TEXT PREFERENCES OF A STUDENT WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER: A CASE STUDY

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A Thesis

Submitted to the Graduate College of Bowling Green State University in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

May 2011

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ABSTRACT

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Teachers have struggled with actively engaging students with special needs in the classroom. Throughout the last several decades, students who have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) have been confronted with many academic challenges, especially with reading. With the significant number of students with ADHD who are struggling and unmotivated to read, teachers need to be aware of the numerous reading tools that can be used to help increase and promote lifelong readers. Introducing students with ADHD to the newest reading materials may encourage students to be motivated to read.

This study sought to determine the text preferences of a student with ADHD while also identifying the typical reading behaviors of the participant at school and home. The case study investigation described the life of a student who has been diagnosed with ADHD and his struggle with reading. Past and present teachers of the student were interviewed about the reading behaviors and complications this student with ADHD encounters during a typical school day. A parent of this child was also interviewed to provide details about the process of having a student identified with ADHD and the behaviors that occur at home.

The student read four different types of books, which included a colored picture book, black and white picture book, colored electronic book, and black and white electronic book. The student answered a 13-question survey about his thoughts on the color, format, and general perceptions of each book. He participated in an interview to express his overall thoughts of the assortment of books, including a discussion of the color and format that were most appealing.

Each survey question was coded, with 3 representing the highest level of interest. After analyzing the data from the surveys and responses from the interview, colored electronic books were the most appealing to the student with ADHD. The student also demonstrated greater
interest in colored texts rather than black and white texts and electronic texts rather than printed
texts. It appears that students with ADHD would be more motivated and engaged in reading if
electronic texts were an option in the classroom setting.
ACKNOWLEDGMENTS

I would like to give a special thanks to the chair of my committee, Dr. Cindy Hendricks, for supporting and guiding me along throughout my study. Additionally, I would like to thank the other two members on my committee, Dr. Lessie Cochran and Dr. Mary Murray, for sharing their knowledge and ideas. I would also like to give a special thank you to the principal, teachers, parents, and student who have helped me with my study with arms wide open. Lastly, thanks to my family, friends, and colleagues for their continuous love and support throughout this research study.
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PREFACE

It was chilly September morning in Northwest Ohio as I was walking into the front doors of the elementary school where I would be teaching for the upcoming year. Many questions were floating around in my head as I was wondering about the students I would soon be meeting. I knew nothing about my students prior to this day; I was hoping only that the students would like me. As I was walking through the hallway on the way to my classroom, I passed a few children who were eager to learn as they have arrived early to school. Thoughts were bubbling up in my head; would these children soon be my students?

As I approached my second grade classroom, I spotted a small bulletin board containing pictures of all of my students that my teacher had created. I was glancing around at all of the photographs, challenging myself to remember as many names as I could. The students would be really baffled if I could instantly call on them during the first day of class. By looking at the photographs on the bulletin board, I made an assumption that I had a pretty “normal” class.

I was standing outside of the classroom door as the first bell began to ring. Students were excited to get to class, and soon enough, my students were approaching the classroom. The students would stop, look at me with a puzzled face, and ask if I was their substitute teacher for the day. I smiled at them and introduced myself. At that point, something seemed to have clicked in their heads as they stated, “Oh, that’s right. Our teacher told us about you yesterday!” They then quickly gave me a hug and continued on with their normal morning routine.

Right before the final bell rang and the announcements began, one final student, Mark (a pseudonym has been used to protect the identity of the student), walked into the classroom. He looked distraught as he placed his book bag on the floor. Mark looked up at me, and he instantly knew who I was and why I was here. “You must be Miss Hoover!” as he said it with a smile on
his face. Mark continued on with the morning routine of putting his book bag on the shelf and
taking out his homework. He went back to his desk and put his head down; however, this was
when students were supposed to find a book to silently read. I went over to Mark’s desk and
insisted that he find a book to read. He raised his head, looked me straight in the eyes, sincerely
said, “I don’t like reading!” and placed his head back on his desk. Little did I know at this point
that Mark was a student with Attention Deficit Hyperactive Disorder (ADHD), but I knew that
reading was a struggle for him. I prepared myself for an upcoming year full of hard work, joys,
and tears.
CHAPTER I. INTRODUCTION

All children, no matter their race, color, ethnicity, socioeconomic status, or ability, should be given the opportunity to learn! Inclusion is not much of debate today but rather a formality, resulting in many classrooms consisting of a wider diversity of students, including students with disabilities. In fact, 5.5 million children (or about 8%) in the United States are identified as having a disability (United States Department of Health and Human Services, 2000). There are numerous kinds of disabilities that can be found in any classroom from students with autism to students with physical impairments.

Along with inclusion of students with disabilities in the general education classroom exist perplexed teachers trying to determine the best way to plan lessons that actively incorporate and engage all students. Students with any type of disability, from mild to severe, can be challenging for a classroom teacher if he/she is unprepared. With the increase of inclusion in today’s school systems, all teachers, whether novice or experienced, need to be well aware of the challenges and rewards that are set forth in front of them of having students with disabilities in their classrooms.

Students with disabilities often tend not to interact with others like their typically developing classmates. They can frequently be found playing by themselves or with an adult, leading to isolation from their peers (Koegel, Koegel, Frey, & Fredeen, 2001; McGrath, Bosch, Sullivan, & Puqua, 2003; Pierce-Jordan & Lifter, 2005). Additionally, countless numbers of teachers often struggle with certain behaviors that students with disabilities express in the classroom. Students with disabilities often demonstrate difficulty following classroom directions and routines (Bryan & Gast, 2000), being off-task (Young, Simpson, Myles, & Kamps, 1997), engaging in disruptive behavior (Gadow, Devincent, Pomeroy, & Azizian, 2005; Reese, Richman, Belmont, & Morse, 2005), and possessing lower academic skills (Simpson, de Boer-
Ott, & Smith-Myles, 2003). Without sufficient knowledge of the skills and interventions needed to help students with disabilities, teachers and students will be struggling with each other.

When analyzing the number of students with disabilities in general education classrooms in the United States, it is astonishing to note that 3% to 7% of students are identified as having Attention-Deficit Hyperactivity Disorder, commonly referred to as ADHD (American Psychiatric Association [APA] 2000). With these percentages, ADHD is considered to be one of the most prevalent neurobehavioral disorders present during childhood years, in addition to the most prevailing chronic health care condition among children in school (American Academy of Pediatrics, 2000; APA, 2000). With the number of children in schools who have ADHD, it is imperative that teachers are aware of what ADHD is and how they can create appropriate learning environments for students with this medical condition. Students who have ADHD are often faced with academic difficulties in all subject areas, especially reading.

Statement of the Problem

Students who have ADHD are faced with many dilemmas in and out of the classroom. The dropout rate is much higher for students with ADHD than compared to their typical developing peers (Barbaresi et al., 2004). This could be due to the issue that students with ADHD tend to struggle more academically; in fact, approximately 80% of students with ADHD are dealing with school achievement problems (Cantwell & Baker, 1991). Additionally, an estimate of 20-30% of students identified as having ADHD have also been classified as having a learning disability (DuPaul & Stoner, 2003). Many studies in the past have indicated the possibility that students who are identified as having a reading disability also have ADHD (Frick et al., 1991; Hinshaw, 1992b; Schachar & Tannock, 1995). With these academic issues that
students who have ADHD are encountering, it is essential that teachers differentiate instruction that best meet these students’ needs.

Teachers use a variety of methods and an abundance of materials when they teach their lessons in today’s schools. Technology has made great advances in the last few decades, and with these advances are opportunities for students to learn using the newest technology that is available. However, as of today, only a few research studies have been published that incorporate academic skills and the use of computerized instruction for students with ADHD. The two most prominent research investigations in this area include Ota’s and DuPaul’s study in 2002 with computerized mathematical instruction for students with ADHD and Clarfield’s and Stoner’s study in 2005 with computerized reading instruction for students with ADHD. Both of these studies displayed positive outcomes when using computers as an instructional tool for students with ADHD. Even though these studies have displayed positive results for students using computers as instructional tools for particular content areas, research about the use of electronic books for reading purposes of students with ADHD was not found. This study will help to increase the knowledge on the reading text preferences, specifically printed books and electronic books, of students with ADHD.

Research Questions

There are many questions teachers have about teaching reading to students with ADHD. However, these studies are limited in number and scope. To explore the nature of the relationship between reading and students with ADHD, this study utilized a case study approach. One student was the focus of this investigation. Parents and teachers of this one student were interviewed to understand the typical reading behavior of the student at home and at school. To further improve future teaching instruction for students with ADHD, this study focused on one particular
question: “What is the relationship between a student with ADHD and his preference for printed
texts and electronic texts?” In addition to this question, several other questions were also
addressed throughout the investigation including the following: “Does the student with ADHD
prefer color texts or black and white texts?” and “Does the student with ADHD prefer printed
texts or electronic texts?”

Rationale

As previously mentioned, there have not been many studies or research on using
computers for neither reading purposes nor instruction. Students who are identified as having
ADHD often have problems academically and reading seems to become more of a task rather
than enjoyable activity. Teachers are constantly struggling with motivating and engaging these
students into reading. By offering students with ADHD the choice of using printed text or
electronic text, pertinent information may be revealed as to how to motivate students with
ADHD to read. Being conscious of the different available texts for students with ADHD may
improve their overall attitude and willingness to read, which may ultimately result in higher
academic achievements not only in reading, also in all of the subject areas.

Definition of Terms

There are several terms that will be used throughout this study. The definitions are
included to help with clarification.

- **ADHD**- A condition that is characterized as those who “exhibit developmentally
  inappropriate levels of inattention and/or hyperactivity-impulsivity” (Jitendra,

- **Children with Disabilities**- “Those who have persistent difficulty doing ordinary
  childhood activities. These children have physical, behavioral, and emotional
problems that can make it difficult for them to participate in strenuous activities, get along with others, communicate and learn, or participate in neighborhood or school activities with their peers” (United States Department of Health and Human Services, 1998).

- **Comorbidity** - The co-occurrence of two or more psychiatric disabilities or mental health issues (August & Garfinkel, 1989).

- **Electronic Books** - “Documents written in electronic text that have the look and ‘feel’ of more traditional books” (Horney & Anderson-Inman, 1999, p. 128).

- **Hyperactivity** - The behavior that tends to display a constant, “motor-like” activity level where the child is constantly up and moving around or fidgeting (Richek, Caldwell, Jennings, & Lerner, 2002).

- **Impulsivity** - The tendency to respond quickly without thinking about the consequences of the action (Richek et al., 2002).

- **Inattention** - The inability to maintain focus on a task (Richek et al., 2002).

- **Learning Disability** - According to the Individuals with Disabilities Education Act, a learning disability is “a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. However, learning disabilities do not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance,
or of environmental, cultural, or economic disadvantage” (United States Department of Education, 2004).

- **Motivation-** “The likelihood of choosing one activity over another, as well as the persistence and effort exerted when participating in the chosen activity” (Malloy, Marinak, & Gambrell, 2010, p. 2).

- **Reading Disability-** “A term that applies to children who fail to learn to read despite normal sensory abilities and intellectual capacity and appropriate educational and environmental opportunities” (Rucklidge & Tannock, 2002, p. 988).

**Limitations**

As with any study, this investigation includes several limitations. These limitations include the location, the participant involved, and the books selected. This study took place at a public elementary school in Northwest Ohio. The location, staff, and students are all familiar with the researcher due to past teaching endeavors.

This was a case study, resulting in only one student who has ADHD participating in the research investigation. The outcome of this study was based solely on the perceptions, beliefs, and attitudes of this one student, which should not be used to reflect on the rest of the population of students with ADHD.

The selection of books used for both printed texts and electronic texts should be considered to be a limitation. Two picture books and two electronic books selected by the researcher were used. The use of different books may yield different results. Also, due to time constraints, only one form of electronic texts was used in this study. Even though this study focused on the electronic texts that can be found on computers, there are numerous electronic
texts that could be used in future research of the topic, such as Kindles and iPads. The use of different forms of electronic texts may also change the results.
CHAPTER II. REVIEW OF LITERATURE

It is evident that students who are identified as having ADHD struggle academically. Reading is often an issue with students who have ADHD, leading to a great deal of frustration and very little, if any, motivation. With the increase of students with ADHD present in today’s classrooms, it is imperative for teachers to determine what preference of texts students have to improve their attitude and motivation toward reading. This section will explain in detail imperative information about ADHD, including the different forms, characteristics, symptoms, treatments, and alternative treatments. The latter half of this chapter will discuss the connection between poor academic performance, particularly in reading, and ADHD by reviewing previously written texts.

Background Information on ADHD

Until recently, many have used the terms ADD and ADHD interchangeably without knowing the difference between the two. ADD referred to people who have problems focusing but did not demonstrate signs of hyperactivity or impulsivity; however, only the term ADHD is used currently. ADHD is a developmental disorder that impacts a person’s attention span, activity level, and ability to control impulses (Barkley, 2000). The impulsivities and inattention that are displayed by people who have ADHD significantly affect all areas of functioning, including work, school, self-esteem, and social and family relationships (Rief, 2005).

There are three different categories of ADHD, which include the predominantly inattentive type, predominately hyperactive/impulsive type, and a combined type. Out of all three varieties, the most commonly diagnosed form is the combined type, which signifies that a person has a considerable amount of all three of the symptoms, including short attention span, high activity level, and frequent impulses (Rief, 2005).
ADHD is more prevalent with males than females by the ratio of three to one (Barkley, 2006; Dodson, 2002; Ford-Martin, Odle, & Davidson, 2009); however, many argue that females with ADHD frequently go undetected as having ADHD. In fact, females tend to show more of the passive inattentive type while males demonstrate the characteristics of impulsivities and higher activity levels. The more interesting, desired, and challenging a task is to a person with ADHD, the more likely the impulsivities and distractibility will not be apparent (Dodson; Rief, 2005). Keeping all students, including students with ADHD, engaged and curious in the classroom will help with classroom management and the overall learning experience for students.

ADHD impacts a person for the entirety of his/her life. It may appear that people “outgrow” ADHD as they become older; however, as people grow older, they are more capable of controlling impulses and paying attention (Dodson, 2002). Many children are prescribed medication at a young age to help them cope with the hyperactivity levels and impulses. It has been recommended that patients continue taking medication throughout adulthood, even if they have “learned to cope” with their behaviors, due to the high levels of stress that are common with the increase of age (Dodson).

History of ADHD

The existence of ADHD dates back as far as to the year 1845. This was when a German physician and poet, Heinrich Hoffman, wrote a poem called *Fidgety Phil* (See Appendix A). *Fidgety Phil* is about a little boy who seems to be restless and unable to control his actions. Many people have now come to the conclusion that Fidgety Phil was a child who had the symptoms like a child with ADHD (Langwith, 2009). This poem insinuates that ADHD was
present in children in these years even though the diagnosis of ADHD was not yet considered to be a medical condition.

ADHD has had a lengthy evolving history; however, it has not always been known as ADHD. The first clinical description of ADHD occurred in the year 1902. George Still, an English pediatrician, was the first to proclaim a condition like ADHD, which was often referred to as “Morbid Defect of Moral Control” (Langwith, 2009). He proclaimed that children with this condition often displayed hyperactive behavior, poor attention, and learning difficulties. Dr. Still also recognized that the symptoms related to Morbid Defect of Moral Control were more commonly found in boys (Weiss & Hechtman, 1993). Throughout the next several decades, numerous names and descriptions were often used. The various names such as Hypokinetic Behavior Syndrome, Hyperactive Impulse Disorder, Hyperkinetic Reaction of Childhood, and ADD, have all been used to describe what is now currently known as ADHD (Langwith; Weiss & Hechtman).

There have also been a variety of reasons that were once thought to be the causes of ADHD. In the years of 1917 and 1918, a worldwide epidemic of encephalitis lethargica was affecting a large number of children and adults. Brain damage was denoted as being the cause for “ADHD”, when in actuality, the exact cause for ADHD is still unknown (Langwith, 2009). This crisis was causing both children and adults to experience behavioral and cognitive problems, resulting in conditions that are similar to ADHD, including impulsivity and impaired attention. The same conditions that Dr. Still noticed were apparent in these children and adults as well. People who were labeled as having encephalitis lethargica were admitted into special treatment centers. Children and adults who were admitted into these centers did show signs of improvement in behavior; however, as soon as they were released to maladjusted parents and
family members, their behaviors repressed back to the hyperactive form (Weiss & Hechtman, 1993). Due to these occurrences, the causes for ADHD were implied to be because of multiple reasons, including environmental and biological factors.

Also, there have been numerous medicines that have been prescribed to help with the symptoms of ADHD. In the year 1937, a group of children with behavioral problems were given a stimulant medicine. Dr. Charles Bradley reported on the changes that occurred stating that the children’s behaviors improved due to the stimulant medicine, Benzedrine (Langwith, 2009; Weiss & Hechtman, 1993). In 1955, the United States Food and Drug Administration (FDA) approved the commonly known drug, Ritalin, for usage. During the years 1996 to 2002, the FDA then accepted the prescription drugs of Adderall, Concerta, and Strattera to be used in the treatment of ADHD (Langwith). These prescriptive drugs are the most frequently used today when treating children with ADHD.

Characteristics and Diagnosis of ADHD

The leading symptoms and the most commonly known characteristics of ADHD are inattention, impulsivity, and hyperactivity. It is crucial to keep in mind that not all children with ADHD present these characteristics in the same way or even to the same degree; some have milder cases while others are on the severe end of the spectrum (Lougy, DeRuvo, & Rosenthal, 2007). This can also be the reason as to why some children go undiagnosed as having ADHD.

According to the Diagnostic and Statistical Manual of Mental Disorder (APA, 2000), for a child to be diagnosed with ADHD, “some impairments from the symptoms must be present in at least two settings [and] there must be clear evidence of interference with developmentally appropriate social, academic, or occupational functioning” (p. 85). If a child demonstrates only certain characteristics of ADHD in one setting, such as at school, the impulsive behavior may be
due to the environmental conditions; it will not account for reliable data for a diagnosis of ADHD. Additionally, these symptoms should be apparent before the child is seven years old (APA; Ashley, 2005).

One commonly known tool used to distinguish the possibility of ADHD is the Vanderbilt ADHD Diagnostic Rating Scale (See Appendix B). The rating scale takes approximately 10 minutes, and is completed by both the parents and the classroom teacher. The rating scale helps to determine (a) the possibility of other co-morbidities like oppositional defiant disorder and depression, and (b) the specific category of ADHD as inattentive, hyperactive-impulsivity, or combined. The Vanderbilt Rating Scale can also help to determine if the same behavioral conditions are being noticed at school and at home (Massachusetts General Hospital, 2010). It is imperative to remember that this rating scale does not directly diagnose the student as having ADHD, but it helps to determine the possibility of the occurrence of this medical condition.

*Predominantly Inattentive*

Previously known as ADD, children who are identified as having the inattentive type of ADHD are often overlooked in the classroom, resulting in these children being more likely to go undiagnosed (Barkley, 2000; Lahley et al., 1998; Rief, 2005). These children are the students who sit quietly in their seats and seem to be absent-minded during teaching instruction. Teachers often describe these students as being unresponsive, inactive, and lethargic. When students who have the inattentive form of ADHD go undiagnosed, they will tend to demonstrate an increase in academic dilemmas as they are introduced to more difficult school material (Barkley, 1997a).

The inattentive behaviors that students display are pervasive, prolonged, and troublesome with the activities to which they are introduced on a daily basis. A student with inattentive ADHD can be observed paying attention to everything else in the classroom except for the one
factor upon which they are expected to be focusing their attention. Since these students are having an overload of external stimuli that are distracting to the student’s attention on class work, the student will likely pay attention to the one aspect that he/she finds immediately satisfying and censor out the rest of the stimuli (Lougy et al., 2007). Countless times, however, the student will center his/her attention on a stimulus that is unrelated to class.

For a student to be diagnosed with the inattentive form of ADHD, the student must frequently display certain behaviors in two given settings. The APA has created a list of criteria common behaviors typically exhibited by a student with inattentive ADHD. The student must reveal at least six of the nine symptoms on the list. The following behaviors that are listed can be found on the APA’s (2000) criteria list for the inattentive form of ADHD.

- often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- often has difficulty sustaining attention in tasks or play activities
- often does not seem to listen when spoken to directly
- often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
- often has difficulty organizing tasks and activities
- often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- is often easily distracted by extraneous stimuli
• is often forgetful in daily activities (p. 92)

Predominately Hyperactive-Impulsive

In addition to inattention, hyperactivity and impulsivity are the other two main characteristics of students with ADHD. Students who display the predominately hyperactive-impulsive form of ADHD typically do not, or seldom, exhibit the characteristic of the inattention behavior (Rief, 2005). Unlike hyperactivity, impulsivity and inattention normally do not diminish after childhood (Weiss & Hechtman, 1993). The students who demonstrate the hyperactive and impulsive behaviors are those who are more likely to be diagnosed with ADHD since it is greatly noticeable in a classroom setting or even at home.

Hyperactive behavior is not limited to high levels of activity, but it also refers to the assortment of body movements such as recurrent fidgeting while sitting, extreme restlessness, and chaotic running around the classroom for no reason (Lougy et al., 2007). The terms that are often used when describing a student who has the hyperactive form of ADHD include “always on the go” and “driven by a motor” (APA, 2000). Without constant reminders, students who exhibit the hyperactive type of ADHD are continuously off task and can include behaviors such as poking, grabbing, playing, and talking.

When relating impulsivity to ADHD, it is often referred to a student’s inability to control their behaviors. Students constantly have a difficult time thinking about the consequences of their actions, resulting in students talking out of turn whenever thoughts come across their minds (Lougy et al., 2007). This causes students, once again, needing constant reminders of appropriate behavior when in the classroom.

Furthermore, the APA (2000) has a list of criteria that can be used to determine whether there is a possibility of a student having the hyperactive-impulsive form of ADHD. Similar to the
inattentive type of ADHD, there are also nine main criteria considered when diagnosing a student. Students must display at least six of the nine characteristics included on the list. The following behavioral traits can be found on the list mandated by the APA (2000):

- often fidgets with hands or feet or squirms in seat
- often leaves seat in classroom or in other situations in which remaining seated is expected
- often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- often has difficulty playing or engaging in leisure activities quietly
- is often “on the go” or often acts as if “driven by a motor”
- often talks excessively
- often blurts out answers before questions have been completed
- often has difficulty awaiting turn
- often interrupts or intrudes on others (e.g., butts into conversations or games) (p. 92)

Causes of ADHD

Despite the countless studies and investigations, the exact cause of ADHD is still unknown (Barkley, 1997b). Ford-Martin et al. (2009) have discussed the possibilities that were once thought to be the cause of ADHD according to Dr. Ben Feingold. Dr. Feingold’s study in the 1970s hypothesized that food allergies and certain types of food were the causes of ADHD. However, after a well-designed follow-up research study, it was clear that there was not a connection between food allergies and children having ADHD. Another popular phenomenon that was thought to be the cause of the hyperactive behavior associated with ADHD was the excessive intake of sugar. This was determined to an implausible cause of ADHD after several
supplemental studies (Rief, 2005). Leading researchers of ADHD have, however, discovered some probable connections between ADHD and heredity, illnesses and brain injuries, chemical imbalances or deficiency in neurotransmitters, slight structural brain differences, and diminished activity and lower metabolism in certain brain regions (Rief).

**Heredity**

Throughout the last several decades, heredity has been deemed by many worldwide researchers, such as Willerman (1973), Goodman and Stevenson (1989), Sherman, McGue, and Iacono (1997), Barkley (1998), Neuman et al. (2001), and Biederman (2005), as being one of the utmost conceivable reasons for children having ADHD. Numerous studies, including the ones previously listed, have used twin studies to find the correlation between families and ADHD. Using identical twins in a study can help to identify possible genetic associations with ADHD since identical twins are more likely to both be impacted by ADHD than non-identical twins (Parker, 1999). According to Barkley, heredity is credited for approximately 80% of children who are diagnosed with having ADHD. It is common for children who have ADHD also to have a parent, sibling, grandparent, or another close relative in the family who has ADHD or at least displays the symptoms of ADHD.

**Illnesses and Brain Injuries**

Some research has indicated a slight chance that illnesses and brain injuries, prenatal and postnatal, may cause an onset of ADHD among children. Trauma to a fetus during pregnancy, or even during birth, may result in brain damage or irregular brain development, causing the possibility of ADHD (Rief, 2005). The different types of trauma that may occur during pregnancy include the following according to Motlagh et al. (2010): fetal exposure to alcohol, cigarettes, and lead; complications, such as toxemia, during birth; and brain injuries from
diseases or trauma. Even though illnesses and brain injuries may be to blame for the cause of ADHD, less than 5% of people diagnosed with ADHD are believed to be from illnesses and brain trauma (Rief).

**Diminished Activity and Lower Metabolism in Certain Brain Regions**

Compared to children who do not have ADHD, children with ADHD have been identified as having less brain activity in specific areas of the brain. These regions include the frontal lobe, links to the basal ganglia, and the cerebellum. These parts of the brain are accountable for being in charge of attention, impulsivity, and activity level. Many neurological brain studies have shown that it is common for a child with ADHD to have less blood flow, electrical activity, and stimulation in at least one of these areas of the brain (Barkley et al., 2002).

**Slight Structural Brain Differences**

Throughout the studies on the brain regions, there has been verification that children with ADHD have different brain structures than children who do not have ADHD. In certain brain regions of children with ADHD, the areas have been found to be smaller and asymmetrical (Barkley, 1998; Rapoport et al., 2001). Rapoport et al., a profound researcher on ADHD and brain size, and his research team have made research breakthroughs with their studies. They have found evidence that children with ADHD have smaller areas of the cerebellum, which is especially apparent with children who do not take medication for ADHD. Their studies also revealed information about the gray and white matter areas of the brain. The gray area, which contains nerve cells and blood vessels, seems to be less apparent in children with ADHD. Also, the white area, which is the part responsible for transferring data between nerve cells, is found less often in children with ADHD who do not take medication. Furthermore, the white area is
apparent just as equally among children with ADHD who do receive medication and children who do not have ADHD (Rapoport et al.).

**Chemical Imbalance or Deficiency in Neurotransmitters**

The two primary neurotransmitters that are associated with ADHD are dopamine and norepinephrine. These two neurotransmitters may help to justify the behaviors of children with ADHD because dopamine and norepinephrine help with attention, activity levels, and motivation. When children are given medication for ADHD, the medication interferes by controlling amounts of dopamine and norepinephrine levels, regularizing brain functioning and increasing self-control (Barkley, 2006). Children with ADHD are thought to have an imbalance or lack of these two neurotransmitters.

**Treatment Options for ADHD**

**Medication**

Medication has been one of the primary treatments for children with ADHD over the past five decades. ADHD medication may be the most effective treatment that a child with ADHD will receive, and ultimately, anywhere from 50% to 90% of children diagnosed with ADHD will be assisted by medication (Parker, 1999). There have been many research studies on the different types of medications that are frequently prescribed to children diagnosed with ADHD, making to not be the “last resort” when everything else fails, which is what occurred often in the past. However, medication should not be used solely by itself; additionally, interventions, counseling, and behavior modifications should also be implemented (Parker). There are many different forms of medication that are used when treating students with ADHD, including stimulants, antidepressants, noradrenergic agonists, selective serotonin reuptake inhibitors, and many more that have not been thoroughly researched as of today.
**Stimulants**

Stimulant medications are normally the first type of medications to be prescribed to children with ADHD. There have been numerous research studies on the effects of stimulant medications for the past 60 years. Stimulants are used to help increase arousal and brain activity, allowing the child to ultimately control his/her behavior and attend to certain tasks. Stimulants also help to increase production of dopamine, which is one of the major neurotransmitters that help to relay information to the brain (Parker, 1999).

There are several types of stimulant medications that are used nowadays for children with ADHD, including Ritalin, Adderall, Cylert, and Deredrine. In 1993, Dr. Josephine Elia conducted a study about the effectiveness of certain medications. In this study, conducted by Dr. Elia and her assistants, it was discovered that 96% of the children with ADHD in the study had demonstrated significant behavioral improvement, such as an increase in attention span, after taking methylphenidate (Ritalin) and dextroamphetamine (Dexedrine) (Elia, Welsh, Gullotta, & Rapoport, 1993). In most cases, stimulant medications have been found to be safe to use with only a few minor side effects such as loss of appetite, insomnia, and irregular heartbeat (Ford-Martin et al., 2009).

**Tricyclic Antidepressants and Antidepressants**

Tricyclic antidepressants (TCAs) are the second main medication used for treatment of ADHD. TCAs are used primarily by adolescents with ADHD and not by younger children. Some common TCAs that are prescribed are Tofranil, Nonpramin, and Elavil (Ford-Martin et al., 2009). Many times, TCAs are used if stimulant medications do not work effectively, if some sort of side effect occurred, or if the adolescent has other conditions such as depression or anxiety (Parker, 1999).
TCAs are believed to work for adolescents who have ADHD by acting on the neurotransmitters of dopamine and norepinephrine (Rief, 2005). One advantage of using TCAs over stimulants is that they have a longer duration period for working up to eight hours, whereas stimulants are only effective for about four hours. When medications last only for four hours, adolescents have to take another dose of the medication during school, which could lead to embarrassment. TCAs have not been found to be as effective as stimulants in most cases; concern has been raised about contrary cardiac side effects and unintentional overdose by individuals who are taking the medication (Parker, 1999).

In addition to TCAs, regular antidepressants have also been prescribed for ADHD. The antidepressant Bupropion has recently been found to work with treatment of ADHD. In one study, it demonstrated that it was as useful as methylphenidate (Ritalin) when reducing ADHD symptoms such as hyperactivity and impulsivity. Bupropion is taken twice or thrice a day, with the most serious side effect being seizures (Parker, 1999).

*Noradrenergic Agonists*

Noradrenergic agonists, like Catapres, are commonly prescribed to children who exhibit extreme hyperactivity, impulsivity, and defiant behaviors; however, it has not shown to be successful with improving inattention dilemmas. This type of medication can be very beneficial to children who also have issues falling asleep due to ADHD (Parker, 1999).

Catapres is normally taken in three or four doses throughout the day. It has been found to take up to one month, however, to see the full results of the medication. There are a few minor side effects that are associated with the noradrenergic agonists, such as dizziness, sleepiness, and nausea (Parker, 1999).
Atomoxetine HCl

The American Academy of Child and Adolescent Psychiatry released the first non-stimulant “first-line” medication in 2004, known as Strattera (Sallee & Smirnov, 2003). Strattera is a norepinephrine reuptake inhibitor, meaning that it helps to make sure that the neurotransmitter norepinephrine does not reabsorb into the brain. By not allowing norepinephrine to be reabsorbed into the brain, more norepinephrine is available for helping other functions in the body, like impulse control (Rief, 2005).

Unlike the rest of the medications for ADHD, Strattera has been proven to work for an entire 24 hours. There are a few minor side effects that have been reported for the use of Strattera, including nausea, vomiting, and tiredness; however, these side effects have not hindered children from continuing taking the medication. Normally, Strattera takes three to four weeks before changes in behavior are noticeable (Rief, 2005).

Other Medication Treatments

There are several other medications that may be used for treatment of ADHD, but the effectiveness of these medications has not been researched as much. These medications include selective serotonin reuptake inhibitors (SSRIs) and monoamine oxidase inhibitors (MAOIs). SSRIs have not been given approval from clinicians who have been testing this form of treatment for ADHD. MAOIs have been found to be dangerous if they are not used following a strict dietary precaution, resulting in this type of medication being prescribed only to adults and not to children (Parker, 1999).
Therapy Techniques for Treating ADHD

Behavior Modification Therapy

Behavior modification therapy focuses on using a reward system to obtain appropriate behavior by a child with ADHD. This reward system can be, and should be, implemented at home and at school. A sticker chart is one of the main reward systems that are commonly used in the classroom. When a student with ADHD completes a task accordingly or if he/she demonstrates appropriate behavior, then the student receives a sticker. The student should place the sticker on his/her chart, and this chart should be in an area the student can easily see. By having the sticker chart, the student can notice the improvements being made. Once a student receives enough stickers, he/she should be rewarded with a special treat that is desirable. The behavior modification therapy can be very useful in a classroom that contains a student with ADHD, and until the appropriate behavior is embedded into the student’s daily routine, it should be used in the classroom (Ford-Martin et al., 2009).

Cognitive-Behavioral Therapy

The main purpose of the cognitive-behavioral therapy is to make the student with ADHD aware of his/her impulsive actions. By making the student cognizant of his/her own thoughts and actions, the impulsive behavior will decrease. Also, the cognitive-behavioral therapy focuses on changing a student’s negative thoughts into positive outlooks. This may be a hard task depending on the student, but eventually it will be obvious that the student is changing his/her thinking, and the impulsive behavior will diminish (Ford-Martin et al., 2009).

Individual Psychotherapy

Individual psychotherapy sessions can be very beneficial to students with ADHD. During psychotherapy sessions, students with ADHD can express their feelings and worries to someone
who can help them gain insight into their behavior and emotions. This can also be a time that is
designated to increasing their self-esteem, especially since students with ADHD often lack self-
estime. Additionally, family therapy sessions can be helpful with learning coping skills and
discussing their own feelings and concerns (Ford-Martin et al., 2009).

*Alternative Treatments for ADHD*

Approximately 2.5 million children in the United States are currently taking some sort of
stimulant medication for hyperactivity and inattention concerns (Parker-Pope, 2009). Even
though prescription medication is a common form of treatment for ADHD, many parents have
great concerns of having their child taking medication since the 2006 warning by the Food and
Drug Administration on stimulant medications. In 2006, the Food and Drug Administration
worried the public by announcing that medications such as Adderall, Ritalin, and Concerta may
result in death, heart attacks, and hallucinations (Parker-Pope). The other route that many parents
take other than medication is alternative treatments.

*EEG Biofeedback*

EEG Biofeedback is a method that has been studied on its effectiveness, and researchers
have announced that their studies have revealed that it works just as well as medication. EEG
Biofeedback can be complicated when trying to explain how it works. During treatment sessions,
electrical activity is measured in different areas of the brain by using electrodes that are attached
to the head. Based on the information that is collected, the child is taught how to control
particular aspects of their mind (Ford-Martin et al., 2009; Parker, 1999; Parker-Pope, 2009).

According to Parker-Pope (2009), many children find the EEG Biofeedback process to be
enjoyable. However, this method can be timely and costly to the family. It takes anywhere from
40 to 80 sessions consisting of 40 minutes each. In addition to this procedure, tutoring and
behavior management training are also offered during the sessions. One of the dilemmas for many families is that the EEG Biofeedback treatment can cost thousands of dollars (Parker, 1999).

Dietary Therapy

Dr. Feingold, a pediatric allergist, has made some accusations on the causes of ADHD in the 1970s and 1980s. He claimed that certain foods that contained artificial colors and additives were the cause of hyperactivity among children. Dr. Feingold wrote a book containing stories about children who had ADHD and exclaimed that their hyperactivity levels were decreased when they were placed on his diet (Parker, 1999). Feingold’s diet consists of high protein and complex carbohydrates, while also eliminating sugar and salicylate-containing foods like grapes, strawberries, and tomatoes (Ford-Martin et al., 2009). Several studies have found no link between a child’s level of hyperactivity and dieting.

Exercise Therapy

Exercise has recently become a phenomenon with helping students with ADHD control their outbursts and improving academic performances. Reynolds and Nicolson conducted a study in 2007 on exercise and the reading skills of students with ADHD. This study revealed significant benefits of exercising and students’ capabilities with motor skills, language fluency, phonology, and working memory. These results are reflective of a previous research investigation that was directed by Reynolds, Nicolson, and Hambly (2003). Both of these studies have demonstrated positive long-lasting effects on reading abilities of students with ADHD.

Reynolds and Nicolson (2007) have released specific recommendations for daily exercises associated with this type of therapy. With exercise therapy, students with ADHD are expected to participate in exercise twice a day in 5-10 minute intervals. Reynolds and Nicolson
have provided a list with more than 200 exercises that students with ADHD can take part in. These exercises include using a balance stimulation board, throwing and catching beanbags, spinning exercises, in addition to a wide range of motor coordination activities (Reynolds & Nicolson).

**Herbal Therapy**

Herbal therapy consists of using natural remedies for treating the symptoms of ADHD. Some of the popular herbal treatments include using ginseng, ginkgo, chamomile, and Echinacea. Not many studies have been completed on the effectiveness of using herbal treatments in regards to ADHD, but a 2001 study indicated improvements in children’s memory and alertness after using ginkgo and ginseng for four weeks (Ford-Martin et al., 2009; Parker-Pope, 2009).

**Significant Historical Research: Academic Dilemmas with ADHD**

Throughout the past five decades, there have been many problems in the classroom for students with ADHD. In addition to the behavioral issues that often occur with students who have ADHD, a significant number of students also struggle gravely in the academic area, resulting in poor school performance throughout their education years (Barkley, DuPaul, & McMurray, 1990; Frazier, Youngstrom, Glutting, & Watkins, 2007; Montague, Enders, & Castro, 2005). For this reason, it is imperative that teachers are well aware of the academic concerns they may encounter with students who have ADHD, and teachers need to desperately find an intervention that best works for these students. There have been significant historical research studies related to ADHD and students’ academic achievements and school performances that have been dated back to the 1960s. These studies range from researching overall school achievements of students with ADHD to the success of medication on students’
school performances to specific content areas that students who have ADHD often exhibit difficulties.

Learning Disabilities and Difficulties with Hyperactive Behavior

In the 1970s and 1980s, the words “learning disability” and “hyperactivity” were often used synonymously or interchangeably (Lambert & Sandoval, 1980). At that point in time, many believed a student who demonstrated hyperactive behaviors was automatically considered to have a learning disability, which is now known to not always be the case. A few studies from this time made a breakthrough about the correlation between learning disabilities and students who exhibited hyperactivity in the classroom.

In 1980, Lambert and Sandoval initiated an in-depth study to reveal the true association between learning disabilities and hyperactivity. Based on the results that Lambert and Sandoval (1980) found, it was evident that 42.6% of the participants who were considered to be excessively hyperactive and performing at a below grade level standard were also considered to have a learning disability (Lambert & Sandoval). This study also suggested that students who displayed hyperactive tendencies may be more predisposed to developing a learning disability.

After the Lambert and Sandoval study in 1980, Holborow and Berry conducted a similar study in 1986. However, instead of determining whether a learning disability existed among students who had hyperactive tendencies, they based their study on students having learning difficulties rather than students being bluntly labeled as having learning disabilities. Prior to this study, all students who were hyperactive were automatically considered to have a learning disability. This investigation reduced the percentage of students who were hyperactive and considered to have a learning disability. Rather than claiming that almost half of the students who present hyperactive tendencies also have a learning disability, Holborow and Berry (1986)
affirmed that approximately 27% of students have learning difficulties along with being hyperactive.

**Academic Difficulties and Characteristics of ADHD**

In addition to hyperactivity being a possibility for influencing a learning disorder or learning difficulty, it also displayed many negative aspects that were presented in the classroom setting. Many studies, like the study piloted by Sprague and Toppe (1966), have presented the facts that students who demonstrate the behaviors of being impulsive, inattentive, and overactive are generally indicative to academic difficulties. The 1976 Huessy and Cohen study suggested students who were hyperactive contained many attributes of academic failure including being truant, not attending class, disrupting class, not completing homework, and being placed in remedial English and mathematics classes. Many were skeptical if this study actually represented a learning disability that may be among students with hyperactivity or if these students were plain lazy.

Furthermore, students who displayed the characteristic of being inattentive during class were also of interest in terms of academic failure. Of course, students who exhibit ADHD symptoms do not often display the ability to attend to important tasks that are put forth in front of them. However, this was once not thought to be a feature of students who have ADHD. In 1976, a research investigation by Ross yielded results that the characteristic of inattention was solely a trait of a reading disability and was not associated to students who have ADHD.

In 1984, a study by Brown and Wynne confirmed this frequently seen dilemma with students who are diagnosed with ADHD. The results of this study indicated that students with ADHD are far more inattentive to tasks than those students who are identified as having a reading disability and students who are considered to be “normal”. In addition to students
struggling with controlling their impulsive behavior, they also have difficulty with staying attentive to essential tasks during school. These dilemmas together have been acknowledged as being one of the main assets to the reasons that students with ADHD encounter problems academically. Without being able to focus on the important aspects that are learned during the school hours, students are going to combat the possibility of academic failure (Brown & Wynne, 1984).

*Reading Difficulties and ADHD*

There have been numerous research studies in the past that have focused on the academic issues that students with ADHD often experience. Students with ADHD may struggle constantly with all academic subjects like mathematics, spelling, writing, and reading. In fact, many students who have ADHD often possess difficulties in reading (Ackerman, Anhalt, & Dykman, 1986; Hinshaw, 1992a; Zentall, 2006). Throughout the decades, many studies have been completed on the effects of ADHD with a student’s ability to do successfully well in certain subject areas.

Reading dilemmas often arise in the classroom with students who have ADHD. In 1978, a research study by Cantwell and Satterfield revealed that there was a high correlation of reading difficulties that were present in students with ADHD. Cantwell and Satterfield compared reading achievement scores of students with ADHD to students not demonstrating ADHD symptoms. Results showed there was a significant difference in the performance scores, and students with ADHD were scoring lower than students without ADHD. Students who were identified as having ADHD scored lower in the areas of rapid word naming, sentence imitating, word sequencing, letter sequencing, and word fragmenting compared to the control group (Cantwell & Satterfield).
A study that further investigated the link between students with ADHD and reading difficulties was led by August and Garfinkel in 1989. Similar to Cantwell’s and Satterfield’s results in 1978, August and Garfinkel also found lower performance skills of rapid word naming in students with ADHD, which is considered to be an excellent predictor for the ability to read fluently. However, unlike Cantwell’s and Satterfield’s findings that insinuated that all students with ADHD have reading disabilities, this investigation revealed that not all students with ADHD are accompanied by reading difficulties. In fact, approximately 39% of students identified as having ADHD also tended to have severe problems with reading while the other 61% students with ADHD were achieving admirable reading scores (August & Garfinkel).

**ADHD Medication and Academic Performance**

With ADHD vastly affecting the academic performances of students nationwide, researchers knew that something had to be done to improve achievement rates. Stimulant medications were prescribed to students in hopes of ameliorating the behaviors hindering their education (Cunningham & Barkley, 1978). Research studies, such as Alexandris and Lundell (1968) and Hoffman, Engelhardt, Margolis, Polizos, and Waizer (1974), were carried out in the early 1960s and late 1970s. These early research studies claimed that stimulant medications were improving the academic performances of students with ADHD. However, after thoroughly extensive review of these studies, Cunningham and Barkley asserted that 82% of the objective measures and tests that were used in these stimulant medication studies were deemed as being invalid. Cunningham and Barkley also argued the stimulant drugs did disclose improvements in the area of attention; however, it did not confirm an increase in academic abilities.

Following the accusations of Cunningham and Barkley (1978), researchers reevaluated the methods and procedures of their studies to ensure the tests used in their studies were valid
and reliable. In 1986, Douglas, Barr, O’Neill, and Britton guided a new study on the use of stimulant medication and its outcomes on behavior and academic achievement among students with ADHD. Through the changes that were recommended by Cunningham and Barkley, Douglas et al. were able to release new evidence that stimulant medications did positively affect students’ behaviors and academic performances. During post-testing, students were able to demonstrate the abilities of staying on task, completing more questions and with accuracy, and working harder to complete the work. Teachers also stated that the students’ behaviors in the classroom were significantly improved, including students being less disruptive and participating more during class (Douglas et al., 1986).

Contemporary Research: Reading and ADHD

Reading is one of the central elements of language that has the greatest impact on all of the other academic areas. Rabiner’s and Cole’s (2000) recent study established the fact that students who are struggling with reading as early as kindergarten will continue to struggle throughout their lifetime. Lerner’s (2003) investigation concurs with Rabiner’s and Cole’s statement with the results of a study on reading achievement throughout the schooling years of students who have reading disabilities. Lerner’s study released the information that 70% of students who were struggling with reading in the third grade were also severely struggling with reading when they entered the twelfth grade.

ADHD and Current Reading Difficulties

In past studies, it was suggested that ADHD and reading disabilities should be considered to be one condition. Researchers proposed that all students with ADHD also had a reading disability, and it should be categorized as such. The research completed by August and Garfinkel in 1989 implied that not all students with ADHD have reading difficulties. Since this study, more
research has been pursued to determine what the true connection is between students with ADHD and reading difficulties. Since there is an adequate amount of students who display both the symptoms of ADHD and hindrances in reading, it is necessary for teachers and educators to be aware of the commonality between the two.

Two current studies have been conducted to identify the similarities and differences between ADHD and reading disabilities. Both Pisecco’s, Baker’s, Silva’s, and Brooke’s study (2001) and Aaron’s, Joshi’s, Palmer’s, Smith’s, and Kirby’s investigation (2002) have concurred that ADHD and reading disabilities are two different dilemmas. However, it can be incredibly challenging deciphering the exact reasons for the shared characteristic of reading difficulties between the two. In fact, Aaron et al. ensured that many people often mistake the problems for reading disabilities and students with ADHD who have difficulties with reading are because of the same reasons merely because the outcomes are the same; however, this is not the circumstance.

One difference between reading difficulties among students with ADHD and students who are diagnosed as having a reading disability is that a reading disability is considered to be a language-based disorder; while ADHD is not believed to be a language deficit but rather a lack of impulse control and deficits in executive processing (Aaron et al., 2002; Pisecco et al., 2001). Students with reading disabilities tend to not perform as well on tasks related to receptive and expressive language (Pisecco et al.). Students with reading disabilities are described as having weaknesses in phonology processing, word recognition, and comprehension. These students also need to pay extra attention while reading to try and decode the words in the passage, resulting in comprehension issues. Nonetheless, when these students are focusing so much on decoding, especially in lengthier reading passages, comprehension is hindered and frustration results
instead. At times, this frustration can turn into students participating in off-task behavior, which is similar to the characteristic of students being inattentive (Aaron et al.; Pisecco et al.).

Students with ADHD may also possess troubles with comprehension while reading; however, it is not due to the same reason as students with a reading disability. Students with ADHD are typically incapable of maintaining continuous attention to a task, such as reading, for long periods of times. Students will then become off-task, resulting in lower scores for reading comprehension. Even though this is the case for a substantial amount of the times, ADHD can be a co-morbid condition with a reading disability. Students who are identified as having ADHD and exhibit comprehension, word recognition, and phonological processing dilemmas while they are taking prescription medication, may also have a reading disability (Aaron et al., 2002; Pisecco et al., 2001). Students identified as having both ADHD and a reading disability typically perform poorly on tasks related to receptive language in addition to demonstrating inappropriate behaviors like the inability to control impulsivity and inattention (Pisecco et al.).

It is imperative for teachers to realize if a reading disability or ADHD is affecting the student’s ability to read successfully because different forms of remediation are used depending on the cause that is hindering the reading process. Students who have a reading disability will need intensive intervention in the areas of phonemic awareness, decoding, and comprehension; on the other hand, students with ADHD will acquire prescription medications and modification therapy to increase reading abilities. Without the proper actions, reading will not improve. Students who have only ADHD and are behind in reading but do not have a reading disability will not benefit with intensive comprehension training. This is because the main cause for not comprehending is their inattentive behaviors (Aaron et al., 2002; Pisecco et al., 2001).
Many students with ADHD have difficulties with reading even though they are not considered to have a reading disability. A recent study by Cutting, Koth, Mahone, and Denckla (2003) indicates that students with ADHD who are free from reading disabilities still contain problems with word recognition compared to students without ADHD. In Cutting et al.’s study, students with and without ADHD were introduced to a list of new words; however, when students were asked to recall the list of new words the following day, students with ADHD were not able to perform as well. This suggests that even though students with ADHD who are not identified as having a reading disability can still come upon weaknesses in reading areas (Cutting et al.).

**Interventions for ADHD**

To ameliorate reading deficiencies in students with ADHD, a study by Volpe, DuPaul, Jitendra, and Tresco (2009) revealed some helpful information about the interventions that are used to increase reading capabilities. Volpe et al. indicated that evidence-based academic interventions did positively influence academic performance; however, the greatest impact will come from ongoing interventions throughout the year for academic performance to continue improving.

One intervention that has been found to be extremely helpful in aiding students’ comprehension, especially those with ADHD, is collaborative strategic planning (CSR). This intervention is based on the concepts of reciprocal teaching, such as interactive teacher-student dialogue, clearly defined procedures, and collaborative group activities (Jitendra et al., 2008). In CSR, pre-reading, during-reading, and post-reading strategies and activities are incorporated, which helps students to monitor their comprehension of the material. During pre-reading, students will recall information that they already know about the topic being discussed, and then
they will make predictions about what they think will happen during the story. While reading the story, students will identify unfamiliar words and use “fix-it” (e.g., The Helping Hand) strategies to make sense of the information. Post-reading strategies include reviewing the pertinent information learned and key words discussed, all of which can be done in collaborative groups (Jitendra et al.). CSR is a good comprehension intervention and strategy that can be used in the classroom to help all students with comprehension, including students with ADHD.

Technology and ADHD

The use of technology in the classroom has been recognized as making the content that is to be learned fun by engaging and motivating to students with ADHD (Bender & Bender, 1996). Students with ADHD can participate in reading, writing, or even math topics on computers for supplemental practice or as rewards. A study by Kim et al. (2006) used the intervention strategy of CSR and implemented it on the computer for students with reading disabilities. A control group was also used, and this group also used the strategy of CSR but not on computers. The results of this study indicated that a significant difference in the post-test scores was noticeable, and the students using CSR on the computers had higher comprehension abilities. These students also expressed that they enjoyed using the computers for reading, and they believed that their reading had improved (Kim et al.). This study clearly demonstrates that reading abilities can be improved by using computers for reading instruction.

In addition to Kim et al.’s study in 2006, a study by Clarfield and Stoner in 2005 also proclaimed that computers can be useful instructional tools for students with ADHD and/ or reading difficulties. The results of Clarfield’s and Stoner’s study indicated that students who use computers for reading instruction achieve higher reading fluency scores. Additionally, there was an increase in positive and appropriate behavior of students utilizing computers compared to
students in the teacher-directed instruction group. Students who used computers were also frequently engaged in the reading and motivation for reading increased, while their overall academic performances also escalated (Clarfield & Stoner). Once again, the use of computers for reading has demonstrated to help motivate, engage, and improve reading skills.

Electronic Books

Throughout the 1990s, audiotape books were often used in classrooms. Electronic books, also commonly known as e-books, are currently replacing the use of audiotape books in the learning process. Unlike audiotape books, electronic books are more interactive and can include animation, music, and help supports for students experiencing reading difficulties (Rhodes & Milby, 2007; Shamir & Korat, 2006). By providing help supports and including interactivity, students with reading difficulties are often motivated, engaged, and self-confident in their reading, which all can be beneficial to students with ADHD.

This newest possibility of using electronic books to increase reading motivation and improve reading abilities has made recent breakthroughs in research. Research has suggested that electronic texts and multimedia supports are effective in improving the quality and extent of learning for students with disabilities. According to the results of Horney’s and Anderson-Inman’s research investigation in 1999, electronic books do enhance the learning of students with reading disabilities and students who are having difficulties with reading. The conclusions that have been drawn from Horney’s and Anderson-Inman’s study (1999) reveal that electronic books aid in comprehension and improve reading fluency for students with reading difficulties. With the benefits that electronic books are disclosing, the use of electronic books seems to be very beneficial to students with ADHD.
Theoretical Orientation

There are numerous theories and models that have been created in relation to ADHD. Models can be very helpful when diagnosing ADHD, but they cannot be considered to be true testable theories. Over time, there have been an abundant number of models related to the three characteristics of ADHD—inattention, hyperactivity, and impulsivity. The cognitive descriptive models for ADHD have been useful in identifying the differences in typical children’s development to children with ADHD in terms of these three characteristics. Out of all of the cognitive descriptive models that have been proposed, two of these models are well known among many. These two models include Douglas’ model related to attention from 1972 and Barkley’s model related to impulsivity from 1997. It is imperative to recognize that both of these models also include motivational factors.

*Douglas’ Model*

Zentall (2006) remarks on the significance of Douglas’ inattention model (1972). In Douglas’ model, it is advocated that ADHD’s primary deficit is the inability to provide, establish, or maintain attention. In addition to this key component are the secondary attributes, which include the incapacity to control oneself through the use of language, underachievement in academics, and lack of appropriate social behavioral skills. The treatment that was recommended in Douglas’ model was constituted through the three words “stop, look, listen”. This model was often used by many therapists (Zentall).

Even though Douglas’ model is commonly known, it is still not considered to be a testable theory. This model helps to predict the prevalence of ADHD in any tasks that require impulse control or attention; however, this is also were many issues arise. This model overlaps with what is considered to be normal behavior and what is considered to be a sign of ADHD
since many typical tasks and behaviors require attention and impulse control. Therefore, it does not strictly identify the characteristics and conditions solely of ADHD, resulting in an unclear understanding of what is considered to be ADHD. Even though this dilemma has been disputed by many, the intervention of “stop, look, listen” can still be worthwhile (Zentall, 2006).

**Barkley’s Model**

In addition to Douglas’ model, Barkley’s (1997b) model has also been used when discussing ADHD. Unlike Douglas’ model that focused on attention as the primary characteristic, Barkley’s model was centered on children’s inhibitions. Barkley affirmed that children who show signs of ADHD have glitches in the prefrontal area of their brains, resulting in impulsivity. Along with this inhibition deficit are three basic cognitive shortages, which are also known as the executive functions. The three deficits include the following: “lack of internally regulated mood, motivation, and arousal (self-control), failure to analyze and synthesize new behavior (reconstitution), and failure to internalize speech and poor working memory” (Zentall, 2006, p. 47). This is useful in explaining the many issues that children identified as having ADHD display with working memory, leading to the reason why children cannot narrow the gap between response and reward (Barkley).

Many questions have arisen about the truth to Barkley’s model on inhibition. Slusarek, Velling, Bunk, and Eggers (2001) state, “although the effects of these processes on working memory, self-regulation of affect, motivation and arousal, the internalization of language, and the reconstitution of behavior are very well elaborated, the theoretical status of the construct ‘behavioral inhibition’ remains ambiguous” (p. 356). Another fault of this model is that it cannot clarify the problems that occur when language and working memory are not an issue. Ultimately,
the foremost reason to why Barkley’s model is not able to be a theory is because it uses one main symptom to describe other symptoms of ADHD (Zentall, 2006).

Arousal Theories

Arousal theories can be applied to the concept of ADHD since arousal can be related back to activity levels, attention spans, and response inhibitions. Zentall (2006) defines arousal as the “physiological activation state of the child, which has trait and state qualities” (p. 49). Arousal can be only evaluated through psychophysiological measures, meaning that arousal is unable to be observed.

Zentall’s Optimal Stimulation Theory

One of the most admired arousal theories is Zentall’s Optimal Stimulation Theory, also known as the Underarousal Theory. According to Zentall (2006), in 1955 Hebb and Leuba originally stated for the brain to be functioning, it needs stimulation. In addition to this statement, Hebb and Leuba commented on how children will change activities if they are not internally or externally aroused by a particular activity (Zentall).

Zentall (2006) was the first to apply the Optimal Stimulation Theory to children who have ADHD in 1975. Zentall noted that children who have ADHD frequently change activities to stimulate their brains, and once they are sufficiently stimulated, this behavior will occur less repeatedly. Even though it is common for human beings to need to be stimulated to focus and give attention to a task, children with ADHD are constantly in the need for extra arousal.

Even though Zentall’s Underarousal Theory for children with ADHD is based off the Optimal Stimulation Theory, there are still some differences between the two. There have been additions to the Underarousal Theory on the options that children have to help them in producing their own stimulation to specific tasks. These options include children needing “more frequent
shifts in attention, thought, or topics of conversation as well as seeking social or emotional
stimulation. It is also possible to seek cognitive stimulation through daydreaming, thought, or
creative activities” (Zentall, 2006, pp. 51-52). This theory can be useful when trying to
understand the actions and behaviors of children with ADHD.

Motivation and ADHD

In addition to the models on ADHD and the theories related to stimulation for ADHD, the
concept of motivation also plays a significant role in students’ academic achievements. Before
discussing the essential motivation theories that can be linked to students with ADHD, it is
imperative to know what motivation is. According to Malloy et al. (2010), “Motivation refers to
the likelihood of choosing one activity over another, as well as the persistence and effort exerted
when participating in an activity” (p. 2). Motivation remains to be a vital role in engaging and
interesting students to read; however, motivating students with ADHD to read can be
complicated. In fact, low motivation and minimal self-esteem in reading is common among
students with ADHD (Cooper & Bilton, 2002). Finding different reading sources, like electronic
books, that students with ADHD can read may help improve students’ reading motivation and
overall academic endeavors.

Expectancy-Value Theory of Achievement Motivation

There have been many contributing researchers that have helped to evolve the
Expectancy-Value Theory of Achievement Motivation, first mentioned in 1957 by Atkinson
(Wigfield, 1994). The Expectancy-Value Theory of Achievement Motivation contains the most
imperative interpretations on motivation for academic achievement. According to Wigfield,
Atkinson stated that the expectancies for success and also the value of succeeding that an
individual has are critical in determining his/her motivation for approaching specific
achievement tasks. Expectancies are considered to be the student’s anticipation of either the success or failure that is to follow their performance, while value is the desirability of the success or failure of attempting a task. Recently, these definitions have been elaborated on by researchers like Eccles and Wigfield.

Wigfield (1994) explains Eccles et al.’s expansion of Atkinson’s original definitions of expectancies and values by discussing that students’ “expectancies for success, subjective task values, and other achievement beliefs mediate their motivation and achievement in educational settings” (p. 50). Eccles et al. insist that a student’s expectancy and value of a certain task is predicted by the student’s achievement performance, choice of achievement, and persistence (Wigfield). A student’s beliefs about his/her abilities and past educational experiences impact motivation to try to do well with tasks from the teacher.

As it has already been previously stated, many students who have ADHD also have difficulties with reading. In the past, students with ADHD have not done extremely well with reading so reading does not always seem like a gratifying task that these students are desperately yearning to complete. In fact, many students with ADHD are not motivated to read for this exact reason. When students realize that they are not doing as well in the reading area as other students in the class in addition to their poor reading performance in the past, students will rather push reading to the side and not put forth a lot of effort to do well with the task. In essence, the Expectancy-Value Theory signifies that students are going to participate in endeavors that they can succeed in and like to do. If students are not receiving high performance results in reading and/or if they do not like to read, they will not be motivated to read.
Another popular motivation theory that is connected to the Expectancy-Value Theory is the Attribution Theory by Weiner in 1972. In Weiner’s Attribution Theory, there are two concepts related to a student’s success and motivation. These two concepts are the intrapersonal theory of motivation and interpersonal theory of motivation. According to the Attribution Theory, if a student does well with a task, they will accredit themselves for working hard; however, if a student does poorly, they will blame others for their failure. Once again, this relates back to the fact that a student will devote more time and dedication to a task that they know they will succeed at; on the other hand, students will not put forth effort to a task that they know they will not do well with (Weiner, 2000).

Summary

Pertinent information has been revealed about ADHD through the many research studies that have been conducted in the past and present times. Even though the exact causes of ADHD are still undetermined, academic difficulties have been recognized as an issue for students who have been diagnosed as having ADHD. Reading difficulties are prevalent among these students, as many of them are often faced with the dilemma of remaining attentive to the reading task.

Throughout the theories and models that have been presented, the commonality of keeping students engaged and interested in reading has been addressed. It has been suggested that being able to hold students’ interests will help increase students’ abilities to remain attentive to the reading task put forth in front of them. This can be done through motivational factors, like providing students with different types of reading materials. This study will help to identify the text preferences and favorability of reading printed texts or electronic texts of students with ADHD.
CHAPTER III. METHODS AND PROCEDURES

To answer the question, “What is the relationship between a student with ADHD and his preference for printed texts and electronic texts?” several different tools were used to gather the appropriate information. Throughout the study, interviews, surveys, and observations played an intricate part in collecting the needed data. This section will introduce and outline the methods and procedures that were used throughout this research investigation.

Methods

Research Design

This research study primarily used a qualitative design but a quantitative research design was also implemented. This investigation was a thorough investigation, also commonly known as a case study, of one particular student who has ADHD. According to Mertler (2006), a case study is defined as an “in-depth stud[y] of individual programs, activities, people, or groups” (p. 9). A case study is the best research design that can be used to solely focus on one subject (Bogdan & Biklen, 1998). A case study was used throughout this investigation to understand the reading difficulties and text preferences of students with ADHD.

There were three main data collecting tools used throughout this case study. First, the personal interview was a vital part of the data collection process. Although there are many different forms of interviewing, semi-structured interviews were used in this study. Semi-structured interviews allow the interviewer to ask basic questions and then give back-up questions if further clarification or explanation is needed (Mertler, 2006). Semi-structured interviews were used to collect data from the parents, past and present teachers, and the student participating in this study.
In addition to interviewing, surveys were also used throughout this study. By using surveys the researcher was able to gather a lot and a variety of information in a rather quick amount of time (Johnson, 2005). Surveys were used by the student participant in this study after reading each of the different texts that were presented to him.

The last data collection tool that was implemented in this case study was observation. According to Schmuck (1997), observations include carefully watching and recording what is seen and heard in a specific setting. Mertler (2006) also states that observations “can be extremely useful in certain situations where other forms of data collection simply will not work, such as when teachers want to check for students’ nonverbal reactions to something…” (p. 93). Observations were used while the student participant was actively reading the different forms of texts.

**Participants**

For this research case study, there was only one student participant, Mark, and four adult participants (three teachers from a public elementary school in Northwest Ohio and one of Mark’s parents) included in this study. The teacher participants included Mark’s first-grade, second-grade, and third-grade teachers. At different times, all three teachers participated in semi-structured interviews. Questions for these interviews were focused on Mark’s reading abilities in that grade and the interventions used during his class.

Prior to working with Mark, parent consent was required. Also a semi-structured interview was used for the parent interview. During the parent interview, questions regarding Mark’s diagnosis of ADHD were clarified along with the behaviors and reading habits of Mark in the home environment.
Mark is a third grader who has been clinically diagnosed as having ADHD. Mark was asked to complete surveys and participate in interviews throughout the study. Mark read different text types including black and white picture books, colored picture books, black and white electronic books, and colored electronic books. Following each of the reading sessions, Mark was asked to complete a survey on the reading that was completed. After all four of the different books were read by Mark, he was asked questions about his favorite books.

**Instrumentation**

*Electronic Books: Colored and Black and White*

The electronic books’ website, [www.raz-kids.com](http://www.raz-kids.com), was utilized for this research study. This is one subsection of the Learning A-Z websites, which also includes other subsections on reading, vocabulary, writing, science, and reading tutoring. This electronic books’ website includes primarily colored e-books, in addition to a few black and white electronic books selections. This website contains electronic books sorted into the different DRA levels, making it easy to find an electronic book at the appropriate reading level for students. This website also offers fiction and non-fiction electronic books the student can either read independently or the computer can read the book to him.

The colored electronic book that was used for this investigation was called *Anansi and the Talking Watermelon* retold by Kitty Higgins (n.d.). A page excerpt from this book is shown in Figure 1. The black and white electronic book that the student read was called *Dinosaurs* by Elizabeth Austin (n.d.). Figure 2 displays a page excerpt from this book. Both of these electronic books are at the DRA level of 28.
Figure 1
Colored Electronic Book

Possum returned later that day with a sour look on his face. He picked up his hoe and started digging furiously.

“Melons!” he cried. “Next year I will grow something else in this patch; you watermelons are nothing but trouble.”

“Perhaps you should grow more peaches!” Anansi said with a mouth full of fuzzy fruit. “The king is sure to listen to a peach!”
Some kinds of dinosaurs died out, and new ones appeared. Like today’s world, the world of the dinosaurs was a changing place.
*Colored Picture Book*

The colored picture that the student participant read for this study was *Lulu the Big Little Chick* by Paulette Bogan (2009). A page excerpt from this book is shown in Figure 3. This picture book was selected from the Children’s Book Council’s (CBC) annual book award finalists list. Every year, the CBC is in charge of the Children’s Choice Book Awards, which involves over 15,000 children and teen participants (CBC, 2010). The Children’s Choice Book Awards was first implemented in 2008 because the CBC wanted to give young children the chance to voice their opinions about books. Publishers first submit hundreds of book titles from the current year, and children can evaluate the books and vote for their favorite.
“This looks like far, far away,” Lulu said, stepping into the sheep pen.
Black and White Picture Book

The black and white picture book that the student read for this investigation was *Alexander and the Terrible, Horrible, No Good, Very Bad Day* by Judith Viorst (1972). A page excerpt from this book is displayed in Figure 4. Even though this picture book was nearly published 40 years ago, it is still commonly known and read by children today. It can be found in public libraries, school libraries, and most teacher library collections. Teachers also still use this book today for teaching purposes.

Figure 4

Black and White Picture Book

I went to sleep with gum in my mouth and now there’s gum in my hair and when I got out of bed this morning I tripped on the skateboard and by mistake I dropped my sweater in the sink while the water was running and I could tell it was going to be a terrible, horrible, no good, very bad day.
Semi-Structured Interviews

The researcher created several semi-structured interview outlines with the questions that were used to gather information. Mertler (2006) suggests that semi-structured interviews start out by asking general questions, and probing questions should be used if more information is needed for the response. The first semi-structured interview (See Appendix C) was with one of Mark’s parents. It included questions about Mark’s reading habits at home and overall behavior in the household. This interview also contains questions about Mark’s diagnosis of ADHD, the medication that he is currently taking, and outside services that have also been involved in the process.

The second semi-structured interview outline (See Appendix D) was for the past and present teachers who have had Mark in their classrooms. These interviews contained four main questions about Mark’s behavior in the classroom and his reading abilities. The questions also entailed information about interventions that have been or are being used for Mark’s reading and the types of reading materials available for him to read in the classroom. Along with these four critical questions were several probing questions that were asked if more information was needed.

The last semi-structured interview (See Appendix E) used in this study was implemented after Mark had read all four of the different books. Twelve different questions were asked to Mark. These questions contained information about his preference for certain characteristics and features of reading materials. Probing questions were also available when more data were needed for the answer.
Surveys

A survey (See Appendix F) created by the researcher was used following Mark’s completion of reading a book. A survey was used for each of the four books presented to him. The survey contained 13 questions about Mark’s perception and interest toward the particular book. Mark read the questions on the survey and circled either “yes”, “somewhat”, or “no”. Following the completion of the surveys, Mark’s responses were recorded using a Likert-type scale. According to Mertler (2006), Likert-type scales can be helpful to examine a student’s response to questions about quality, frequency of occurrence, and comfort level.

Observation

Observation was also used throughout this research investigation. The researcher systematically recorded important information that was seen or heard while Mark was reading each type of text. Mertler (2006) insists that observation is important and plays a significant role while collecting data. Using observation for this research study identified the nonverbal actions that occurred during the different readings.

Procedures

There were many procedural steps in this study. First, parent and student consent forms were completed (See Appendices G and H). Following the completion of the consent forms, interviews were given to the adults involved in this study. The three teacher participants and one of Mark’s parents were interviewed prior to the start of the investigation of Mark’s text preference.

This study included working one-on-one with Mark on two different occasions for approximately 30 minutes each session. During the first session, Mark read a colored picture book. Following the completion of this book, Mark completed a survey about the reading.
Mark 15 minutes to read the colored picture book and complete the survey. Mark was then given the black and white picture book to read. He was given a survey about the book following the reading, and this took Mark another 15 minutes to complete.

The third session began with a description and explanation of electronic books and how these books are used. The researcher took Mark through the different steps of using an electronic book for about 5 minutes. Following the introduction to electronic books, Mark read the colored electronic book. After reading the electronic book, Mark completed the survey about the colored electronic book in approximately 15 minutes. Mark was then introduced to the black and white colored electronic book. The same procedure was repeated for the black and white electronic book. Following the completion of the survey for the black and white electronic book, Mark participated in an interview about all four of the books. This interview took approximately 10 minutes.

Data Collection

Data were collected through three distinct instruments: interviews, surveys, and observations. First, teacher and parent interviews were conducted to obtain background information on Mark. These interviews provided data on Mark’s behavior and reading habits at school and at home. Teacher interviews were completed after school hours, while parent interviews were completed in person. These interviews occurred before the in-depth investigation began.

While Mark was reading a given story, observation notes were utilized. Any nonverbal behaviors that can only be seen or heard were recorded. This included Mark smiling or laughing at a part in the book. Comments that Mark made to the researcher about the book were also recorded. Following the completion of the reading, Mark was given a survey. This survey was
strictly about the book that he had just read, and it disclosed information about Mark’s perception and attitude toward the book. These surveys were completed after each of the four readings.

The last data collection tool used was interviewing. Mark participated in an interview about the four books he read, following the completion of reading the last book and taking the last survey. These questions contained information about Mark’s perception of the pictures, colors, and features of the different books. The interview questions ultimately revealed Mark’s preference of reading text.

Data Analysis

The data that were obtained through interviews, surveys, and observations were analyzed using Mertler’s characteristics of qualitative research, specifically the constant comparative method. According to Mertler (2006), a constant comparative method is “a research design for studies involving multiple data sources, where data analysis begins early in the study and is nearly completed by the end of data collection” (p. 70). Data that were collected each day were compared to previous information that was gathered. Key findings are presented narratively in the results section.

Triangulation was also used to verify the reliability and validity of the information that was given. Triangulation was conducted through the use of interview answers, survey responses, and observations. The data that were collected are displayed in narrative text along with charts that are necessary. Charts are used to display the data collected about the different types of texts, printed texts versus electronic texts. Data are also displayed for the information regarding color texts versus black and white texts.
Summary

The purpose of this study was to identify the text preference of students with ADHD. A wide variety of data collecting tools were utilized in this study, including interviewing, surveying, and observing. Through these different methods, information about the color (color versus black and white) and text form (printed versus electronic) will be uncovered. Data will also be gathered by interviewing teachers and parents of a student with ADHD.
CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

It has been a continuous struggle for teachers to engage and motivate students with special needs to read in the classroom. For this reason, students who have been diagnosed with ADHD have specifically fallen behind in the reading area. Students with ADHD have displayed significant problems with inattention during reading instruction. Within the last decade, alterations have been made to reading materials and tools that are available for students to use. These changes include the implementation of electronic books in the classroom setting for reading purposes.

The purpose of this study was to determine the text preferences of a student with ADHD. This investigation will help to identify if color, or the lack there of, has an impact on a student with ADHD to select and enjoy reading a specific type of book. Additionally, the format of the book, including picture books and electronic books, will also be analyzed to determine the link between a student with ADHD and his preference toward a particular book. This chapter will first introduce the daily life of a student with ADHD and the struggles that this student has encountered with reading. After this description, the results from the study will be presented along with a discussion of these results as it relates to the research question.

Portrait of a Student with ADHD

*Parent’s Perspective of Mark’s Behaviors Before and After Prescribed Medication*

The student participant is a boy, Mark, who is currently in the third grade. Mark was diagnosed with ADHD in April of 2006. Even though Mark was diagnosed with ADHD in 2006, he was not prescribed medication for ADHD until 2009. He is currently taking medication daily in the morning before he goes to school and before he goes to lunch. The medication he is currently taking is Adderall XR and Amphetamine Salts. Mark’s mother has noticed a difference
in his behavior at home since he has been prescribed with medication. She states that Mark was very fidgety and was unable to stay focused on a task for a long period of time. Since his diagnosis of ADHD, Mark has improved immensely with completing tasks that are given to him at home.

Mark’s mother also has noticed a change in Mark’s reading behaviors and abilities at home since he has been taking medication. Prior to his diagnosis of ADHD, Mark struggled with reading, leading him to having no desire to read. When Mark’s mother would ask him to read out loud to her, Mark would melt down and would refuse to read. This resulted in a constant struggle between both Mark and his mother. Mark’s mother has clearly stated that since he has been taking his medication, Mark is better at keeping his composure when asked to read at home. He is willing to read out loud and can often be seen reading for fun in the home setting. According to his mother, Mark enjoys reading magazines, fiction and nonfiction books, and encyclopedias. His mother also stated that Mark prefers to read books with pictures and some kind of color. It has been noted that Mark does not read electronic books when at home. Mark’s mother made it clear that Mark has had many struggles throughout his lifetime with following directions and paying attention. Due to these circumstances, Mark has had difficulty in school, particularly with reading.

*Teachers’ Perspectives of Mark’s Behaviors Before and After Prescribed Medication*

When Mark was in first grade, it started to become evident that he was behind the rest of the students with reading. His first grade teacher commented on how it was hard for Mark to sit still and listen while she was teaching. He would impulsively blurt out answers and would easily get distracted by other items in the classroom. Reading instruction in Mark’s first grade classroom involved guided reading lessons, and Mark received a lot of support from his teacher.
She stated that Mark would try to read, but would easily get discouraged and frustrated when all of the rest of the students were able to easily read. His first grade teacher also stated that Mark had a hard time grasping the concept of hunks and chunks, and he struggled when trying to decode words and split them into segments. A few interventions were implemented in first grade. The teacher worked one-on-one with Mark quite frequently, and items like letter magnets were often used to try and help Mark visually see the letters that made up the words.

Between first and second grade, Mark was prescribed with medication for ADHD. According to the teachers in the school, Mark seemed like a completely different student when he took his medication. He was able to act appropriately in the classroom setting and was capable of giving his full attention to the teacher during instruction. When Mark entered the second grade, he was significantly behind the rest of the students with reading. In fact, Mark was reading at a DRA level of a 4 when students were supposed to enter into the second grade reading at a DRA level of at least an 18. Mark was only able to quickly identify a few of the sight words at the kindergarten level. He was also identified as being in the bottom 10% of second grade students in his school with reading skills and capabilities. He also had a negative disposition toward reading, due to the struggling and difficulty he previously had with trying to learn how to read.

Throughout Mark’s second grade year, intensive reading interventions were implemented in attempt to have Mark catch up to where he should have been for a second grader. Every morning Mark would work with a teacher, and they would work on sight word recognition and reading books at his instructional level. Reading instruction in the second grade involved all three of the second grade classroom teachers dividing the students up into three categories of advanced readers, average readers, and remedial readers. Mark was placed in the remedial
readers’ group. The remedial reading class had four teachers working with smaller groups. Mark typically was in a group with three to four other classmates. By having reading instruction like this, Mark was able to once again receive more support. Several reading strategies were introduced to Mark, like the Orton-Gillingham method of using “bumpy writing” for sounding out words. Another method was “tapping it out”, which is a kinesthetic way to learn how to spell and pronounce words. Mark would often use these strategies in the regular classroom setting when he came across a word that was unfamiliar to him. Since Mark was identified as being in the bottom 10% in his grade for reading abilities, he participated in “Project More”. “Project More” entailed Mark being pulled from class for a half an hour three times a week to work with a reading tutor. Mark seemed to enjoy working with the reading tutors, and he would often arrive back to the classroom eager to explain to his teacher what reading skill he worked on during the session.

Throughout the school year, Mark was slowly making progress with his reading capabilities. In January, his parents also enrolled him into weekly sessions at the Sylvan Reading Center. Mark would attend Sylvan two to three times a week for an hour after school. Sylvan also seemed to really help Mark with his reading skills, specifically with learning “hunks and chunks”. Mark’s favorite consonant digraph was “ph”. Throughout the remaining time of the school year, Mark would constantly remind other students that “ph” makes the /f/ sound. Mark would also point out the letters “ph” in any words that he found while reading. When Mark would notice “ph” in a word, he would always raise his hand and inform the teacher that he knew how to read the word because it had that particular digraph. With these types of actions and behaviors, Mark started to demonstrate an interest in reading.
With the tremendous improvements that Mark made with reading throughout second grade, his attitude and motivation toward reading also improved as it became closer to the end of the school year. Instead of despising going to reading class, Mark looked forward to it. Also throughout the day, he could often be seen reading a book whenever he had a little bit of free time. In fact, at times Mark had to be told to stop reading and put the book away. By the end of the school year, Mark was almost reading at grade level as he was one DRA level short of being considered on track. However, the improvements that were made with his reading abilities and attitude toward reading throughout the school year were truly remarkable.

Mark is currently in third grade, and he still has the positive outlook on reading. Mark’s current teacher describes him as a very respectful student who is always trying his best. According to Mark’s teacher, he is reading at a third grade level. However, despite this fact, Mark is still placed in the remedial reading group this year. The third grade teachers have decided to place Mark in this group to continue his growth in reading and increase his self-esteem and confidence in his reading abilities. This also gives Mark some one-on-one support and guidance that he may still need with reading. Mark’s teacher also stated that he has days where he forgets to take his medication, and when this occurs, Mark is unable to focus on a task that is given to him. For this reason, the third grade teachers fear that if he were placed in a higher reading group, Mark would fall behind in reading again. Since Mark has been performing well in school, especially in reading, the teachers do not want to see him become discouraged with reading like he once was.

Since Mark is doing well with reading, no new reading interventions have been introduced to him. His third grade teacher also clarified that Mark is no longer in the bottom 10% in his class for reading abilities. This signifies that Mark is unqualified to be a participant in the
“Project More” program. She has stated, however, that recently she has been noticing that Mark is slowly starting to fall behind in math. She explained that extra time is now going to be spent on helping Mark with learning new math concepts rather than reading skills.

All three of Mark’s previous teachers have stated that he seems to enjoy reading colored picture books. In fact, Mark’s second grade and third grade teachers acknowledged the fact that Mark does not enjoy reading any type of chapter books, whether they are shorter chapter books or longer chapter books. None of the three teachers have utilized electronic books in the classroom setting. Most recently in the third grade, Mark has been introduced to a reading program on the computer that he plays once a week for about 15 minutes. Overall, this is about the only time that is allotted for Mark to utilize computer reading instruction.

Data Analysis

The data collected from the four surveys following the reading of each of the selected books were analyzed first. The questions from the surveys are focused on Mark’s preferences and opinions on the colors and pictures that were apparent in the books, the format of the books, and general perceptions of the books. The results from these surveys for each of the four books are displayed in Table 1. After the analysis of the survey results, the examination of the interview results will follow with the same characteristics being evaluated.

On the survey, questions 1, 2, 3, 4, and 5 were related to Mark’s perception of the colors and pictures used in the books (See Appendix F). On the other hand, questions 6, 8, and 9 were related to Mark’s opinion on the different formats that were used for the presentation of the books. The remaining questions on the surveys were focused on Mark’s general judgment of the book as a whole (See Table 1). Likewise, the interview questions were similar in format. Student interview questions 5, 6, and 7 were focused on the colors used in the books, while questions 3,
4, 8, 10, 11, and 12 were solely focused on the format of the books (See Appendix E). Once again, the remaining student interview questions centered around Mark’s general opinion and comparison between the four different books (See Appendix E).

Table 1
Survey Results by Individual Survey Questions and Book Type

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<th>Black &amp; White Picture Book</th>
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<td>1. Did you enjoy the pictures in this book?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Did you like the colors that were used in this book?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3. Do you think you would like reading this book more if different colors were used?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4. Were you ever distracted by the pictures that were used in this book?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>QUESTIONS ON FORMAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Were you ever distracted by the colors that were used in this book?</td>
<td>Y</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>6. Were you ever distracted by the format of the book? (e.g., clicking the mouse, turning the pages)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. Would you read this book again if it was on a computer in your classroom?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9. Would you read this book again if it was a picture book in your classroom?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
### QUESTIONS ON GENERAL PERCEPTION

<table>
<thead>
<tr>
<th></th>
<th>Picture Book</th>
<th>White Picture Book</th>
<th>Electronic Book</th>
<th>White Electronic Book</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

#### 7. If this was a choice of book to read in your classroom, would you read this book again?

- [X] Yes
- [X] Somewhat
- [X] No
- [X] Strongly No

#### 10. Did this book make you want to read more?

- [X] Yes
- [X] Somewhat
- [X] No
- [X] Strongly No

#### 11. Would you like it if all of the books in your classroom were the same as this book? (same colors and features)

- [X] Yes
- [X] Somewhat
- [X] No
- [X] Strongly No

#### 12. Overall, did you enjoy reading this book?

- [X] Yes
- [X] Somewhat
- [X] No
- [X] Strongly No


<table>
<thead>
<tr>
<th>13. Would you ever read this book again?</th>
<th>Y</th>
<th>S</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture Book</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Picture Book</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Book</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Electronic Book</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: Y= Yes  S= Somewhat  N= No

Colored Picture Book

*Lulu the Big Little Chick* by Paulette Bogan (2009) was the colored picture book that was used for this research study. This picture book contains a lot of bright vivid colors on all pages from the front cover to the back cover. The text in the book, however, is not in color. The text appears black in an easy-to-read font throughout the picture book.

Color

The survey contained five questions about the pictures and colors that were used in the colored picture book. Mark stated that he enjoyed the pictures in the book. He also said that he would look at the pictures first when turning the page, and this would often cause distraction. Also, Mark claimed that the colors that were used throughout the book were ok, but he wishes that there was a larger variety of colors used throughout the book. Despite the vividness of the colors that were used in the book, he was not distracted by the colors (See Table 1).

Format

There were three question on the survey related to Mark’s opinions on the format of the picture book. According to Mark, the format of the book did not distract him from reading the story. Mark also stated that he would definitely read this book again if it was a picture book in
his classroom; however, he also mentioned that he might read this book again if it was in an
electronic book format (See Table 1).

General Perceptions

The remaining five questions on the survey pertained to Mark’s general perception and
thoughts of the colored picture book. Mark would be somewhat happy if all of the books in his
classroom at school were colored picture books. Along with this response, he also mentioned that
this book somewhat made him want to read more. Overall, Mark claimed that he enjoyed reading
the colored picture book, and he would definitely read this book again (See Table 1).

Observations

Mark appeared to be very excited about reading *Lulu the Big Little Chick*. When Mark
was first introduced to the picture book, he had a smile on his face and laughed at the title of the
book. Mark seemed eager to read the story and started reading without being prompted. He
wanted to read the picture book out loud, and he read fluently and with expression. Mark would
turn a page and laugh at the pictures in the book. Throughout reading the book, Mark appeared to
be engaged and interested in the story.

Black and White Picture Book

*Alexander and the Terrible, Horrible, No Good, Very Bad Day* by Judith Viorst (1972)
was the black and white picture book that was used for this research investigation. Only the
cover of the book contained a little bit of color. All of the text and pictures that appeared in the
book were black and white.

Color

Questions 1, 2, 3, 4, and 5 were based on the pictures and colors used in the book. Mark
did not enjoy the pictures or colors that were used throughout this picture book. He proclaimed
that he would enjoy reading the book more if colors were used in the book. Mark also stated that he was never distracted by the pictures or the colors presented in this black and white picture book (See Table 1).

*Format*

When Mark was asked the three survey questions about the format of the black and white picture book, he responded “No” to all of them. He claimed that he was never distracted by the way the picture book was formatted. Mark also expressed that he would not read this picture book again if it was a picture book in his classroom nor in the format of an electronic book (See Table 1).

*General Perceptions*

The remaining questions gave an insight to Mark’s complete perception of the black and white picture book that he read. Mark mentioned that this book did not make him want to read more. He also stated that he would not enjoy it if all of the books in his classroom were similar to this picture book. Mark expressed that he somewhat liked the book, and he also explained that he would like this book more if there was color. Overall, Mark announced that he would not read this book again unless he was forced to read it (See Table 1).

*Observations*

When Mark was first introduced to the book, the first statement he made was that the title was very long; however, despite this fact, Mark appeared to be excited about reading this book. When Mark opened the book up to the first page, he noticed that the pictures were in black and white. Instantly, Mark flipped through the remainder of the book and asked why the pictures were not in color. Similar to the colored picture book, Mark read the black and white picture book aloud. Mark really seemed to enjoy the repetition of the phrase, “I could tell it was going to
be a terrible, horrible, no good, very bad day”. In fact, he read this statement with much expression. After reading the black and white picture book, Mark immediately made the comment that he would like the picture book more if there was color.

*Colored Electronic Book*

*Anansi and the Talking Watermelon* retold by Kitty Higgins (n.d.) is a colored electronic book from the website [www.raz-kids.com](http://www.raz-kids.com) that was utilized for this research study. There was one colored picture on every other page while plain black and white text can be found on the opposite page.

*Color*

Mark’s responses to the five questions about the colors and pictures found in the colored electronic book indicated that he enjoyed these features of the colored electronic book. He also stated that he would not have liked the colored electronic book more if different colors were used or if other pictures were utilized throughout the story. Mark also admitted that he was sometimes distracted by the pictures that were placed throughout the colored electronic story (see Table 1).

*Format*

When replying to the three questions on the format of the colored electronic book, Mark proclaimed that he would greatly enjoy reading the story again if it was in an electronic format; however, he also mentioned that he would maybe choose to read the story again if it was in a picture book format. Mark also indicated that he was not distracted by the electronic format (See Table 1).

*General Perceptions*

Mark’s general opinion of the colored electronic book was revealed through his responses to the five remaining survey questions. Mark asserted that reading the colored
electronic book did not make him want to read any more than he already does. Despite this claim, he expressed that he enjoyed reading the book, and if the book was a choice of book to read in his classroom, he would read it again. Mark also exclaimed that he would greatly enjoy it if all of the books in his classroom had the similar colors and format that were used for the colored electronic book (See Table 1).

Observations

When Mark was told that he was going to read a book on a computer, he seemed very thrilled and motivated to start reading. He stated that he had never read a book on a computer prior to this experience. Mark was shown how to click on the arrow to turn the pages for the book. He was also presented with the feature of clicking on a word if he did not know the pronunciation of the word, and by doing this, the word would be read out loud to Mark. After these directions, Mark instantly started reading the colored electronic book aloud. At first, Mark had a little bit of difficulty with clicking the mouse to turn the pages; however, after a few attempts, it did not slow down or hinder his reading experience. Mark read the story aloud with expression, and at times he would laugh at what the main character was doing in the story. Mark also utilized the help support feature of the electronic book by clicking on the unknown word and hearing the correct pronunciation. The first time Mark came upon a word that he did not know, he clicked on it and was stunned by the word being read aloud. Once the word was read aloud, Mark would repeat the correct pronunciation of the word and continue on with his reading. Overall, Mark appeared to be very engaged in reading a story on a computer.

Black and White Electronic Book

Dinosaurs by Elizabeth Austin (n.d.) was the black and white electronic book that was used in this research investigation. This black and white electronic book can be found on the
www.raz-kids.com website. Including the cover page, there was not any color found throughout this book.

**Color**

The first five questions that were asked to Mark helped to indicate his thoughts about the colors and pictures that appeared in the black and white electronic book. He verbalized that he liked the pictures that were presented in the electronic book. However, he also stated that he did not like the colors that were used, and he would enjoy the book more if some sort of color was utilized throughout the story. Mark also claimed that he was never distracted by the pictures or the colors that appeared in the black and white electronic book (See Table 1).

**Format**

Three questions were asked to Mark to help reveal his perception of the electronic book format. Mark’s responses to the questions displayed that he would read the book again if it was in the form of an electronic book or a picture book. His replies to the questions also indicated that the electronic book format was not distracting (See Table 1).

**General Perceptions**

On the survey, questions 7, 10, 11, 12, and 13 were asked to help reveal Mark’s true perceptions on the black and white electronic book. Mark stated that he greatly enjoyed reading the black and white electronic book, and he would certainly read this book again. He also proclaimed that reading this black and white electronic book made him want to read more. Despite these positive claims, Mark expressed that he would somewhat want all of the books in his classroom to have the same colors and format of this particular book (See Table 1).
Observations

Mark was introduced to the black and white electronic book immediately after reading the colored electronic book. Mark instantly appeared interested in the topic of the book. When the front cover of the book appeared on the computer screen, Mark stated, “Dinosaurs! I love books about dinosaurs!” He eagerly read through the electronic book, stopping frequently to share information about the story that he found to be interesting. When clicking the mouse to turn to the next page, Mark would first look at the picture of the dinosaurs that appeared on the new page. He would try and pronounce the name of the dinosaur, which could be found alongside the picture. After making a few comments about the type of dinosaur that appeared on the page, Mark continued on reading about the particular species. Overall, Mark appeared to be engaged and interested in reading the black and white electronic book about dinosaurs throughout the entire story.

Overall Text Preferences Based on Survey Results

Mark’s responses to the survey questions about each book that he had read has helped to infer insightful information regarding the research questions, “What is the relationship between a student with ADHD and his preference for printed texts and electronic texts?”, “Does the student with ADHD prefer color texts or black and white texts?”, and “Does the student with ADHD prefer printed texts or electronic texts?” To answer these research questions, the question items on the survey were placed into one of the three categories of color, format, or general perceptions. Additionally, each survey item was coded to determine the total for each of the three categories. A majority of the questions was stated in a way that appeared favorable when Mark answered “yes”. The questions that were stated in such a way were coded with “yes” being represented by the numerical value 3, “somewhat” being represented by the numerical value 2,
and “no” being represented by the numerical value 1. However, survey questions 3, 4, 5, and 6 were created in a way that by answering “no” to an item was actually a positive characteristic of the book. For this reason, these questions involved recoding the answers. This resulted in the responses “yes” being represented by the numerical value 1, “somewhat” being represented by the numerical value 2, and “no” being represented by the numerical value 3 (See Appendix F). Table 2 shows the numerical value for Mark’s responses to each question for all of the books. The higher the value, the more favorable the book appealed to Mark, which demonstrates Mark’s texts preferences.

*Overall Perception of Each of the Texts*

To determine Mark’s preference for each of the four books, which includes the colored picture book, black and white picture book, colored electronic book, and black and white electronic book, all of the values for each of his responses to the survey questions were added together (See Table 2). The calculations indicated that Mark’s overall perceptions of the picture books were displayed through the numerical values of 32 for the colored picture book and 20 for the black and white picture book. Additionally, Mark’s overall perceptions of the electronic books were indicated with the numerical value of 35 for the colored electronic book and 34 for the black and white electronic book (See Table 2).
Table 2

Student’s Numerical Response by Question Type and Book

<table>
<thead>
<tr>
<th>QUESTIONS ON COLOR AND PICTURES</th>
<th>Colored Picture Book</th>
<th>Black &amp; White Picture Book</th>
<th>Colored Electronic Book</th>
<th>Black &amp; White Electronic Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you enjoy the pictures in this book?</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2. Did you like the colors that were used in this book?</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3. Do you think you would like reading this book more if different colors were used?</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4. Were you ever distracted by the pictures that were used in this book?</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Question</td>
<td>Colored Picture Book</td>
<td>Black &amp; White Picture Book</td>
<td>Colored Electronic Book</td>
<td>Black &amp; White Picture Book</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------------------------</td>
<td>-------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>5. Were you ever distracted by the colors that were used in this book?</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>QUESTIONS ON FORMAT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Were you ever distracted by the format of the book?</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>(e.g., clicking the mouse, turning the pages)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Would you read this book again if it was on a computer in your classroom?</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9. Would you read this book again if it was a picture book in your classroom?</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>QUESTIONS ON GENERAL PERCEPTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>7. If this was a choice of book to read in your classroom, would you read this book again?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colored Picture Book</td>
<td>Black &amp; White Picture Book</td>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>10. Did this book make you want to read more?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>11. Would you like it if all of the books in your classroom were the same as this book? (same colors and features)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>12. Overall, did you enjoy reading this book?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td>Colored Electronic Book</td>
<td>Black &amp; White Electronic Book</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

The numbers represent the responses, with 1 being the least and 3 being the most.
13. Would you ever read this book again?

<table>
<thead>
<tr>
<th></th>
<th>Colored Picture Book</th>
<th>Black &amp; White Picture Book</th>
<th>Colored Electronic Book</th>
<th>Black &amp; White Electronic Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL TOTAL</td>
<td>32</td>
<td>20</td>
<td>35</td>
<td>34</td>
</tr>
</tbody>
</table>

Colored Texts Versus Black & White Texts

To determine if Mark preferred colored texts or black and white texts, the numerical values for each of these specific categories from Table 2 had to be added together. In other words, the overall numerical total for the colored picture book and the total for colored electronic book were added together. When these two values were added together, the overall total for colored texts was 67 (See Table 3). Likewise, the same process was completed to configure the overall total for black and white texts. The total for the black and white picture book was 20, and the total for the black and white electronic book was 34. The final calculation for the black and white texts resulted in the value of 54 (See Table 3).
Table 3
Student’s Preference of Colored Texts versus Black & White Texts

<table>
<thead>
<tr>
<th></th>
<th>Colored Picture Book</th>
<th>Colored Electronic Book</th>
<th><strong>Total Score for Colored Texts</strong></th>
<th>Black &amp; White Picture Book</th>
<th>Black &amp; White Electronic Book</th>
<th><strong>Total Score for Black &amp; White Texts</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OVERALL TOTALS</strong></td>
<td>32</td>
<td>35</td>
<td><strong>67</strong></td>
<td>20</td>
<td>34</td>
<td><strong>54</strong></td>
</tr>
</tbody>
</table>

*Printed Texts Versus Electronic Texts*

Similar to the calculations that were utilized to derive the total scores for determining Mark’s color preference, additional computations were sought to determine Mark’s preference for printed text or electronic text. To configure Mark’s overall total for printed texts, the colored picture book’s value of 32 was added to the black and white picture book’s score of 20. The overall value for printed texts was calculated to be 52 (See Table 4). Equally, the same procedure was completed to derive the total score for electronic texts. The colored electronic book’s score of 35 was added to the black and white electronic book’s value of 34, which resulted in the overall total of electronic texts to be 69 (See Table 4).
Table 4

Student’s Preference of Printed Texts versus Electronic Texts

<table>
<thead>
<tr>
<th></th>
<th>Colored Picture Book</th>
<th>Black &amp; White Picture Book</th>
<th>Total Score for Printed Texts</th>
<th>Colored Electronic Book</th>
<th>Black &amp; White Electronic Book</th>
<th>Total Score for Electronic Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OVERALL TOTALS</strong></td>
<td>32</td>
<td>20</td>
<td><strong>52</strong></td>
<td>35</td>
<td>34</td>
<td><strong>69</strong></td>
</tr>
</tbody>
</table>

*Interview Results*

An interview was held after Mark read all four of the different texts. Mark was asked 12 different questions about the picture books and electronic books that he read. These questions were also split into the categories of color and pictures, format, and overall perceptions. The questions that were asked to Mark during the interview helped Mark to express his overall opinion of the four selected stories.

*Color*

Interview questions 5, 6, and 7 were all focused on the pictures and colors that appeared throughout the four different books. Mark stated that he enjoyed the pictures the best from the black and white electronic book. When asked why he liked those pictures the best, he replied that the pictures in this book appeared to actually look like real dinosaurs. He also stated that he enjoyed them too because he is interested in learning about dinosaurs. Despite these positive remarks about the pictures presented in the black and white electronic book, Mark did admit that he wished the pictures contained some sort of color. When Mark was asked about which book had the pictures he liked the least, he quickly stated that he did not enjoy the pictures in the black
and white picture book. Mark continued on by stating that he did not like that the pictures were only in black and white, and this simple characteristic of the book made it boring to read. Mark asserted that colored pictures made the books more appealing to read.

**Format**

Mark was asked six specific questions about the format of the books during the interview. He was asked which type of book seemed to be easier to read. Mark responded by saying that he found the electronic books to be the least difficult to read. When asked why he thought this, Mark instantly responded by saying that when he came across an unknown word, he could click on the word to figure out the correct pronunciation. Mark stated that when an unknown word appears in a story that he is reading, he typically stops reading and tries to sound the word out to obtain the correct pronunciation. Mark admits that sometimes when he does this, he forgets what he had already read. He claimed that this feature of the electronic books made it easier for him to read and understand the story.

The next two questions were focused on what Mark liked and disliked about picture books and electronic books. Mark made the statement that electronic books were more fun to read, and he liked that he could click a button instead of flipping pages. One aspect that Mark did not like about electronic books was that sometimes he would click the button too many times when trying to turn to the next page. When Mark was asked what he enjoyed about the picture books, he could not think of a response. Mark specified again that they were not as enjoyable to read as the books on the computer.

Mark was questioned about the type of book he would prefer to read. His response was that he would select the electronic books because they were more enjoyable to read. Mark replied that electronic books are different from the types of books that he typically reads, which are
conventional picture books. He continued to state that he would like to read books in the classroom on a computer. Mark insisted that if was able to utilize computers for reading purposes, his desire to read would increase.

*General Perceptions*

The remaining interview questions that were asked to Mark were about his overall perceptions and opinions of the different types of books. When Mark was asked which book he enjoyed reading the most, Mark responded by saying the black and white electronic book was his favorite to read out of the four books. He expressed that this book was the most enjoyable because it was about dinosaurs: a topic that he thoroughly enjoys reading and learning about. The book that Mark enjoyed reading the least was the black and white picture book. He protested that he did not like the lack of color throughout the book, which made the book uninteresting to read. Mark also stated that he did not like the repetitiveness of the phrase, “It was a terrible, horrible, no good, very bad day!” Mark expressed that the repetition of this sentence made the book seem like a book that a younger student would read.

The last question on Mark’s general perception of the different types of books was about distracting elements. Mark asserted that, in reality, neither the electronic books nor picture books contained distracting features. He claimed that he was able to stay focused more on reading the electronic books’ stories because he was engaged and occupied with reading on a computer.

*Discussion of Results*

The purpose of this research investigation was to determine the relationship between a student with ADHD and his preference for printed texts and electronic texts. In addition to revealing if a student with ADHD prefers to read printed texts or electronic texts, this study also sought to determine if a student with ADHD prefers to read colored texts or black and white
texts. Additionally, this case study involved interviewing parents and teachers of the student participant, Mark, to gather as much information as possible about Mark and his daily struggles with reading. The data from the parent and teacher interviews indicated that Mark struggled immensely with reading until he was prescribed medication and received intense reading intervention from outside services and at school. Due to these two events in Mark’s life, he is now considered to be an average reader and enjoys reading for pleasure.

The data was first analyzed by Mark’s responses to each of the individual questions for all four of the books from the surveys. These survey responses were analyzed by theme (color, format, and general perceptions) and type of book (colored picture book, black and white picture book, colored electronic book, and black and white electronic book). Following the analysis of each individual survey question, specific values were assigned to the survey responses to determine the answers to the research questions. Responses determining the highest level of interest in color, format, and overall perceptions were assigned the numerical value of 3. Many times, the highest level of interest response was “yes”; however, questions 3, 4, 5, and 6 were recoded so the highest level of interest was when Mark responded with “no”. Once again, the data were analyzed by theme (color of text and format of text) to decipher Mark’s preference for reading materials. The analysis of the interview questions were evaluated by the categories of color, format, and general perceptions. Based on the results from the surveys, observations, and interview, the following conclusions can be made about the color, format, and overall text preferences of a student with ADHD.

**Color of Texts**

Mark, a student diagnosed with ADHD, prefers to read colored texts over black and white texts.
Format of Texts

Mark, a student identified as having ADHD, prefers to read electronic texts over printed texts.

Overall Perceptions of Texts

Out of all four the books used for this research investigation, Mark, a student identified as having ADHD, prefers to read colored electronic texts. The black and white electronic text was Mark’s second book of choice, followed by the colored picture book. Mark’s least desired text selection was the black and white picture book.

Summary

This chapter is comprised of the data that have been collected to answer the research question: “What is the relationship between a student with ADHD and his preference for printed texts and electronic texts?” Additionally, the data were also used to determine if a student with ADHD prefers colored texts or black and white texts. Data were gathered through surveys, observations, and interviews. Furthermore, past and present teachers and a parent of a student with ADHD were interviewed. Their responses to the interview questions have been utilized to provide a description of the behaviors and reading abilities of the student with ADHD who participated in this research study.

The student’s responses to the survey and interview questions indicated the text preferences of a student identified as having ADHD based on the color and format of the books. The interview results helped to determine the specific books that had the best and worst colors and pictures, the particular format (printed text or electronic text) he desired over the other, the type of book that was easier to read, the kind of book that was more interesting to read, the book that encouraged him to read more often, the specific books he enjoyed the most and least reading
overall, and the exact reasoning for these responses. Mark’s responses indicated his beliefs that electronic books are more interesting to read and help make reading easy and enjoyable. He also liked the pictures and colors from the electronic book more than the conventional picture books. Overall, Mark asserts that electronic books motivate him to read, and he would choose to read an electronic book over a printed picture book on any given day.
CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

There are many students in today’s classroom who are identified as having special needs, including students diagnosed as having ADHD. Students identified as having ADHD are faced with many academic obstacles, especially in reading. As many students with ADHD struggle with reading, their motivation for reading immensely decreases. Once reading motivation is diminished, students will continue to struggle and their reading skills will fall further and further behind.

Fortunately, in today’s times, there are numerous reading materials that can be utilized by students with ADHD for reading intentions. Of the latest technologies that have been created for reading purposes, electronic books may be one technology phenomena to not only be used for reading reasons, but they may also be utilized to help increase students’ reading motivation. Electronic books have the potential to engage students in reading and keep them interested in these types of activities. By giving students with ADHD a choice in the format of book they select to read, students may gain positive reading attitudes and dispositions. This chapter will include a summary of the research study, provide conclusions from the results of the study, and offer recommendations for classroom teachers, administration, and future research opportunities.

Summary

The intention for this research investigation was to determine the answer to the research question, “What is the relationship between a student with ADHD and his preference for printed texts and electronic texts?” Additionally, this research study sought to determine if a student with ADHD prefers to read colored texts or black and white texts. Chapter I included a discussion on inclusion of students with special needs in today’s classrooms. It also contained an analysis of the prevalence of students with ADHD who are found in general education classrooms and the reading difficulties that they have to overcome. With the numerous changes in technology,
teachers may not be aware of the newest reading tools that could be used in their classrooms to assist students with ADHD. Only a few studies have been completed on the benefits of using computerized instruction for students with ADHD. Students with ADHD will benefit from teachers being informed of the technology instruments that can be utilized to help increase reading motivation and improve students’ reading skills.

Chapter II provided an in-depth description of ADHD, including the history of the medical condition, different types of ADHD, the numerous treatment options available, significant historical research on ADHD and reading, and the foremost theories related to students with ADHD and reading. By being aware of the past and present research discoveries on the concept of reading difficulties of students with ADHD, educators and researchers can learn from these studies to improve and change their current reading curriculum to best accompany the difficulties students with ADHD frequently encounter. The first historical researchers examined the challenges that students with ADHD are confronted with and how students can combat these challenges to improve their abilities to learn. Currently, researchers have begun to focus on how technology can be incorporated into the classroom to increase reading abilities among the ADHD population.

Chapter III outlined how this research study was going to be conducted to determine the answer to the intended research questions. This chapter provided information about the student participant, the books that were used for the student to read, and the data collection tools that were utilized to gather pertinent information. The instruments that were used to accumulate data from the student included surveys, observations, and an interview. Additionally, parent and teacher interviews were used to obtain imperative information about the student participant’s
diagnosis of ADHD and his reading behaviors and abilities in the different environmental settings.

Following the data collection process, the data were analyzed and presented in Chapter IV. Tables were used to represent the key findings from this study. The data were analyzed using three categories, including color, format, and general perceptions of a given book. Table 1 represented Mark’s response to survey questions for each book, and these survey questions were arranged by the type of question. Table 2 displayed the numerical value given to each of Mark’s responses for survey questions about each of the books. Table 3 was included to illustrate Mark’s overall perception for colored texts and black and white texts. Likewise, Table 4 was used to indicate Mark’s overall perception for printed texts and electronic texts.

This chapter, Chapter V, will confirm the conclusions that can be drawn from the data results. Additionally, this chapter will also be comprised of recommendations that are intended for classroom teachers and school administrators. Also, recommendations for future research investigations and opportunities will be included.

Conclusions

Using the numerical value of “3” to represent Mark’s highest level of text preference on each of the survey questions, colored electronic books are the type of texts that Mark desires to read. Black and white electronic texts are Mark’s second text selection, followed by colored printed texts. Mark’s least preferred text type is black and white printed books. Additionally, the results from the surveys indicate that Mark prefers to read electronic texts over printed texts and colored texts rather than black and white texts. Overall, Mark specified that he would enjoy reading more if he was given the choice to read electronic texts. These results would be supported by researchers Bender and Bender (1996) because Mark found electronic books to be
enjoyable, engaging, and motivating. Mark’s responses to the interview questions support the conclusion that electronic texts are the type of books that he prefers to read. When Mark was asked the initial interview questions, it was evident that the two types of electronic texts were more appealing to Mark than the conventional picture books. His responses indicated that he enjoyed the colors, pictures, and specific features of the electronic books, like clicking on a word to hear the correct pronunciation. Additionally, the observations that were noted while Mark was reading the four different books also suggest that he was more engaged and interested in the electronic texts.

Research advocates (Horney & Anderson-Inman, 1999; Rhodes & Milby, 2007; Shamir & Korat, 2006) express the need for implementing electronic books in classrooms for students with ADHD and they also convey the benefits that result from the inclusion of these types of texts into these students’ daily routines. These advocates declare that electronic books contain the help supports and interactivity that motivate students with ADHD to read. Mark’s interview responses indicate these exact needs and display the benefits that these researchers claim to be pertinent. Mark utilized the help supports that were offered in the electronic books when he came across an unknown word. Instead of becoming frustrated with trying to figure out the correct pronunciation of the word and then trying to identify what that word means, Mark was able to hear the correct pronunciation and continue reading the text. The feature of help supports that are accessible to students while reading the electronic texts assists in minimalizing the constant struggle that readers identified as having ADHD often exhibit. With the type of features that are only available in electronic texts, students who have ADHD and struggle with reading will become more motivated to read when using these types of book formats.
Overall, Mark preferred to read electronic texts rather than the conventional printed texts, and he also stated that he would select to read colored texts over black and white texts. This research investigation concludes that students with ADHD will enjoy and be more motivated to read colored electronic books over any other form of text. It is imperative that classroom teachers incorporate these types of texts in their classrooms, particularly to increase the motivation and reading interests of students with ADHD.

As former researchers (Lerner, 2003; Rabiner & Cole, 2000) have discovered through their investigations, students who struggle with reading early on in school will continue to struggle with reading later on in life. The reading struggles that many students with ADHD are confronted with can easily create frustration and disinterest in reading altogether. However, as this research study and previous research studies (Clarfield & Stoner, 2005; Horney & Anderson-Inman, 1999; Kim et al., 2006) have found, the use of electronic texts in the classroom can help students with ADHD combat reading difficulties, increase reading motivation, and improve reading skills. For these exact reasons, it is crucial that classroom teachers are aware of the benefits that electronic texts have on students with ADHD and implement these types of reading technologies into their classroom routines.

Recommendations

Classroom Teachers

The results from this research study suggest that students with ADHD enjoy reading and are motivated by electronic texts more than conventional printed texts. With these types of results, classroom teachers should incorporate the use of electronic texts into their daily lessons and reading curriculum. By implementing this form of technology into the classroom, teachers
will notice that all students, including students with ADHD, will benefit from this type of reading instruction.

There are a few websites that offer free or low-priced subscriptions to use the electronic books on the classroom computers. The website that was utilized during this research investigation included electronic texts from a variety of topics, genres, and reading levels. With the diverse reading interests and reading levels that can be found in any classroom, a website that offers these types of electronic texts will be useful with the assortment of books that are available for student use. This will make it easier for students to locate electronic texts that are at their independent level, and ultimately leading to students struggling less with reading and identifying words.

Classroom teachers should keep in mind that all students will need to be introduced to the proper way of navigating through the websites that electronic texts can be located from. Some students may experience difficulties with finding an electronic text that are at their independent reading levels or even clicking the mouse to turn the electronic book to the next page. Classroom teachers should introduce electronic texts to the whole class and explain to students how they should utilize the electronic books. Instead of having students huddle around a computer to view these specific instructions, the teacher may want to demonstrate how to navigate through the electronic text website by using a SMART Board. Teachers should clearly explain the different levels of electronic texts, how to find a particular electronic text, and how to view an electronic text to read or to have the electronic text read aloud.

Classroom teachers have busy schedules, which often make it difficult to find time for students to utilize electronic texts during school hours. There are several options that classroom teachers can consider about when to use electronic texts in the classroom setting. Teachers may
want to have a schedule of the days when certain students can read electronic books. Students
may be able to read electronic texts during morning work and sustained silent reading. If the
classroom teacher has a student with ADHD in his/her classroom, he/she may want to consider
having a computer always available for this student during sustained silent reading. If the student
desires to read from an electronic text, the computer will be accessible to the student. By
allowing time for students with ADHD to read from electronic texts, these students will be
motivated and engaged in reading.

Administration

There are several important roles school administrators can undertake to ensure that
electronic texts are implemented into classrooms for students’ use. First, school administrators
can help to provide adequate funding for high-quality electronic text programs as only a few
websites contain free use of electronic texts. Additionally, the websites with free electronic texts
contain a small variety of electronic texts that can be accessible. With the support from school
administration, classroom teachers will be equipped with the electronic text programs that can be
utilized to provide motivating reading instruction for all students, including students with
ADHD.

Also, school administrators can provide professional development activities for
classroom teachers on how to incorporate electronic texts into the reading curriculum. Many
teachers struggle with keeping up-to-date on the latest technology trends, which may hinder
students’ learning. By providing teachers with the opportunity to learn how to use electronic
texts and implement this form of technology into daily lessons, teachers will build confidence,
leading to teachers feeling comfortable integrating electronic texts into their daily routines.
Students with ADHD will greatly benefit from electronic texts being available in the classroom for many different reasons, and school administrators can help make this happen.

**Future Research**

To further expand the different possibilities of technologies that can be used to help motivate and engage students in reading who have been diagnosed with ADHD, other forms of electronic texts may want to be explored. Recently there have been many technology related reading devices that have been introduced to the public. Technology items like the iPad, Kindle, and Nook may all be other forms of electronic texts that may useful for future research studies. It would be interesting to see which type of electronic text would be more appealing to students with ADHD.

Furthermore, this research study did not involve the comprehension aspect of reading, which is one area that many students with ADHD often struggle with. Future research investigations could be sought to determine which text type results in greater comprehension outcomes for students with ADHD. Even though students with ADHD prefer to read electronic text, it may be possible that comprehension is hindered by the distractions that electronic texts can entail. Future research studies can help to reveal the comprehension aspect related to electronic texts.

**Summary**

This chapter reviewed the current study, provided a conclusion based on the information gathered, and offered recommendations for classroom teachers, school administration, and future research possibilities. The results that were drawn from this study correlate with outcomes from previous research investigations in regards to the benefits from using technology to improve reading motivation and capabilities of students with ADHD. Students with ADHD find colored
electronic texts to be the most engaging and interesting to read. Teachers can help to motivate students with ADHD to read by providing them with access to these types of books in the classroom.
REFERENCES


http://idea.ed.gov/explore/view/p/\%2Croot\%2Cregs\%2C300\%2CA\%2C300\%252E8\%2C


Viorst, J. (1972). *Alexander and the terrible, horrible, no good, very bad day*. New York:
Atheneum Books for Young Children.

interventions for children with attention deficit hyperactivity disorder: Effects on reading

Weiner, B. (2000). Intrapersonal and interpersonal theories of motivation from an attributional

adolescents, and adults* (2nd ed.). New York: Guilford Press.

perspective. *Educational Psychology Review, 6*(1), 49-74.

288-293. doi: 10.1111/1467-8624.ep12115128

paraprofessional involvement in supporting inclusion of students with autism. *Focus
on Autism and Other Developmental Disabilities, 12*(1), 31-38.

APPENDIX A.

FIDGETY PHIL POEM
"Let me see if Phil can
Be a little gentleman;
Let me see if he is able
To sit still for once at table:"
Thus Papa bade Phil behave;
And Mamma looked very grave.
   But fidgety Phil,
   He won't sit still;
   He wriggles,
   And giggles,
   And then, I declare,
Swings backwards and forwards,
   And tilts up his chair,
Just like any rocking-horse-
"Phil! I am getting cross!"

See the naughty, restless child
Growing still more rude and wild,
   Till his chair falls over quite.
Phil screams with all his might,
   Catches at the cloth, but then
That makes matters worse again.
Down upon the ground they fall,
Glasses, plates, knives, forks, and all.
How Mamma did fret and frown,
When she saw them tumbling down!
   And Papa made such a face!
Philip is in sad disgrace.

Where is Phil, where is he?
   Fairly covered up you see!
Cloth and all are lying on him;
He has pulled down all upon him.
   What a terrible to-do!
Dishes, glasses, snapped in two!
   Here a knife, and there a fork!
Phil, this is cruel work.
   Table all so bare, and ah!
Poor Papa, and poor Mamma
Look quite cross, and wonder how
They shall have their dinner now.
APPENDIX B.

VANDERBILT ADHD DIAGNOSTIC RATING SCALE
VANDERBILT ADHD DIAGNOSTIC TEACHER RATING SCALE

Name: Grade: ____________________
Date of Birth: ______________ Teacher:__________________________________
School: __________________________________

Each rating should be considered in the context of what is appropriate for the age of the children you are rating.

Frequency Code: 0 = Never; 1 = Occasionally; 2 = Often; 3 = Very Often

1. Fails to give attention to details or makes careless mistakes in schoolwork   0 1 2 3
2. Has difficulty sustaining attention to tasks or activities           0 1 2 3
3. Does not seem to listen when spoken to directly                     0 1 2 3
4. Does not follow through on instruction and fails to finish schoolwork (not due to oppositional behavior or failure to understand)   0 1 2 3
5. Has difficulty organizing tasks and activities                     0 1 2 3
6. Avoids, dislikes, or is reluctant to engage in tasks that require sustaining mental effort 0 1 2 3
7. Loses things necessary for tasks or activities (school assignments, pencils, or books) 0 1 2 3
8. Is easily distracted by extraneous stimuli                         0 1 2 3
9. Is forgetful in daily activities                                   0 1 2 3
10. Fidgets with hands or feet or squirms in seat                     0 1 2 3
11. Leaves seat in classroom or in other situations in which remaining seated is expected   0 1 2 3
12. Runs about or climbs excessively in situations in which remaining seated is expected 0 1 2 3
13. Has difficulty playing or engaging in leisure activities quietly 0 1 2 3
14. Is “on the go” or often acts as if “driven by a motor”            0 1 2 3
15. Talks excessively                                                   0 1 2 3
16. Blurts out answers before questions have been completed           0 1 2 3
17. Has difficulty waiting in line                                    0 1 2 3
18. Interrupts or intrudes on others (e.g., butts into conversations or games) 0 1 2 3
19. Loses temper                                                        0 1 2 3
20. Actively defies or refuses to comply with adults’ requests or rules 0 1 2 3
21. Is angry or resentful                                              0 1 2 3
22. Is spiteful and vindictive                                         0 1 2 3
23. Bullies, threatens, or intimidates others                         0 1 2 3
24. Initiates physical fights                                         0 1 2 3
25. Lies to obtain goods for favors or to avoid obligations (i.e., “cons” others) 0 1 2 3
26. Is physically cruel to people                                     0 1 2 3
27. Has stolen items of nontrivial value                               0 1 2 3
28. Deliberately destroys others’ property                            0 1 2 3
29. Is fearful, anxious, or worried 0 1 2 3
30. Is self-conscious or easily embarrassed 0 1 2 3
31. Is afraid to try new things for fear of making mistakes 0 1 2 3
32. Feels worthless or inferior 0 1 2 3
33. Blames self for problems, feels guilty 0 1 2 3
34. Feels lonely, unwanted, or unloved; complains that “no one loves him/her” 0 1 2 3
35. Is sad, unhappy, or depressed 0 1 2 3

PERFORMANCE

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<tr>
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<th>Problematic</th>
<th>Average</th>
<th>Above Average</th>
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<tr>
<td><strong>Academic Performance</strong></td>
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<tr>
<td>1. Reading</td>
<td>1</td>
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<td>3</td>
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<tr>
<td>2. Mathematics</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>3. Written expression</td>
<td>1</td>
<td>2</td>
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<td><strong>Classroom Behavioral Performance</strong></td>
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<td>1. Relationships with peers</td>
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<td>3</td>
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<td>2. Following directions/rules</td>
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<td>3. Disrupting class</td>
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<td>2</td>
<td>3</td>
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<td>4. Assignment completion</td>
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<td>2</td>
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<td>5. Organizational skills</td>
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<td>2</td>
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VANDERBILT ADHD DIAGNOSTIC PARENT RATING SCALE

Child’s Name: ____________________________  Today’s Date: __________________________
Date of Birth: ____________________________  Age: __________________________
Grade: _________________________________

Circle the number on the scale that corresponds to how you would rate your child’s behavior.

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1. Does not pay attention to details or makes careless mistakes, for example homework
2. Has difficulty attending to what needs to be done
3. Does not seem to listen when spoken to directly
4. Does not follow through when given directions and fails to finish things
5. Has difficulty organizing tasks and activities
6. Avoids, dislikes, or does not want to start tasks that require ongoing mental effort
7. Loses things needed for tasks or activities (assignments, pencils, books)
8. Is easily distracted by noises or other things
9. Is forgetful in daily activities
10. Fidgets with hands or feet or squirms in seat
11. Leaves seat when he is suppose to stay in his seat
12. Runs about or climbs too much when he is suppose to stay seated
13. Has difficulty playing or starting quiet games
14. Is “on the go” or often acts as if “driven by a motor”
15. Talks too much
16. Blurs out answers before questions have been completed
17. Has difficulty waiting his/her turn
18. Interrupts or bothers others when they are talking or playing games
19. Argues with adults
20. Loses temper
21. Actively disobey or refuses to follow an adults’ requests or rules
22. Brothers people on purpose
23. Blames others for his or her mistakes or misbehaviors
24. Is touchy or easily annoyed by others
25. Is angry or bitter
26. Is hateful and wants to get even
27. Bullies, threatens, or scares others
28. Starts physical fights
29. Lies to get out of trouble or to avoid jobs (i.e., “cons” others) 0 1 2 3
30. Skips school without permission 0 1 2 3
31. Is physically unkind to people 0 1 2 3
32. Has stolen things that have value 0 1 2 3
33. Destroys others’ property on purpose 0 1 2 3
34. Has used a weapon that can cause serious harm (bat, knife, brick, gun) 0 1 2 3
35. Is physically mean to animals 0 1 2 3
36. Has set fires on purpose to cause damage 0 1 2 3
37. Has broken into someone else’s home, business, or car 0 1 2 3
38. Has stayed out at night without permission 0 1 2 3
39. Has run away from home overnight 0 1 2 3
40. Has forced someone into sexual activity 0 1 2 3
41. Is fearful, nervous, or worried 0 1 2 3
42. Is afraid to try new things for fear of making mistakes 0 1 2 3
43. Feels useless or inferior 0 1 2 3
44. Blames self for problems, feels at fault 0 1 2 3
45. Feels lonely, unwanted, or unloved; complains that “no one loves him/her” 0 1 2 3
46. Is sad or unhappy 0 1 2 3
47. Feels different and easily embarrassed 0 1 2 3

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<th>Above Average</th>
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<td>1. Rate how your child is doing in school overall</td>
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<td>3 4 5</td>
<td></td>
</tr>
<tr>
<td>a. How is your child doing in reading?</td>
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<tr>
<td>b. How is your child doing in writing?</td>
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<tr>
<td>c. How is your child doing in math?</td>
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<td>2. How does your child get along with you?</td>
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<tr>
<td>3. How does your child get along with brothers and sisters?</td>
<td>1 2 3 4 5</td>
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<tr>
<td>4. How does your child get along with others his/her own age?</td>
<td>1 2 3 4 5</td>
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<tr>
<td>5. How does your child do in activities such as games or team play?</td>
<td>1 2 3 4 5</td>
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</table>
VANDERBILT ADHD DIAGNOSTIC TEACHER RATING SCALE

Instructions and Scoring
Behaviors are counted if they are scored 2 (often) or 3 (very often).

**Inattention** Requires six or more counted behaviors from questions 1–9 for indication of the predominantly inattentive subtype.

**Hyperactivity/Impulsivity** Requires six or more counted behaviors from questions 10–18 for indication of the predominantly hyperactive/impulsive subtype.

**Combined Subtype** Requires six or more counted behaviors each on both the inattention and hyperactivity/impulsivity dimensions.

**Oppositional Defiant and Conduct Disorders** Require three or more counted behaviors from questions 19–28.

**Anxiety or Depression Symptoms** Require three or more counted behaviors from questions 29–35.

The performance section is scored as indicating some impairment if a child scores 1 or 2 on at least one item.

VANDERBILT ADHD DIAGNOSTIC PARENT RATING SCALE

Scoring Instructions

**Predominately Inattentive Subtype** requires 6 of 9 behaviors, (scores of 2 or 3 are positive) on items 1 through 9, and a performance problem (scores of 1 or 2) in any of the items on the performance section.

**Predominately Hyperactive/Impulsive Subtype** requires 6 of 9 behaviors (scores of 2 or 3 are positive) on items 10 through 18 and a problem (scores of 1 or 2) in any of the items on the performance section.

**The Combined Subtype** requires the above criteria on both inattention and hyperactivity/impulsivity.

**Oppositional-Defiant Disorder** is screened by 4 of 8 behaviors, (scores of 2 or 3 are positive) (19 through 26).

**Conduct Disorder** is screened by 3 of 15 behaviors, (scores of 2 or 3 are positive) (27 through 40).

**Anxiety or Depression** are screened by behaviors 41 through 47, scores of 3 of 7 are required, (scores of 2 or 3 are positive).
APPENDIX C.

PARENT INTERVIEW QUESTIONS
Parent Interview Outline

1. When was your child diagnosed with ADHD?

2. What kind of medicine is your child currently taking?
   - Has he had any recent changes in medication? Why?
   - Has he had any adverse reactions to the medication? If yes, then what?

3. How would you describe your child’s behavior at home before and after he was prescribed medication?

4. How would you describe your child’s reading abilities before and after he was taking medication?

5. What types of reading materials are available to your child to read at home?
   - What types of reading materials does he like to read?
   - What types of reading materials does he not like to read?
   - Does he often read at home?
   - Who does he read with?

6. What types of books does your child seem to choose to read? (e.g., picture books, short chapter books, long chapter books)
   - Does he often choose to read picture books?
   - Does he seem to pick out picture books with a lot of color, minimal color, or black and white?

7. Does your child have access to a computer at home?
   - If yes, does your child ever read books on a computer at home?
   - If yes, does he seem to enjoy reading books on the computer?

8. Were there any outside services ever involved with your child’s reading?
   - If so, what services?
APPENDIX D.

TEACHER INTERVIEW QUESTIONS
Teacher Interview Outline

1. How would you describe the student’s behavior in the classroom?
   - Is he able to pay attention during class?
   - Is he able to focus on tasks?
   - Does he display impulsive behaviors at times?

2. How would you describe the student’s reading abilities?
   - Is he behind in reading compared to other students?
   - What area of reading does he struggle with?
   - What does he enjoy learning about in reading?
   - What type of books does he generally choose to read?
   - What genre of books does he generally choose to read?

3. Were/are there any reading interventions used for the student?
   - If yes, then what interventions?
   - Did/do these interventions work?

4. What types of reading materials are available in the classroom for students to read? (i.e. books, magazines, newspapers, electronic books on computer)
   - Did the student seem to prefer any particular type of reading material?
   - Has the student had the opportunity to read electronic books? If yes, does the student seem to enjoy reading electronic books?

5. What is the learning environment like in the classroom for the student?
   - Is computerized instruction utilized?

6. How would you describe reading instruction in your classroom? (e.g., small group work, whole class, computerized instruction)
   - Is computerized instruction ever a part of reading instruction in your classroom? If yes, what programs and/or websites are used?
APPENDIX E.

STUDENT INTERVIEW QUESTIONS
Student Interview

1. Out of all four books, which one did you like to read the most? (GENERAL PERCEPTION)
   - Why?

2. Out of all four books, which one did you like the least? (GENERAL PERCEPTION)
   - Why?

3. What did you like about reading the books online? (FORMAT)
   - Is there anything that you did not like?

4. What did you like about reading the picture books? (FORMAT)
   - Is there anything that you did not like?

5. Which book do you think had the best pictures? (COLOR)
   - Why?

6. Which book do you think had the worst pictures? (COLOR)
   - Why?

7. Do you think that online books have better pictures than the pictures books? (COLOR)
   - Why?

8. Do you think that online books or picture books are easier to read? (FORMAT)
   - Why?

9. Where you ever distracted while reading? (GENERAL PERCEPTION)
   - If yes, what distracted you?
10. If you could choose, would you rather read an online book or a picture book? (FORMAT)
   - Why?

11. Do you think that the online books are more fun and interesting to read than the picture books? (FORMAT)
    - Why?

12. Would you choose to read more often if your teacher included online books in the classroom? (FORMAT)
    - Why?
APPENDIX F.

STUDENT SURVEY
Student Survey

1. Did you enjoy the pictures in this book? (COLOR)
   YES   SOMEWHAT   NO
   3     2           1

2. Did you like the colors that were used in this book? (COLOR)
   YES   SOMEWHAT   NO
   3     2           1

3. Do you think you would like reading this book more if different colors were used? (COLOR)
   YES   SOMEWHAT   NO
   1     2           3

4. Were you ever distracted by the pictures that were used in this book? (COLOR)
   YES   SOMEWHAT   NO
   1     2           3

5. Were you ever distracted by the colors that were used in this book? (COLOR)
   YES   SOMEWHAT   NO
   1     2           3

6. Were you ever distracted by the format of the book? (e.g., clicking the mouse, turning the pages) (FORMAT)
   YES   SOMEWHAT   NO
   1     2           3
7. If this was a choice of book to read in your classroom, would you read this book again? (GENERAL PERCEPTION)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

8. Would you read this book again if it was on a computer in your classroom? (FORMAT)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

9. Would you read this book again if it was a picture book in your classroom? (FORMAT)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

10. Did this book make you want to read more? (GENERAL PERCEPTION)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

11. Would you like it if all of the books in your classroom were the same as this book? (same colors and features) (GENERAL PERCEPTION)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
12. Overall, did you enjoy reading this book? (GENERAL PERCEPTION)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

13. Would you ever read this book again? (GENERAL PERCEPTION)

<table>
<thead>
<tr>
<th>YES</th>
<th>SOMEWHAT</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX G.

PARENT CONSENT FORM
Dear Family,

I am a student at Bowling Green State University in the Graduate Reading Program. Last year, I had the opportunity to work with Mark at Elementary as a student teacher. Mark taught me valuable information last year about teaching students with ADHD. During my time at Mark, I recognized the hard work and dedication that Mark had to overcome his reading difficulties. Mark has inspired me to continue my education in reading and learn more about how I can help students who are struggling with reading.

I am currently researching information about the connection between ADHD and reading difficulties. I am hoping to do a research study on the reading preferences of students who have been diagnosed with ADHD. The purpose of my study is to determine if students with ADHD prefer to read printed text or electronic text. In addition to this, I will also investigate if students with ADHD like to read colored text or black and white text. It is my hope that this information will be able to help teachers make better decisions about the reading materials that they have available in their classrooms.

The purpose of this letter is to ask you to allow Mark to participate in my study. If you grant your permission, Mark will be asked to read four different types of books: a colored picture book, a black and white picture book, a colored electronic book, and a black and white electronic book. This will be done throughout four different days. Following the reading of each book, Mark will be asked to complete a quick survey about his thoughts toward the book. Reading the book and taking the survey should only take 15 minutes. After all four books have been read, Mark will participate in an interview about the book that he enjoyed reading the most. This interview will take approximately 10 minutes.

In addition to this study, I would also like to include some information about Mark’s behavior and reading abilities at school and at home. There are a few questions that I would like to ask you pertaining to Mark’s diagnosis of ADHD. Answering these questions should take approximately 15 minutes. Mark’s story is truly remarkable and one that would be inspirational to share.

Please be assured that any information you or Mark provides during this study will be completely confidential. All measures to protect Mark’s privacy, in addition to your privacy, will be taken. At no point will Mark’s real name nor your real name be used in this study. No recordings of any sort will be taken during this study, and both survey materials, interview materials, and any observational notes will be kept in a locked cabinet to ensure total privacy.

Please keep in mind that participation is completely voluntary. There are no anticipated risks greater than those in daily life associated with this study. Mark’s grades, class standing, and/or relationship with the school and your relationship with the school will not be impacted by the decision of participating or not participating. The potential benefits of this study include providing specific information to teachers about what types of books to use with students who have ADHD.
Additionally, you may be introduced to a new form of book that he enjoys to read. You and/or are free to withdraw from this study at any time.

There are two forms below. By completing the first form below, you are agreeing to allow to participate in this study. By completing the second form below, you are agreeing to participate in this study. You can return these forms to _________ at your earliest convenience. If at any time you have questions or would like to be removed or have _______ removed from this study, please contact either myself (419-618-5585 or hooverk@bgsu.edu) or my advisor, Dr. Cindy Hendrickx (419-372-7341 or cindyg@bgsu.edu). Also, you may contact BGSU’s Human Subjects Review Board (419-372-7716 or hrsrb@bgsu.edu) with any questions or concerns about participant rights. Thank you so much for your cooperation.

Sincerely,

Kathy Hoover
Graduate Student
Bowling Green State University

I, (Print name) __________________________________________, permit my child to participate in the study outlined above.

_________________________________________  ________________________________
(Signature)                                      (Date)

I, (Print name) __________________________________________, agree to participate in the study outlined above.

_________________________________________  ________________________________
(Signature)                                      (Date)
APPENDIX H.

STUDENT CONSENT FORM
Dear,

My name is Kathy Hoover. I am a student at Bowling Green State University. Last year at
you told me how you take medicine for ADHD. You taught me a lot about how to teach students
with ADHD. For school, I am doing a study on the kinds of books that students with ADHD like to
read. I hope to find out what types of books students with ADHD enjoy to read. This will help
teachers know what kinds of books they should have in their classrooms.

This letter is to ask you to be in my study. If you want to be in my study, you will read four different
kinds of books. You will read one book each day for four days. You will read a colored picture book,
a black and white picture book, a colored online book, and a black and white online book. You will
take a survey about each of the books. The questions will be about your thoughts about the book.
This should take no longer than 15 minutes. I will ask you a few questions about your favorite book
after you read all of them. This should take no longer than 10 minutes.

No one will know that you were in this study. Any information you give will only be used by me.
This information will be kept in a secret place. There should not be any risks of being in this study
other than those that may occur during a normal school day. This study will help teachers choose
books. You may also find a new type of book you like to read!

I would really enjoy your help with this study. Please know that being a part of this study is
completely up to you. If you choose to be or not to be in this study, it will not affect your grades at
school. You can also stop being in this study at any time.

You can sign your name below if you want to be in this study. You can tell your teacher if you have
any questions or if you want to stop being in this study.
Thank you!

Sincerely,

Kathy Hoover
Graduate Student
Bowling Green State University

I, ____________________________, agree to be in the study that is
described above.

____________________________  __________________________
(Signature)                  (Date)

529 Education Building
Bowling Green, Ohio 43403-0247  Phone 419-372-7320

BGSU NSRB - APPROVED FOR U
ID 11 2011-06-25
EXPIRE 11-11
APPENDIX I.

TEACHER CONSENT FORM
Dear Teacher,

I am a student at Bowling Green State University in the Graduate Reading Program. I am currently researching information about the connection between ADHD and reading difficulties. I am hoping to do a research study on the reading preferences of a student who has been diagnosed with ADHD. The purpose of my study is to determine if students with ADHD prefer to read printed texts or electronic texts. In addition to this, I will also investigate if students with ADHD like to read colored texts or black and white texts. It is my hope that this information will be able to help teachers make better decisions about the reading materials that they have available in their classrooms.

One of your former students,  , has previously been diagnosed as having ADHD.  will be participating in my research study. Prior to working with  , I need to interview his past and present teachers. The purpose of this letter is to ask you to participate in my study. If you choose to participate in this study, you will be interviewed by me. Questions will contain information about  's reading abilities and behavior in class. This interview should take approximately 15 minutes.

Please be assured that any information that you provide during this study will be completely confidential, and all measures to protect your privacy, in addition to  's, will be taken. At no point will your real name nor  's real name be used in this study. No recordings of any sort will be taken during this study, and the interview materials will be kept in a locked cabinet to ensure total privacy.

Please keep in mind that participation is completely voluntary. Your relationship with the school will not be impacted by the decision of participating or not participating. There are no anticipated risks greater than those in daily life associated with this study. The potential benefits of this study will be providing information to teachers about what types of books would be most beneficial for students with ADHD. You are free to withdraw from this study at any time.

By completing the form below, you are agreeing to participate in this study. If at any time you have questions or would like to be removed from this study, please contact either myself (419-618-5585 or hooverk@bgsu.edu) or my advisor, Dr. Cindy Hendricks (419-372-7341 or cindyg@bgsu.edu). Also, you may contact BGSU's Human Subjects Review Board (419-372-7716 or hrsb@bgsu.edu) with any questions or concerns about participant rights. Thank you so much for your cooperation.

Sincerely,

Kathy Hoover
Graduate Student
Bowling Green State University
I, (Print name) _________________________________, agree to participate in the study outlined above.

______________________________  ______________________________
(Signature)                   (Date)
APPENDIX J.

SUPPORT LETTERS
Dear Principal,

My name is Kathy Hoover, and I am a student at Bowling Green State University in the Graduate Reading Program. I am currently doing a research study on the text preferences of students with ADHD. The purpose of my study is to determine if students with ADHD prefer to read printed texts or electronic texts. In addition to this, I will also investigate if students with ADHD like to read colored texts or black and white texts. It is my hope that this information will be able to help teachers make better decisions about the reading materials that they have available in their classrooms.

The purpose of this letter is to ask you for permission for this study to take place at “Elementary School”. For this study, I will need to use a classroom and one computer for a 30 minute block of time. Below, I have created a timeline for the dates and times I will need access to a classroom and a computer.

- January 21, 2011 from 11:30-12
- February 2, 2011 from 11:30-12

I would greatly appreciate your support! If you have any further questions or any concerns, please contact either myself (419-618-5585 or hooverk@bgsu.edu) or my advisor, Dr. Cindy Hendricks (419-372-7341 or cindyg@bgsu.edu).

Sincerely,

Kathy Hoover
Graduate Student
Bowling Green State University
Dear Teacher,

My name is Kathy Hoover, and I am a student at Bowling Green State University in the Graduate Reading Program. I am currently doing a research study on the text preferences of students with ADHD. The purpose of my study is to determine if students with ADHD prefer to read printed texts or electronic texts. In addition to this, I will also investigate if students with ADHD like to read colored texts or black and white texts. It is my hope that this information will be able to help teachers make better decisions about the reading materials that they have available in their classrooms.

The purpose of this letter is to ask you for permission for the use of your classroom for this study. I will be working with one of your students in your classroom. For this study, I will need to use your classroom and one computer for a 30 minute block of time. Below, I have created a timeline for the dates and times I will need access to your classroom and a computer.

- January 21, 2011 from 11:30-12
- February 2, 2011 from 11:30-12

I would greatly appreciate your support! If you have any further questions or any concerns, please contact either myself (419-618-5585 or hooverk@bgsu.edu) or my advisor, Dr. Cindy Hendricks (419-372-7341 or cindyg@bgsu.edu).

Sincerely,

Kathy Hoover
Graduate Student
Bowling Green State University