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The Effects of Canine Therapy on Academics, Behavior, and Motivation of Students

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The Effects of Canine Therapy on Academics, Behavior, and Motivation of Students

By
Maria Rector

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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2016

Approval Page

This dissertation was submitted by Maria Rector under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Dedication

I would like to dedicate this dissertation to my family who has been extremely supportive since day one. I would also like to dedicate this dissertation to my two little twin girls, Emma and Bella, who were born during the dissertation process. They provided the motivation I needed to prove to them that you are able to achieve any dream you have.

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Abstract

The Effects of Canine Therapy on Academics, Behavior, and Motivation of Students.
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The purpose of this study was to determine whether canine therapy provided by the B.A.R.K.S. program was effective in increasing reading achievement, impacting the motivation of students while participating in therapy, and decreasing off-task behaviors in the classroom. This study focused on academic or behavioral difficulties that have been exhibited in the general education classroom.

This study utilized a mixed-methods approach, with pre and postassessments for academics, behavior, and motivation. Parents were also given a questionnaire to fill out that addressed the qualitative component of the study. A combination of *t* tests and ANCOVA were used to analyze the data that were collected. The quantitative results from this study did not show a statistically significant impact when students' academic growth and off-task behaviors were compared in the pre and postassessment; however, the qualitative data showed positive results with motivation.

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Chapter 1: Introduction

Introduction

The high school drop-out rate has been called a national crisis, with almost one third of high school students leaving the school system before graduating (Swanson, 2004). This is even more noticeable among students of varied races and disabilities (Greene & Winters, 2005; Laird, Debell, & Chapman, 2006). There is not a one-size-fits-all approach that works with teaching students in our educational system, and the current strategies being utilized in schools to address achievement gaps are not always working for children. According to Glickman, Gordon, and Gordon (2014),

Changes in the U.S. demographics, culture, environment, science, technology, and economy mean that our schools must change if they are to prepare students to be successful and contributing members of society and if society is going to offer all of its citizens' life, liberty, and the pursuit of happiness. (p. 344)

Innovative and effective intervention strategies are necessities in order to have an impact on educational outcomes. Canine therapy, which utilizes therapy dogs as a recipient of student reading, is one educational option that is rarely considered. At an elementary school in North Carolina, the B.A.R.K.S. canine therapy program has had several successes with the children who have participated in the program. The B.A.R.K.S. acronym stands for Bringing Animals Relief and Kindness. One of the most recent success stories is below.

Shortly after starting BARKS for only his reading, a 2nd grader's Mom left the family, resulting in the second grader having to get himself and his younger brother to school on their own. The child stopped having homework ready and refused to cooperate with his teacher at school and was always late for school,

except for the day when he had BARKS first thing. Parent-teacher conferences only led to the child being punished. Since BARKS was the only thing he seemed interested in, we set up a reward program for him. He chose more dog reading time and during his additional time, in addition to reading, we worked to help him with scheduling his duties at home. In a couple of months, he was back on track and finished the year two grade levels above grade. His younger brother in kindergarten also surpassed the other students. (J. Gray, personal communication, September 27, 2014)

Many researchers have noted an impact between children and animals that extends beyond just learning responsibility within the home. In an article by Tipper (2011), she noted that human-animal relationship connections are “invariably socially located and interlink with social structures” (p. 7). This same author discussed how children often use terms such as liking, knowing, and meeting when referring to animals along with referring to animals as friends or family. This article shows that children connect to animals on a deeper level, feel safe with animals, and associate them on the same level as a friend or family member. This means they are more likely to openly communicate with an animal because they feel comfortable and feel they are not being judged. Tipper stated that children “readily articulate close relationships with animals in a more ‘unguarded’ way than adults” (p. 17). When children feel less afraid and are in a nonjudgmental zone, this allows a relationship to occur between the canine and the child.

Schools and libraries are beginning to utilize therapy dogs; however, there is not currently a large body of research that shows whether or not this is an effective strategy in improving the academics of children who participate. This study focused on the effectiveness of canine therapy on reading achievement, decreasing off-task behaviors,

and increasing the motivation of students while they participated in the canine therapy sessions.

General Overview

According to Friesen (2010), animal-assisted therapy (AAT) has been shown to provide a social and emotional support system for a child who is perceived as being nonjudgmental and comforting. The social and emotional support system provided by AAT helps children boost their self-esteem and also aids in children expressing themselves (Friesen, 2010). According to Shore (2013), low self-esteem can affect a student's performance in school both academically and behaviorally.

Horses, dogs, and dolphins are popular animals used for AAT. According to the Professional Association of Therapeutic Horsemanship International (PATH, 2011), horses are utilized to help individuals who have had amputations; those with ADHD, autism, brain injuries, and cerebral palsy; individuals who have had a stroke, are deaf, or are developmentally delayed; and individuals with Down syndrome, emotional disabilities, learning disabilities, multiple sclerosis, muscular dystrophy, spinal bifida, spinal cord injuries, and visual impairments. Equine therapy facilities are currently scattered throughout the United States on farms; and dogs have been used to build self-esteem, help treat posttraumatic stress disorder, and increase reading fluency in students with disabilities at both schools and libraries (Christensen, 2015). Currently, there are 850 equine farms that are members of the PATH organization in the United States and internationally (PATH, 2014). Dolphins are now being used in AAT, which is located most commonly in Florida, as a way to increase communication and mobility in individuals with disabilities (Dolphins-World, 2014). The idea to use dolphins began in 1978 and was started by Dr. David Nathanson to increase speech and motor skills of

patients.

AAT occurs in a variety of settings. It can occur in an institution to help reduce the anxiety of patients, in nursing homes to help decrease depression in the elderly who have lost their beloved homes, or in schools with students to increase motivation and decrease negative behaviors. When horses and dolphins are utilized, the therapy occurs in the locations where those animals are located and does not typically occur at a school. Horse therapy typically occurs at a farm, and dolphin therapy typically occurs at an aquarium. There are schools like one located in Conover, North Carolina, that will send students to an equine farm to receive services. Some individuals have dogs located at their homes to help them in daily life skills or to comfort and help them deal with hardships. There are a variety of ways AAT can occur, and the location can vary depending on the type of therapy offered.

This study focused on canine therapy. Canine therapy is typically based in schools or libraries. An example of a library program currently in place in North Carolina is The Hickory City Library Paws to Read Program. This program allows children to set up appointment times to read to a certified K-9 therapy dog every week. Within North Carolina, there are three major canine therapy programs currently being utilized in schools that focus on reading. These programs are Therapy Dogs International (TDI), North Carolina Pet Partners, and the B.A.R.K.S. program.

TDI (2015) has an objective of providing a relaxed and dog-friendly atmosphere which allows students to practice the skill of reading. The students who are chosen to participate in this program typically have reading difficulties that have impacted their self-esteem (TDI, 2015). According to TDI,

By sitting down next to a dog and reading to the dog, all threats of being judged

are put aside. The child relaxes, pats the attentive dog, and focuses on the reading. Reading improves because the child is practicing the skill of reading, building self-esteem, and associating reading with something pleasant. (p. 1)

North Carolina Pet Partners is a member of the Community of Pet Partners and provides service dogs to schools. This organization was previously known as the Delta Society. Pet Partners utilizes positive animal-human interaction to improve physical, emotional, and psychological needs of individuals (North Carolina Pet Partners, 2012).

In a North Carolina county, certified therapy dogs are involved in many of the elementary schools through a partnership with the B.A.R.K.S. program. The B.A.R.K.S. program is part of the Helping Paws International Organization. Children are chosen to participate in the program based on teacher and reading specialist selection. The children are varied in what their needs may be. For example, the student may be performing well academically and just be shy, or a student may be a struggling learner who needs support with reading. After being chosen to participate in the program, students are paired up with a reading assistant team that includes a canine and a handler. The students work with this team for 8-12 week intervals. Each session with the canine lasts a half-hour to an hour, with the dog sitting or lying by the child while the child reads. Below is a description of the reward system that occurs with Helping Paws International (2000-2016) to help foster motivation to read:

To foster reading at home and to continue the joy of learning we reward the students at the end of each 10 weeks. At the beginning of each 10 weeks, we give the student two doggie bookmarks with his dog's picture on it. One bookmark stays in the student's folder and one is sent home with the student. On the back of the bookmarks are 10 blocks. Every time the student has a reading session at

school, they get to put a sticker of their B.A.R.K.S dog in a space. Every time they read at least 30 minutes at home with an adult or older sibling, the parent or legal guardian gives them a check mark. Once the 10 spaces are filled, the students get to exchange the bookmark for a new book, which they get to select from the Helping Paws “Adventures in Reading” treasure box. That book then receives a bookplate with the student’s name, a picture of the student’s B.A.R.K.S dog, a note from the dog and its handler, and is “pawtographed” with the dog. The students will receive their final books at the end of the year celebrations/graduations where the parents get to watch the students help the dogs with the book “signing.” (p. 2)

The B.A.R.K.S. program at an elementary school was analyzed in this study. The B.A.R.K.S. program is a volunteer program, and the canines and trainers who choose to participate in the program receive 5-6 months of obedience and therapy-assistance animal training. In order to become trainers, there are multiple tests that occur throughout the training in both classrooms and outside facilities. An animal behaviorist, behavioral consultant, and canine psychologist observe the canines being utilized multiple times throughout the training process. The canines are also trained to retrieve books, help turn the pages, read to the children, and whine when a child makes a mistake while reading. In order for the canine to catch mistakes while the child reads, the handler cues the dog with a signal to turn his/her head to the child, place a paw on the book, or make a noise.

The dogs are trained not to react toward the child in a negative way. The following is an example of a student and how the dog reacted in the situation as prompted by previous training sessions. At a school in a North Carolina county, there was a student who was hyper and expressive while participating in the B.A.R.K.S. program. This

student would often do dives over the dog; and on one occasion when she got excited and spread her arms out, she bopped the dog on the nose. The dog just gave her a quick kiss and did not act aggressive in any way toward the girl (J. Gray, personal communication, June 3, 2015).

The canine handlers are trained to utilize various reading strategies when the students are participating in the reading therapy sessions. When the program was started at the school where this study was located, the school was responsible for training the handlers with literacy strategies. The BARKS program has been able to add reading strategies training as a part of the overall training. This year, the training focused on high frequency words, determining when a book is too hard for a student, a comprehension strategy using the hand where students work through comprehension strategies (look at picture, think about story, go back and read again, make the first sound of word, make a guess at it), what to do when a student gets stuck reading, how to monitor reading, and making connections to the reading.

History

Historians believe that AAT began as early as prehistoric times, even though there is no written record of this occurring. The earliest recorded use of AAT occurred in the 18th century. During this time, William Tuke was in charge of the York Retreat in England. This retreat had various animals to help enable socialization skills of individuals who were there suffering from mental illnesses (Serpell, 2000). In 1860, Bethlem Hospital in England also started using animals to help increase the morale of patients (Serpell, 2000).

Sigmund Freud was also famous for using animals in his research. He learned that dogs helped his patients relax and be more willing to talk and share information in

sessions. This use of animals in his therapy sessions seemed to work best with children and adolescents (Stanley, 2010).

In the 1900s, the use of animals in therapy became more popular. In 1944, the Pawling Army Air Force Convalescent Hospital in New York City used dogs to treat soldiers with battle injuries or psychological trauma. The hospital was also a working farm for the recovering patients (Kennedy, 2012).

In 1947, Green Chimneys Children Services was founded in New York on a dairy farm that had been converted into a residential treatment center for children. This facility focused on children with developmental disabilities and emotional and behavioral needs. In the 1970s, the farm began to use farm animals as companions and also as motivation in helping the children to recover (Chandler, 2005). Today, the farm has more than 200 students in therapeutic day and residential programs and includes over 300 domesticated farm animals and wildlife species that utilize animal therapy with the children for whom they provide services (Green Chimneys, 2014).

The first research documented on the use of companion animals occurred in 1962. Boris Levinson (1972) was a child psychologist who found significant progress occurred when his dog attended the therapy sessions. He observed this phenomenon several times with children who were withdrawn and uncommunicative. The dog helped to facilitate a relationship between the patient and the therapist (Chandler, 2005). Levinson noticed that the child would communicate with the animal in contrast to very little communication with him previously.

In the 1960s, the use of horses in therapy became popular as a form of animal therapy. In 1969, the North American Riding for Handicapped Association was started in Denver, Colorado. By 2003, over 700 centers had been opened throughout the United

States and Canada. The North American Riding for Handicapped Association sets standards for how equine-assisted counseling occurs (Chandler, 2005). Today, the North American Riding for Handicapped Association is known as PATH. Currently, PATH has 850 member centers and 7,600 individual members in countries all over the world. Previously, the focus was on physical and mental therapy but now includes therapeutic carriage driving, interactive vaulting, equine-facilitated learning and mental health, ground work and stable management, and Equine Services for Heroes that helps war veterans and military personnel (PATH, 2014). Rising Hope Farms in Claremont, North Carolina, is a PATH-certified location. This nonprofit therapeutic riding facility provides various equestrian activities for individuals with disabilities. Below is the testimony of a mother whose son is involved in the Rising Hope Farms (2010) program:

My son Bradley has Duchenne Muscular Dystrophy which weakens his muscles. He began therapeutic horseback riding at Rising Hope Farm last spring with the hope that it would help him maintain his strength and improve his flexibility. Riding at the farm has done just that. Brad's balance has improved tremendously since he began riding. His flexibility is great and he loves coming to the farm. He is more confident now and being able to ride a horse makes him feel so special. He loves to give the horses treats and really looks forward to seeing Buddy the dog. He has accomplished things on the horse that I never thought possible. Gail and the volunteers really care about Bradley. Everyone there has been a tremendous blessing to our family. (p. 2)

It is important to understand the various types of animals used in therapy from an historical perspective; however, the attention is now turned to canine therapy, which is the focus of this study. In 1990, the Delta Society (a canine therapy program) began a

Pet Partners program. The main facility for Pet Partners is located in Bellevue, Washington. The Pet Partners program uses therapy animal teams that include dogs, cats, birds, small animals, horses, and farm animals to help individuals in need (Chandler, 2005). This organization now has locations across the United States and has a therapy program in North Carolina that provides reading therapy dogs.

With more research being completed, the use of canine therapy is becoming more popular. Most of the research on canine therapy began in the 1990s and has continued. Publications in both newspapers and magazines have helped to spread successful stories of the use of canine therapy. Animal therapy has progressed significantly since earlier days when only the mentally ill were provided this treatment. In more recent years, animal therapy has evolved to include more variations in the service delivery.

Introduction to the Problem

According to Swanson and Hoskyn (1998), the number of children who are identified as having a learning disability has increased over the last 20 years (p. 277).

According to Swanson and Hoskyn,

Although learning disabilities as a diagnostic entity represent the largest single category of students receiving special education, the answers to questions such as “Which intervention works best for the type of learning problem experienced by the learning disabled student?” are unclear. (p. 277)

This statement clarifies that there is a lack of interventions that are meeting the academic needs of students with learning disabilities. Behavioral interventions also have the same status. Schunk and Pajares (1997) noted that in order for the “gap” to be closed in academic achievement, motivation to read must be increased. Schunk and Pajares also mentioned that providing a student with multiple opportunities to engage in activities

related to reading are recommended, and having positive experiences related to reading can increase self-confidence and self-efficacy in relation to reading. Canine therapy is an intervention that has the possibility of closing academic gaps, increasing motivation, and decreasing behavior. Unfortunately, schools are not always open to implementing canine therapy, which may be due to the lack of current and compelling research related to canine therapy and is one of the reasons why schools may be hesitant to implement a canine therapy program.

Purpose of the Study

The purpose of this study was to determine whether canine therapy was effective in increasing reading achievement, increasing motivation of students, and decreasing off-task behavior of students with learning difficulties. The researcher hoped to show that canine therapy had a positive effect on meeting the learning needs of students and ultimately impacted academic success. It was also hypothesized that motivation could be increased and off-task behavior decreased when canine therapy was used with students. With the focus schools have on the “whole student,” this intervention could potentially meet multiple needs of these children.

Theoretical Framework

The social cognitive theory proposed by Albert Bandura in the 1970s links learning to a social context and has an impact on canine therapy research. The following are the three main assumptions of social cognitive theory: (1) personal, behavioral, and environmental factors influence one another in a reciprocal function; (2) people have an ability to influence their own behavior and environment in a purposeful, goal-directed fashion; and (3) learning can occur without an immediate change in behavior (Denier, Wolters, & Benzon, 2014).

The first assumption of the theory is that personal, behavioral, and environmental factors influence one another in a reciprocal fashion. This simply means that a child's learning can be shaped by reinforcements provided by themselves or others. With canine therapy, the use of a canine for learning could be seen as a reinforcement, thus having an impact on a child's learning. The social interaction that also occurs between the therapy personnel and the child could have an impact on the child's learning. Canine therapy overall has both social and environmental components to it, which ties into this first assumption of the social cognitive theory. The social components of canine therapy include children interacting socially with a canine and canine handler. The environmental component of canine therapy includes students learning in an environment outside of the classroom. The change of environment and the social aspect of canine therapy both act as reinforcements.

The second assumption of the theory is that people have an ability to influence their own behavior and the environment in a purposeful, goal-directed fashion. In canine therapy, students feel more in control of their environment. They choose the books they would like to read after reading books sent by the classroom teacher, and the students also choose how to interact with the canine in the canine therapy session. By allowing the students to choose their books and how to interact with the canine, this allows them to have some control in their learning. This could help prepare the students for being more reflective and thus have an impact on their learning.

The third assumption states that learning can occur without an immediate change in behavior. In this study, the impact of canine therapy on the behavior of students was studied to determine if off-task behaviors decreased. With canine therapy, the focus is on the child; that focus could impact behavior over a long-term period, even if a change in

behavior is not seen immediately. Change takes time, and the study occurring over 12 sessions of therapy allowed the researcher to know if there was an impact on behavior, since the behavior was measured at the beginning of therapy and again at the end of therapy.

Based on research by Chandler (2012) and the impact of animals in therapy sessions, this study also theorized that children can relate to animals in a way that capitalizes on improving the child's achievement, behavior, and motivation. It is also theorized, based on Chandler's research, that the relationship that occurs between a canine and a child in a therapy session can give hope to a child, eliminate their fears associated with reading, allow a relationship of trust to build, and increase their self-esteem.

These three assumptions show the potential impact canine therapy could have on a child. Canine therapy allows students to have some control in their learning and it also has social and environmental components to the therapy. The B.A.R.K.S. program helps students to set goals and rewards those goals at the end of the program. With these components in place, this theory suggests that a child's learning could be impacted.

Hypotheses and Research Questions

In this study, the effects of canine therapy on reading achievement, behavior, and motivation were evaluated. There were three research questions that were answered through this study: (1) What is the impact of canine therapy on reading scores of students with learning difficulties; (2) What is the impact of canine therapy on the behavior of students with learning difficulties; and (3) What is the impact of canine therapy on the motivation of students with learning difficulties?

It was hypothesized that following the canine therapy, improvements would be

seen with students' reading achievement, on-task behaviors, and increased motivation. Regarding academics, it was hypothesized that reading scores would increase as measured by the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment. With regard to behavior, it was hypothesized that students' on-task behavior in the classroom would increase as measured by the Pearson Behavioral Observation of Students in Schools (BOSS). It was also hypothesized that while participating in canine therapy, student motivation would increase which would have an impact on reading achievement as measured by the Center for the Study of Animal Wellness Pet Bonding Scale (CSAWPBS).

Overview of Methodology

This study used a convergent parallel mixed-methods approach to determine whether the use of therapeutic dogs has an effect on academics, behaviors, and motivation of students with learning difficulties. There were two parts to this study. The first component was collecting pre and posttest assessment results using DIBELS. The teachers in the school administered the pre and posttest assessments. There were also observations completed by the researcher of the participating students to determine the student off-task behavior prior to the therapy sessions beginning and after the 12 sessions ended. CSAWPBS was given to the students at the beginning and end of the canine therapy session to determine if canine therapy had an impact on student motivation. The media coordinator at the school gave the survey. The second part of the study focused on interviewing the parents of the students who participated in the study to gain a parental perspective on whether canine therapy impacted the behavior of their child at home. The Parent Interview Questions were sent home for the parents to complete. Once all data were collected, the academic and behavioral data were analyzed using analysis of

variance to determine the effectiveness of the canine therapy. The independent variables in this study included both a control group and an experimental group. The dependent variables were the pre and postscores that were gained on the academic assessment, behavioral assessment, and motivation assessment. The qualitative data gained through the interviews were analyzed to determine common themes across the data.

This study occurred in one main location. The reading therapy dogs were located in an elementary school in a North Carolina county. The dogs were brought in for a 12-week period to work with nine students in the school library. The students were chosen to participate in the canine therapy program based on their performance on the DIBELS assessment given at the beginning of the school year, along with behaviors and home-life issues that were brought up at the beginning of the school year. The teachers determined who would benefit from the therapy sessions. The students who participated in the canine therapy sessions were first and fourth graders.

The canine therapy sessions occurred once a week. Students were paired up one-on-one with a dog and dog handler. The students spent 30 minutes reading to the dog utilizing a book from their classroom that was predetermined by the child's teacher. When students finished the book, they had special pet books they could choose from in the library to read to the dog. The dog handler would ask comprehension questions of the student while they read. Teachers provided information to the dog handlers on the types of questions or skills the students needed to work on that week in their session. While students read the book to the dog, they had the ability to pet and interact with the dog. The dogs were trained to help turn pages and respond if a word was read incorrectly. This ensured that the errors were noted by the dog and not the handler and minimized judgment that students typically feel when they make mistakes. During the time the

canine therapy sessions were occurring, the library was not open to any other students. This allowed the children to feel that they were in a safe environment to read.

Consent for this study was gained from parents whose students participated in therapy sessions. The letters were sent home with the students to describe the study that occurred and the information that was gained from the study. Permission was obtained from the school district of the school where the reading therapy dogs were used. The county where the study occurred required a formal application process to perform the study, and this process had to be followed to gain permission. As part of the formal application process, the principal had to grant permission for the study to occur at the school.

Limitations

The first limitation of this study is found in the brevity of the therapy which lasted for only 12 sessions. It is believed that a longer study would have provided more credibility to the findings. A second limitation of the study is found in the sample size of the group. A larger sample size would have provided for a thorough data analysis to occur. A third limitation of the study is found with the location occurring at one place. The results of the study may have varied outside of that one school setting, and having multiple locations would provide information on whether results are replicated. A fourth limitation that occurred in the study was students having different teachers and different classroom experiences which could have impacted the achievement results. A fifth limitation that occurred in the study was the availability of the canine handlers. One of the groups was seen every other week for a total of 12 sessions due to the canine handlers' availability, and the second group was seen on a weekly basis. This limitation could have impacted the results because 12-week sessions did not occur concurrently.

Delimitations

A delimitation of this study was found in the study having only occurred at the elementary level. There were no students in middle school or high school to determine if canine therapy would have an impact on upper-grade students.

Importance of the Study

It is important that the educational system find a way to help students who continue to struggle when other interventions with the student are failing. Students continue to fall behind and educational gaps continue to widen once a student falls behind, and then the students end up becoming frustrated and ready to give up. Many students with learning difficulties end up dropping out of school because the educational system has failed to meet their educational needs. According to Statistic Brain Research Institute (2014), 3,030,000 students in the United States drop out of school every year. Differentiated and innovative education is a big push in schools today due to the high demands that society is placing on education. Canine therapy is an innovative form of therapy that could provide extra motivation to a student to work harder and could help close the student's educational gaps.

Schools rely on research to determine appropriate instruction with students, and the research is limited with canine therapy. Currently, most school systems in North Carolina are not open to bringing canines into schools. Part of this opposition is due to policies that are currently in place in school districts that do not allow animals in school. In order for canine therapy to be valued in education, research needs to show that it has the potential to be an effective intervention. By providing parents with explanations on the research related to canine therapy, they may feel more comfortable with their children being in the presence of canines to assist their child with learning.

Definition of Key Terms

AAT.

Animal-Assisted Therapy (AAT) is a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process.

ATT is directed and/or delivered by a health/human service professional with specialized expertise, and within the scope of practice of his/her profession. (Pet Partners, 2014, p. 1)

Therapeutic dogs/canine therapy. Therapeutic dogs can have various functions.

For the purpose of this study, a therapeutic dog is a dog that is trained to work with children who are reading to it. Dog handlers accompany the dogs at all sessions (Helping Paws International, 2000-2016).

Learning difficulties. The students who participate in this study had various learning difficulties. These difficulties can range from learning disabilities, motivational difficulties, acquiring English as a second language, and behavioral difficulties. The students who were chosen to participate in the program were determined by their performance on academic assessments and also the teacher's input into students who were exhibiting motivational and behavioral challenges in the classroom.

B.A.R.K.S. One of the bigger programs in North Carolina that provides reading therapy dogs. There are two other well-known canine therapy programs in North Carolina. The B.A.R.K.S. program began in 2001 in Durham County Schools and has grown since that time. This program is the program that is being utilized in this study (Helping Paws International, 2000-2016).

Dog handler. A dog handler is an individual who is trained to work and provide commands for the dog in the school setting (Helping Paws International, 2000-2016).

Pearson BOSS. This assessment allows an observer to track the frequency of positive and negative behaviors that occur in a classroom. It also analyzes a student's active and passive engagement in activities. It is recommended that three observations occur for 15-30 minutes to gain accurate data (Shapiro, 2013).

CSAWPBS. This scale measures a student's motivation as they participate in canine therapy. The assessment is composed of 28 questions and uses a Likert scale. Rebecca A. Johnson, Ph.D., R.N., and Richard L. Meadows, D.V.M., D.A.B.V.P created it (Anderson, 2007).

DIBELS. DIBELS has seven components of the assessment. These areas are phonemic awareness, alphabetic principal, accuracy and fluency with connected texts, reading comprehension, oral language, and vocabulary. Currently, this is one of North Carolina's most common assessments used to judge the reading performance of students (Good et al., 2004).

Summary

The need to find approaches that impact both academics and behavior of students with learning difficulties is great. The research for this study analyzed whether canine therapy has the potential to impact academics, motivation, and behavior. With multiple forms of data being analyzed through this study, it will provide a greater view of whether or not canine therapy is effective. With AAT being used since the 18th century in different forms, it is time to determine if this therapy should be extended more to the academic setting. Children are able to relate to dogs and feel more comfortable communicating with them (Tipper, 2011), which could have the potential to impact their education in multiple ways. This chapter has provided information on canine therapy and the components of this study along with the theoretical framework on which this study

was based. Chapter 2 examines the research related to the importance of canine therapy and AAT.

Chapter 2: Review of Literature

Introduction

Canine therapy is an innovative approach to instruction that has been gaining more popularity. Currently, there is a lack of data on how effective both animal therapy and canine therapy are in their ability to impact instruction. In order to better understand what animal therapy is and how it has evolved, an in-depth look at the history of animal therapy and the current research on AAT is needed. It is also important to look at current academic and behavioral interventions that are currently practiced in education. While this study focused on canine therapy, it is helpful to review all types of animal therapy to better understand the context of canine therapy. Therefore, the review of literature will also include animal studies outside of canine therapy studies.

History of AAT

The history of AAT has an important role in canine therapy. The use of canines in working with individuals with mental illnesses, health issues, and more severe disabilities had an impact on canine therapy being extended to the school setting.

The earliest recorded use of AAT occurred in the 18th century, where William Tuke was in charge of the York Retreat in England. This retreat utilized a variety of animals to help enable socialization skills of individuals who were there suffering from mental illnesses (Serpell, 2000). In 1860, Bethlem Hospital in England also started using animals to help increase the morale of patients (Serpell, 2000).

Sigmund Freud was well known for using animals in his research. While working with individuals, he learned that dogs helped his patients relax and be more willing to talk and share information in sessions. The use of animals in his therapy sessions seemed to work well with children and adolescents (Stanley, 2010).

In 1947, Green Chimneys Children Services, which served as a children's residential treatment facility, was founded in New York and focused on children with developmental disabilities and emotional and behavioral needs. In the 1970s, Green Chimneys, which was previously a dairy farm, began to use farm animals as companions and also as motivation in helping the children to recover (Chandler, 2005). Today, the farm has more than 200 students in therapeutic day and residential programs and includes over 300 domesticated farm animals and wildlife species and animal therapy that play a critical role in the services they provide to children (Green Chimneys, 2014).

Boris Levinson was one of the first psychologists to look at the relationship between animals and children (Baarda & Edenburg, 1995). According to an article by Baarda and Edenburg (1995), Levinson noticed this interaction between children and animals completely by chance. During one of his sessions with a boy who had problems with social contact, Levinson had his dog with him. Levinson did not allow his dog in therapy sessions; but in one of his sessions, the boy arrived earlier than usual and Levinson was surprised when the boy spoke to the dog. In previous sessions, the boy never spoke. This encounter opened the door for Levinson to continue looking at involving animals in therapy (Baarda & Edenburg, 1995). Levinson (1972) had a similar encounter when he introduced a cat into another therapy session:

My cat had been sleeping in her basket in the office for a few sessions before John noticed her. He began to fondle her and wanted to feed her. He asked many questions about the cat, wanting to know where she came from. I explained to him that we had acquired her at the ASPCA, where she had been left as one of a litter of abandoned kittens. I told him how much we loved her and how my two sons often fought for the privilege of having her in their room at night. At first

John found it difficult to accept the idea that a cat that had been abandoned by her mother and her owner could be loved and accepted by others. He kept returning to the subject; he obviously began to see an analogy between the kitten's situation and his own, and to consider the possibility that he actually was loved by his adoptive parents. His recovery seemed to begin with our discussions about my "adopted" cat. (p. 142)

Both of the stories above are a picture of the work Dr. Levinson did with both animals and children. Boris Levinson had a huge impact on animal therapy. Without his studies involving animals being a part of the therapy with children, it is possible that the field of AAT would never have been studied and researched. He inspired more people to look into whether or not animal therapy has validity in the medical field.

The Delta Society that is known today as Pet Partners began in 1977. Dr. Leo K. Bustad, a veterinarian; Dr. Michael McCulloch, a psychiatrist; and Dr. William McCulloch, a doctor, founded the Delta Society. It was formed to research the effect that animals have on people's lives. In 1990, the National Service Dog Center was established through the Delta Society. They also developed the Pet Partner's Program, which offers training for animal-assisted activities and therapy for both volunteers and healthcare professionals. In 2012, the Delta Society changed its name to Pet Partners.

Most recently, Pet Partners launched an initiative to address crisis response. In an article by Betker (2013), Pet Partners worked with students at a middle school in Newtown, Connecticut, within 4 days of the mass shooting that occurred at the elementary school. In December 2012, there were dog teams everywhere in Newtown working with students and family members. One of the handlers stated about the dogs,

They focus on the human, she said, not on the fact that they (may) want to play

fetch or demand belly rubs; they quietly allow the person to do what they want, be that stroking fur, hugging, or lying on the floor with them, for as long as the person wants. (Betker, 2013, pp. 2-3)

The dogs provided stability to a hurting community where there was no stability at the time. Dr. Levinson and Pet Partners have been influential in the evolution of canine therapy. The history of AAT has shown that over time, viewpoints on how canines can be used with humans have changed. The animals that are being used in therapy have also been expanding with a change from farm animals to dogs and cats now being included as a form of AAT.

Models of AAT

AAT provisions can vary depending on a child's needs. AAT has been used in counseling sessions, in physical therapy sessions, at healthcare facilities, and in schools. In these different settings, various areas are worked on ranging from helping with emotional support to helping with educational gaps.

As mentioned above, Boris Levinson was the first to use a dog in a counseling session, which occurred completely by accident. Since then, several others have followed in his footsteps. According to a journal article written by Chandler (2001), "The animal's warm and playful presence can be comforting" (p. 1). The article also went on to describe what AAT can look like in counseling sessions.

AAT is not a style of therapy like Cognitive-Behavioral or Rational-Emotive therapy, however a therapist can incorporate the animal into whatever professional style of therapy the therapist already enacts. AAT sessions can be integrated into individual or group therapy and with a very wide range of age groups and persons with varying ability. There are many different types of

therapy animals. The most common are dogs, cats, and horses. Farm animals can be therapeutic as well as smaller or less common types of animals, such as, rabbits, birds, fish, hamsters, and even llamas. Each of these animals has specific skills and abilities to contribute to the therapeutic process. (Chandler, 2001, p. 1)

Animals providing comfort to students greatly enhances communication in a counseling session. Children are better able to communicate, and the animals can also provide comfort for the emotional turmoil they may be experiencing.

Equine therapy is most popularly used to provide children with a form of physical therapy. Hippotherapy combines speech language, physical therapy, and occupational therapy together with the use of a horse and is guided by a trained therapeutic riding instructor. Hippotherapy is best described by Granados and Agis (2011):

It is referred to as a “passive” type of riding, in which the horse moves the rider. The gait of a horse has been shown to closely resemble that of human walking, so the rider can go through the physical motions of walking without placing any weight on their legs. (p. 192)

Hippotherapy has been used with a wide range of disabilities including autism, cerebral palsy, developmental delays, Down syndrome, muscular dystrophy, and several more. Benefits from the use of hippotherapy range from improved muscular symmetry to increased balance and muscle strength.

Florence Nightingale was one of the first to use animals in the medical field. Nightingale (1898) wrote a book titled *Notes on Nursing* where she wrote about small animals helping to heal the sick. Nightingale stated,

A small pet animal is often an excellent companion for the sick, for long chronic cases especially. A pet bird in a cage is sometimes the only pleasure of an invalid

confined for years to the same room. If he can feed and clean the animal himself, he ought always to be encouraged to do so. (p. 147)

One of the more recent areas that AAT is now being incorporated into is the school setting. AAT is being utilized with students who have disabilities, with students who have behavioral concerns, and with students who are having academic difficulties to determine if animal therapy makes a difference in either academics or behavior. These different forms of AAT are important in understanding which animal therapies match the needs of individuals in order to find interventions that are appropriate.

Past Research Studies on Canine Therapy

Before canines were used in schools, they were utilized in counseling sessions with children. Children's response to canines being included in therapy sessions provide a picture of the influence they can have on a child. Canine therapy began to be included in counseling sessions with Boris Levinson, and now more counselors are incorporating canines.

As mentioned previously, Boris Levinson was the first person to utilize dogs in therapy sessions. In a study done by Silva, Correia, Lima, Magalhaes, and de Sousa (2011), the effect of a canine being introduced to a therapy session of a boy with autism was analyzed. During this child's therapy sessions, there was an increase in engagement in therapy seen with the use of a canine. There were also lower levels of negative behavior seen with the use of a therapy dog. While this is just a study of one child, it shows the difference a therapy dog made in one child's therapy. It also demonstrates the effect that the canine had on decreasing a child's negative behaviors such as scratching and biting, which are behaviors that could be exhibited by students who participated in this study.

A second study focused on using canines in play therapy sessions for children with autism. This study found that using dogs in therapy sessions, even as few as 14 sessions, significantly increased the speech of children between the ages of 7 and 10 years old (Fung & Leung, 2014). This study demonstrated that having a dog involved in a therapy session provides a special and pleasant experience and can have an impact on the comfort level of children in therapy sessions. According to this article, a dog acts as a “social icebreaker” and helps to elicit speech from children.

In a literature review that was done by Mariani and McCullough (2012), the effects of therapy dogs with childhood cancer patients and their families were examined. This article discussed how in many families, the pets take center stage in a family’s life and offers companionship and joy on a daily basis. It also stated,

Many research studies have provided promising evidence that involving animals in therapeutic interventions provides benefits for many populations, such as exercise or opportunities for positive play; relaxation and reduced anxiety; unconditional support and acceptance; improved skills that lead to healthy relationships with others; enhanced social interactions; increased learning, growth, and development; and improved senses of self-esteem and confidence. For critically or terminally ill populations, such as children with cancer and their families, therapy animals also have the potential of normalizing the hospital experience, motivating active participation in the healing process, offering helpful distraction from pain or worry, decreasing blood pressure and heart. (Mariani & McCullough, 2012, p. 3)

According to Chandler (2012), there are several productive ways therapy dogs effect counseling sessions:

1) Clients may be more motivated to attend and participate in therapy because of a desire to spend time with the therapy pet, 2) Clients' focus may be temporarily shifted away from disabling pain because of the interaction with the therapy pet to the extent that they can work harder and longer in therapy and potentially gain more benefit per session, 3) Clients may receive healing nurturance and affection through physical contact with the therapy pet, 4) Clients may experience soothing comfort from petting or holding the therapy pet, 5) Clients may experience genuine acceptance by the therapy pet, 6) Clients may experience enjoyment and entertainment from interactions with the therapy pet, 7) Clients may be able to form a more trusting relationship with therapists who demonstrate they can be trusted by the way they interact with the therapy animal, 8) In many instances, based on the unique characteristics of clients' conditions or needs, they may be able to perform activities and achieve goals that would not otherwise be possible without the assistance of a therapy pet. (p. 4)

This means that clients may have their stress reduced overall with a therapy pet and have more success in therapy sessions. If pets can be calming in therapy, the same may hold true for dogs used in other settings, including educational settings.

The studies above show how canines have impacted children in therapy sessions. Children had less negative behaviors, showed trust with a canine, and were comforted by the presence of a canine. These same behaviors could be exhibited in a school setting, and a canine being brought in has the potential of impacting those negative behaviors.

Reluctance of Schools to Embrace Canine Therapy

Many schools are not open to using animals in their school system out of fear of

students having allergic reactions or incurring injuries due to the animals biting or frightening students, the fear of lawsuits, providing a place for the animal to untether during the day, and the cost of canines. Most school districts currently have policies in place that would have to be rewritten for canine therapy programs to be implemented.

A recent case of a therapy dog being refused at school in Massachusetts for a 7-year-old student who had a seizure disorder, demonstrates a school's reluctance to utilize canine therapy. The child had a therapy dog at home that was able to detect chemical changes that would trigger a seizure. According to the article by Szathmary (2014), the dog was trained; but the school was reluctant to allow the dog, stating that their district had the following law: "A public entity is not responsible for the care or supervision of a service animal" (p. 2). There have been two court cases related to therapy dogs in the school. The first case *C.C. vs. Cypress School District* (Ensminger, 2011) occurred in 2011 and involved a child with severe autism. This child utilized a service dog for comfort at home to help with his anxiety and fears while at school. According to Ensminger (2011), the school district claimed that having a dog for comfort did not meet the need for service dog requirements and also believed that having a dog in the classroom would "fundamentally alter the nature of the school's program" (p. 1). The cost of the service dog was also a concern to the district in this case. This case showed some of the concerns with having a dog in the school that included the school needing to train aides on the commands for the dog, holding the dog's leash to navigate campus, providing the dog with water, and being able to tether and untether the dog during the day. However, if a school establishes expectations of how dogs should be treated, reviews the rules of how to interact with the dog with students, and how to handle students with allergies to the dog in their school from the beginning, similar to the school

being utilized in this study, the presence of a therapy dog will be less concerning. Also, the nonprofit and canine handlers provide the care for the dogs in this case, so cost and care of the dog is not a concern of the school. The second court case, *A.S. vs. Catawba County* (Ensminger, 2011), occurred in 2009 and involved a 4-year-old boy who had a disability due to fetal alcohol syndrome and utilized the service dog for a form of deep pressure therapy. The school board questioned whether this animal was a service animal. The board felt that all components of IDEA and access had not been attempted before utilizing the service animal (Ensminger, 2011).

While all these examples are related to service dogs specifically, they show why districts may be hesitant to allow canine therapy programs at the school. They may view canines as disruptive, adding risks to the school such as safety, increasing litigation concerns, and as requiring too much care. However, quality canine therapy programs take responsibility for these aspects and ensure that canines get in-depth training to ensure the safety of children.

Effects of Canine Therapy on Academics

In order to understand the impact canine therapy has on academics, the following studies have analyzed the impact of canine therapy on reading achievement. One study analyzed the specific impact with one student, and the other two studies studied the impact of canine therapy with a small group of students. These studies provide a picture of what current research shows in relation to the impact of canine therapy on academics.

Zack was a student who was asked to be a part of an 8-week study that looked at the effectiveness of the BaRK (Building Reading Confidence for Kids) reading program. Zack was 9 years old at the time he participated in the study. During the sessions, he would read aloud to the dog and the dog handler. To measure Zack's growth throughout

the 8 weeks, he was given a pre and posttest that looked at his reading rate, accuracy, and comprehension. After the 8 weeks, there was a significant gain seen in Zack's reading accuracy and an even bigger gain seen with his comprehension. Since this study included only one student, it is hard to determine if the results would be consistent with other students. The study made the following statement on why it was so effective:

Maybe a canine assisted literacy program could provide a learning experience as part of this 'reconfiguration of curriculum' that endeavors to re-engage the disengaged learner. This research has demonstrated that the BaRK program provided the impetus and motivation to re-engage one disengaged and disaffected reader. (Fisher & Cozens, 2014, p. 8)

Paradise (2007) studied the use of therapy dogs to increase student performance and motivation. For this study, reading comprehension performance was analyzed to see if students who worked with reading therapy dogs showed improvements in their ability to comprehend. This study showed that those students who were registered to reading therapy dogs achieved more growth in their reading skills than the students who were just working with a certified teacher one-on-one. In the first area studied, the researcher required students to identify, describe, and explain the book they read. The results from this showed a statistically significant difference between the first objective 1 ($M=47.67$, $s=30.10$) and the last objective 1 ($M=83.67$, $s=33.52$) scores ($F_{1,110}=13.38$, $p<.001$). Also in this study, there was a statistically significant difference between the control group and the experimental group ($F_{4,110}=3.03$, $p<.05$), with the experimental group showing higher scores. In this study, Paradise also gave a questionnaire to the teachers and found that 13.4% of students had increased in their confidence/self-esteem, 34.3% of students had a more positive attitude toward reading, 22.4% of students were excited

about reading to the dog, 7.5% students showed an increase in motivation, and 1.5% of students showed an increase in test scores. Paradise stated the following on what may be the reason students with reading therapy dogs showing more academic growth:

It was likely that the registered therapy dogs produced this low-risk environment for the students who were assigned to them. The children who were assigned to registered therapy dogs were in an environment where they did not have to worry about failure or embarrassment; therefore, these students were able to demonstrate higher levels of achievement and outperformed their peers who had one on one instruction with a certified teacher but were not assigned to registered therapy dogs. The students who were not assigned to registered therapy dogs did not have the advantage of the low-risk environment provided by the dog. (p. 139)

The question left unanswered by this study is whether or not the dogs are making the difference in students' academic growth or if the environment is responsible for the effect on student growth. Studies that have occurred in school settings are better indicators of whether therapy dogs have an impact on academic achievement versus the environment where the intervention is occurring.

Treat (2013) examined the effects of therapy dogs on reading fluency, accuracy, and comprehension by using Gray Oral Reading Test, Fourth Edition (GORT-4) and The Basic Reading Inventory to measure student reading skills. Students also had a preanxiety scale that they completed. This study occurred in a school setting, so the researcher was able to rule out the factor of the environment having an effect on the study. In this study, student rates of reading went from 5.44 to 7.22, accuracy went from 5.66 to 9.0, fluency changed from 5.0 to 7.88, comprehension changed from 7.44 to 9.33 and their oral reading quotient moved from 77.5 to 91.66. On the Basic Reading

Inventory, Treat utilized a control group and a treatment group. Both groups made gains in reading fluency, accuracy, and comprehension; but the intervention group made greater gains than the control group in all skill areas. The treatment group also showed decreases in all areas of the anxiety scales (how are you feeling?–4.9 decrease; how do you feel about reading?–4.1 decrease; and how do you feel about reading out loud?–4.5 decrease).

The studies by Treat (2013) and Paradise (2007) both show that therapy dogs can cause significant gains in reading achievement. There are limited studies that show how canine therapy can impact the academics of students. In the studies that were completed, reading therapy dogs were brought into schools and reading improvement was analyzed. These studies all show that gains were seen through the use of canine therapy.

Effects of Canine Therapy on Behavior and the Subsequent Effects on Academics

With previous studies showing the impact of canine therapy on academics, studies on the behavior of students in canine therapy programs also provide valid information. The studies below by Schuck, Emmerson, Fine, and Lakes (2013) and Wicker (2005) provide information on therapy dogs in relation to behavior. The studies below also illustrate correlations between academics and behavior.

In a study by Schuck et al. (2013), the effects canine therapy has in relation to on-task behavior were evaluated. Attention deficit hyperactivity disorder (ADHD) is one of the main causes for students' distractibility and off-task behaviors in the classroom. In this study by Schuck et al., the researchers examined an alternative approach of using therapy dogs with two groups of students with ADHD. The first group worked with actual therapy dogs in their sessions, and the second group worked with toy dogs in their sessions. During the sessions, students worked on social skills. Parents also underwent

training during the 12 weeks their children were receiving the intervention. Both treatment groups, the one with real dogs and the one with toy dogs, showed improvements in their social skills, prosocial behaviors, and competing problematic behaviors according to parents. The group that used the actual therapy dogs overall saw a greater reduction in the severity of ADHD symptoms than the group that used toy dogs in their therapy sessions. Schuck et al. stated the reason they thought students in the group with the real dog showed a greater reduction than the group that had the toy dog was,

Thus, the primary difference between treatment models is likely the heightened demands that a live animal places on a child's attention. If a child's attention wanders when interacting with a dog puppet, the puppet does not engage in behaviors that draw the child back into engagement. In contrast, a live dog might prompt a child to maintain attention or refocus on the dog and task at hand. These interactions with a live animal, therefore, could become an opportunity to train attention, where the animal serves as a prompt to refocus attention on the therapeutic activity. (p. 134)

This study demonstrated that live dogs do have an effect on decreasing a student's ADHD behaviors. Even though this study was not done in a school setting, it shows the impact that could occur if therapy dogs were brought into a school to work with students who have attention disorders.

A study completed by Wicker (2005) looked at how effective therapy dogs were when used in alternative school settings. For this study, she examined whether the following of directions, acceptance of feedback from staff, and respectful and caring responses toward others improved when therapy dogs were brought into the school to work with students. The dog therapy sessions in this study differed from the ones above

because the focus was not on academic instruction. In this study, students were training the dogs to become more dependable and disciplined canine companions. Social skills and nurturance were also incorporated into the lessons. This intervention occurred over a 10-week period. This study showed no significant statistical gains for improvement in student at-risk behaviors. However, there was positive growth seen in the area of social skill interactions with peers and adults. Wicker felt the small size of the group could have had an effect on the results. However, this study is still valid in showing that interventions do not always work with every student. It truly is a student-by-student decision when considering educational interventions, because each child has individual learning styles and needs interventions to fit those learning styles.

A study completed by Bassette and Taber-Doughty (2013) utilized the BOSS assessment to analyze the impact that canine therapy dogs had on three students who were identified as having emotional behavioral disorders. These three students had individualized education plans and attended a class that was designed for students with emotional and behavioral disorders. The Bassette and Taber-Doughty study analyzed the canine therapy program for 4 weeks to determine the impact of the intervention. The results of the study showed the students involved in the study showed moderate to significant improvements in off-task behavior while participating in the canine reading therapy program. Some of the behaviors that were seen in relation to student interaction with the canines during therapy follow:

Student 1 would quickly find a book to read, sit down next to the dog, and begin petting/talking to the dog. She would often continue to pet the dog while she read her book and showed the dog the illustrations. After the reading activities were completed she enjoyed petting the dog and taking the dog for a walk in the school

hallway. Furthermore, Student 1's relationship with the dogs expanded beyond the required interactions during the study. For example, during one session she brought in baby pictures of herself to show the dog Brutti and also drew a picture to give to him. During another session, once she completed her required reading and prior to the next student reading, she requested to read a personal book to the dog. At the beginning of the study, the teacher indicated Student 1 tended to read fast and missed information as a result. It appeared that providing the dog as a reading companion provided her with the ability to focus individually on making sure the dog heard each word she read prompting her to slow down and become more aware of what she was reading. Similar to Student 1, Student 3 appeared to develop a close bond with the dogs and would frequently talk to the dogs at the beginning of the study before beginning to read his book. After completing his AR quiz, he enjoyed petting the dog and liked giving basic commands for the dog to complete (e.g., shake). Student 3's on-task behavior was more stable during intervention and he also read at a higher volume and spoke more clearly than he did during baseline. He noted he enjoyed having the dogs come to visit him in the classroom and liked reading to the dogs even though the books were challenging. Student 3 indicated he enjoyed spending time with the dogs and liked taking the dogs for walks in the hallway after the reading activities. During the last session, Student 3 asked if he could read an extra book to the dog. This indicates that he was motivated to continue reading to the dog, which is of particular notice since his teacher reported he was frequently reluctant to read. Student 2 differed from the other students as he would not usually talk to the dog prior to reading his book and would typically only pat the dog at the end of the reading activities and

usually declined any further interactions with the dog. When asked about his experience, Student 2 noted that he was proud of himself for reading challenging books throughout the study and he enjoyed reading to the different dogs. He indicated he would have preferred to not have the human audience, which included the handler and researcher. (Bassette & Taber-Doughty, 2013, pp. 252-253)

This study utilized BOSS that was used in this study to measure student off-task behavior. This study was also a good example of the impact canine therapy had on three students.

The research on therapy dogs and the effects on academics is currently limited to reading achievement. The effects of therapy dogs related to overall academic achievement and not just reading is a field that has yet to be given in-depth study. The research on the effects of therapy dogs related to behavior is also limited. The groups in these studies also tend to be smaller groups of students, making it harder to determine if therapy dogs are effective on a larger scale. However, the data in all of these studies are good indicators that therapy dogs could be highly effective if they were used on a regular basis in the educational setting. An alternative school setting may not be as effective for utilizing dogs to decrease behaviors based on the study above. However, with limited research it is hard to determine if dog therapy is truly ineffective with more extreme behaviors. Ten weeks is a short time to implement an intervention and look at the effectiveness of the intervention. It could be that if the canine therapy intervention was put in place for longer periods of time, it could have a greater impact on both educational achievement and behavior of students.

When looking at different factors which can impact student achievement,

behavior is one of the factors that should be considered. In the studies above regarding the effects of canine therapy on behavior, academics were not considered. If canine therapy can help decrease undesired behavioral issues, it is possible that academics of those same students could improve.

Executive function is the term used to describe school skills that are necessary for school success. These skills can include paying attention, problem solving, and controlling behavior. Deficits in executive functioning can cause students to bully other students or lead to more antisocial behaviors. One study examining executive functioning and its relation to academic achievement found no meaningful relationship between the two. The researcher thought several factors, including the rating scale for executive function, could have had an impact on the results of this study (Sadeh, Burns, & Sullivan, 2012).

In a second study on the impact of executive functioning, there was a relationship between early academic achievement and self-regulation. Many of the other components that are considered to be a part of executive functioning did not seem to have any relationship to self-regulation (Blair & Raxxa, 2007). Self-regulation is often used to refer to a child's capacity to control impulses or to start or stop doing a task when asked. Self-regulation is an issue often seen in students with Attention Deficit Disorder. So, if self-regulation has an impact on academic achievement, there is a good possibility that ADHD could have an impact on the academic achievement of students with ADHD.

In a longitudinal study that occurred in Sweden, the impact of ADHD on students' academic achievement over time was studied. This study examined the students' academic achievement from sixth grade through eleventh grade. They found in Grades 6-11 that ADHD had a negative impact on academic achievement. However, when

students were in eleventh grade, the ADHD symptoms seemed to positively add to the students' academic achievement. They believed that this was due to students having positive expectations for their future, which had a positive effect on their academic achievement (Scholtens, Rydell, & Yang-Wallentin, 2013).

Data are varied on whether behavior has a direct impact on academic achievement. However, some links have been found in relation to self-regulation and ADHD. Students who have difficulty with self-regulation and ADHD typically have more difficulty academically. According to the Centers for Disease Control and Prevention, there are approximately 5.9 million children between the ages of 3 and 17 who are diagnosed with ADHD (Office of Information Services, 2014). This is only the number of diagnosed cases and does not include children who may go undiagnosed. With that in mind, interventions need to be put in place to help students build self-regulation and also decrease ADHD symptoms in children.

The studies above show that canine therapy has had some impact on behaviors, and this study analyzed if there are any changes to the behavior of students who participated in the reading therapy sessions. While studies on ADHD were included, the students who participated in this study may not have a diagnosis of ADHD. Students could exhibit behaviors similar to ADHD but not have a diagnosis and could demonstrate a need for canine therapy. The Pearson BOSS was utilized in this study to observe off-task behaviors that are frequently seen in the classroom.

Canine Therapy's Effect on Motivation and the Link to Academics

The following studies make connections to motivation and the impact they have on achievement and children with mental illnesses. If a student lacks motivation, it has the tendency to impact self-regulated learning. The study by Dimitrijević (2009) showed

the impact an animal, like a canine therapy dog, can have on motivation of children.

An article by Dimitrijević (2009) discussed how animal therapy has impacted children suffering from mental illness. He stated that “Animal-assisted therapy in a natural environment brings about the encounter between a patient and an animal, which elevates the motivation and strength of the individual” (p. 236). This article also discusses that having an animal present also increases a child’s desire to join a group and participate in social activities.

Canine therapy is believed by Dimitrijević (2009) to increase the motivation of students who may have had less motivation previously in school. This raises the question of whether motivation has an impact on the academic success of students. According to an article by Mega, Ronconi, and De Beni (2014),

students’ implicit theories of intelligence, self-efficacy, and approach achievement goals play an essential role in their motivation. These different components of motivation are closely linked to self-regulated learning and facilitate and influence various self-regulatory strategies. Therefore, they promote and sustain academic achievement. (p. 123).

While this study did not analyze canine therapy’s impact on motivation, in a previous study by Paradise (2007), she saw an increase in student’s self-esteem, which is a component of self-efficacy.

While there is limited research on canine therapy, this study analyzed how motivation changes in relation to the therapy sessions. If a child’s motivation increases, it has the potential of impacting their self-efficacy and can also impact their self-regulated learning. The studies above, while limited, show that canine therapy has the potential to increase motivation.

Achievement Gaps

The discussion of closing achievement gaps occurs frequently in schools today. A major concern is that if the achievement gaps are not decreased, students will just continue to fall further and further behind academically. The widening achievement gap can then lead to students dropping out of high school sooner or dealing with a lack of motivation. Alternative interventions, such as canine therapy, that could be effective in closing the achievement gap need to be considered to have a further impact on the graduation rate and achievement.

Pollock, Black, and Ford (2012) stated, “The persistent presence of underachieving students, students who graduate from high school ill-prepared for college and the workplace, and students who do not graduate at all confirms that we must continue to find new solutions” (p. 3). This statement proves how important it is that solutions are found to address the issues that are affecting future adults. One way of doing that is through finding more innovative ways to educate children. It is also important to address this issue of the achievement gap as early as possible so the gap can be closed.

Individualizing education to close achievement gaps is highly important. There is not a one-size-fits-all approach in education that will work. If everyone is taught the same and provided the same interventions, achievement gaps will not narrow. Hess (2011) discussed the need for differentiated instruction:

The implication is that, from the very beginning, disadvantaged and advantaged children have different educational needs and stand to benefit from different kinds of instruction. The kinds of teaching and support that can help disadvantaged students acquire the skills and knowledge that they did not receive at home are

often superfluous or inappropriate for more advantaged children. In this way, gap-closing can transform from a strategy that lifts up the least proficient students into one that slows up the most proficient. (p. 3)

According to this article, if the classroom tries to use the same approach for all students, the higher learners suffer and have a decline in the scores and only minimal growth is seen with the lower learner students. There has to be differentiation in order to close achievement gaps successfully. According to Tomlinson (2000), differentiation means tailoring instruction to meet individual needs” (p. 1). Differentiation can include changing the process, product, or the learning environment. Canine therapy is a form of differentiating instruction that changes both the environment and the process of the delivery of reading instruction. The students are outside of their classroom receiving one-on-one support to increase their reading skills. The students each have a dog handler and a dog to work with. The dog handlers previously have received minimal training on reading instruction. This one-on-one, individualized intervention could potentially help close the achievement gap.

In an article written by Mostert and Glaswell (2012), it was discussed that increasing fluency helped to close reading achievement gaps. When they completed a study in 2011, it was found that student achievement, motivation, and engagement increased in reading when fluency practices were put in place. Both Treat (2013) and Paradise (2007) found that students experienced increases in their reading when canine therapy was utilized with the students.

The National Education Association (NEA, 2014) has created a list of strategies that can be used to help close the achievement gap. The following strategies that were included as research-based strategies to close the achievement gap that are related to

components of canine therapy are supporting students via mentors, tutoring, peer support networks, and role models; use varied, effective strategies to instruct diverse learners; use research and data to improve instruction; and target literacy instruction. In the first strategy of supporting students, it is very possible that the canine could be seen as a student support. Even though the canine is not a direct support that speaks to the student, the canine can provide the student with a safe, nonjudgmental relationship. The dog handlers that accompany the canine may also be able to provide that same relationship to students. The other strategies of using varied, effective strategies and using research and data to improve instruction also relate to canine because there are data to support the belief that canine therapy can be an effective strategy in instructing students.

Research shows the types of strategies that need to be implemented in order to help close the achievement gaps that are being seen in education today. Canine therapy is a creative way to address some of the strategies that need to be put into place for closing those gaps. It is a form of differentiated instruction that focuses on fluency and comprehension within the therapy sessions with the potential of increasing student engagement, achievement, and motivation.

Summary

In reviewing the literature on AAT, it was found that the current literature available is very limited. When narrowing the search to looking at how canine therapy affects students in an educational setting, the research is even more limited, dated to 2007 and beyond. The current research that is available shows that canine therapy has positive effects on education and also in the medical field. However, at times the research showed that no major statistical gains were seen and that provides a conflicting view on how much of an impact canine therapy can have on education. This study will add more

research on canine therapy to the educational field that will show if there is any impact on achievement, behavior, or motivation of students. According to the research above, behavior and motivation have the potential of impacting achievement, so these aspects are important to analyze in determining the effectiveness of canine therapy.

Chapter 3: Methodology

Introduction

The purpose of this study was to determine if canine therapy was effective in increasing reading achievement, increasing motivation of students while participating in therapy, and decreasing off-task behaviors of students with learning difficulties. With limited research on canine therapy and schools being reluctant to embrace it as an intervention, more research is needed in the educational field. The research questions in the study were developed from a desire to add to the literature by determining if canine therapy does impact reading achievement, behavior, and motivation. Below, each of the following areas is explained in more detail: research questions, research method, participants, research procedure, and method of analysis.

Research Questions

1. What is the impact of canine therapy on reading scores of students with learning difficulties?
2. What is the impact of canine therapy on the behavior of students with learning difficulties?
3. What is the impact of canine therapy on the motivation of students with learning difficulties?

Research Method

For the purpose of this study, a convergent parallel mixed-methods approach was utilized. Creswell (2014) described this approach as a researcher collecting both quantitative and qualitative data. The researcher then analyzes the data separately and compares the results to see if the findings confirm or disconfirm each other. It is believed the two types of data can provide different types of information. The quantitative data in

this study consisted of academic assessments for the reading skills of the participants in this study. There was also an observation completed that is related to off-task behavior of students in the classroom. To measure the motivation of students participating in therapy, CSAWPBS was utilized. The qualitative component of this study was in the form of a questionnaire that was completed by parents on what they see with their child at home before and after canine therapy. Both sets of data were analyzed separate of each other initially and followed by an analysis to determine if there was a positive correlation seen in the use of animal therapy in both academics and on-task behavior.

Participants

Participation in this study was voluntary. Parents were asked to grant permission for their child to be a participant in the study and also for their own participation in an interview. The county where this study occurred currently has an application process in place for securing permission to conduct research. The researcher followed this process in order to gain district approval. As a final step in this process, the principal was contacted to give final permission. The principal granted the permission and sent an email to the researcher giving permission to move forward with this study.

This study occurred at an elementary school in a North Carolina county, located in an urban area that has approximately 500 students enrolled in the school and 46 teachers. The school has a 51.8% free and reduced lunch population. The school has 11.3% of their students who are Limited English Proficient, and 14.9% of the student population is identified as being in the Exceptional Children's Program. The canine therapy at this elementary school occurred in the school library. The B.A.R.K.S. program has been in place for 10 years. This school has an open library that is located in the center of the school. In order for anyone to move throughout the school, they have to

pass through the library. Many times, the teachers and other students in the school will stop by for a visit with the dogs. The program is now embedded as a part of the school. At the beginning of every school year, the school reviews the expectations with everyone (staff and students)—that when therapy sessions are occurring, no one is to disturb the students or the dogs. They also review expectations for how the dogs should be treated.

The dogs were brought into the school once a week for the students to read to through the B.A.R.K.S. program. The school chose the B.A.R.K.S. program because they have a training program in place for the dogs that will ensure the student's safety. This is a nonprofit organization, so there are no fees associated with participation in the program. Prior to the visits, the teachers of the students generated a list of topics they wanted the students to work on in the therapy sessions. The books utilized by the students came from the classroom. The dog trainer asked students comprehension questions after the students were comfortable about what they had read, based on the student fluency and number of errors as they read the text. The students involved in this program were in first and fourth grades, and their participation in the program was dependent upon the school's schedule in relation to the availability of when a canine team was able to come to the school to visit. The schedule was set in October 2015. The data for this portion of the study were collected over 12 sessions of therapy.

The school had nine slots for reading therapy canines. A control group was selected to approximate similar characteristics possessed by the experimental group who were involved in canine therapy. The participants were varied in race, gender, and socioeconomic background, along with the learning difficulties they exhibit. This allowed for diversity to occur within the study.

The students who participated in the therapy have some form of learning

difficulty in the classroom setting. These difficulties can range from a student performing below grade level in reading to a student having issues with motivation and self-esteem that is impacting their performance in the classroom. These students were chosen for the program after beginning-of-the-year assessments were given. The school started the program in November. For this study, there was a control group that had similar demographics as the group receiving canine therapy. This control group did not interact with the canines in any way. The control group was preselected by the B.A.R.K.S. program as part of their data collection process, because they also collect data to analyze the success of their program. The participation selection form was utilized to gather information on the diversity of the students participating in the study. This form can be found in Appendix A. It was also utilized to ensure that a fair ratio of students from different backgrounds would be a part of this study.

Research Procedure

The participants for this study were chosen based on the location of the therapy where the program is currently established. The participants were chosen to give variation in gender, race, age, and disability that are reflective of school demographics. The first step was to gain consent from all parties involved in the process. This included the school system in which the students are enrolled, the teachers of the students who gathered data and had classrooms where observations occurred, and the parents of the students.

In order to accurately assess academic level of students prior to therapy sessions beginning, a reliable assessment was utilized. Every year in North Carolina, reading is tracked through the use of the DIBELS assessments. These scores were obtained prior to the canine therapy sessions beginning for both the control group and the experimental

group. Students were chosen to participate in the study by teachers based on low-performance scores on DIBELS and behaviors that are exhibited in the classroom. At the end of 12 sessions, the students were administered DIBELS again, and the scores from pretest to posttest were analyzed.

In order to accurately assess whether behavior has improved through the use of animal therapy, a combination of responses to a questionnaire and observations were used. The parent questionnaire can be found in Appendix B. These questions were asked of the parents of each of the students participating in therapy, and the responses were compared and analyzed for common themes that occurred across the responses of students in both the control group and the experimental group. The Pearson BOSS was used to analyze the behavior of students in the school setting. The researcher observed the control group and experimental group behaviors prior to the therapy beginning and after 12 sessions of canine therapy. In order to assess student motivation throughout the therapy, CSAWPBS was utilized. This instrument can be found in Appendix C. This scale was given to the students at the beginning of the therapy session and also at the end of the 12-week period. This survey asked questions to the students in relation to the therapy dog and utilized a scale having the students rate their feelings from 1 to 5. This rating scale measures a participant's feelings of attachment, reciprocity, and unconditional acceptance after receiving a visit from a dog in the context of canine therapy. Permission was gained from the writers of CSAWPBS. This permission from the writers can be found in Appendix D.

Method of Analysis

A mixed-methods design was used for this study. Both quantitative and qualitative data were used to look at the effects of canine therapy on reading

achievement, math achievement, motivational levels of students, and behavior. The quantitative component of this study was gained by collecting pre and posttest scores on DIBELS assessments, CSAWPBS, and BOSS in October and again in February. The qualitative data component was based on the results of a follow-up questionnaire with parents who utilized open-ended questions that occurred in February.

The University of Oregon completed a study where they looked at the reliability and validity of DIBELS. They found,

The DIBELS offers educators brief, valid, reliable and repeated measures to assess student's early literacy skills. Knowing how a child performs on the DIBELS measures in kindergarten and first grade strongly predicts their end of first and second grade reading outcomes. Educators can use the DIBELS to identify children, as early as kindergarten, who are at-risk for reading difficulties. Perhaps even more important, DIBELS can provide educators with information to target interventions to core components or early literacy and provide students with support necessary to put them on track for becoming successful readers. (Good et al., 2004, p. 38)

The reliability and validity of the Pearson BOSS, based on the interobserver agreement of the BOSS, is high. According to Volpe, DiPerna, Hintze, and Shapiro (2005), BOSS did have discriminant validity (p. 461). According to an abstract that was written for the IZAZ conference in 2014, when a study was completed on the effectiveness of CSAWPBS, CSAWPBS results showed positive patient perception throughout the program with no significant differences between the four time points. This assessment was studied in correlation with another assessment used for canine therapy, and convergent validity was indicated (Calvo, Bowen, Bulbena, & Fatjo, 2014).

The quantitative data gained for this study were collected prior to the treatment starting and at the end of the treatment sessions. Data were collected for both a control group and the group receiving canine therapy. A teacher or an outside scorer scored all quantitative assessments. The mean and range of these academic scores were analyzed and compared to determine the effectiveness of animal therapy.

This study utilized a dependent t test on all pre and posttest scores on DIBELS, BOSS, and CSAWPBS. This t test allowed for an analysis to occur on whether the scores were higher from the beginning to the end of treatment. Since this study utilized a control group and an experimental group, the t test occurred for both groups on both DIBELS and BOSS. The t test on CSAWPBS could only be completed with the experimental group because this scale is designed for students who are involved in canine therapy.

An analysis of covariance (ANCOVA) was utilized in this study. The ANCOVA allowed for a comparison to occur across the control group and experimental group and took out all possible discrepancies that occurred. According to Huck (2012), “the analysis of covariance allows researchers to make inferential statements about main and interaction effects” (p. 345). The use of an ANCOVA for this study allowed for a determination to be made on whether canine therapy had an impact on reading, math, motivation, and behavior of students who were in the experimental group by analyzing the difference in scores between the control group and the experimental group. Within this study, the treatment that was provided was the independent variable. The pretest scores are the covariates, and the posttest scores are the dependent variables.

The qualitative data that were gained from parent interviews were analyzed for

themes. The themes that were found allowed the researcher to make assumptions on parent perceptions of the impact of canine therapy on their child.

Table 1 shows the alignment of research questions with the tools that were utilized to collect data and the method of analysis.

Table 1

Research Questions, Tools, and Data Analysis

Research Question	Measurement Tool	Method of Analysis	Groups Involved
What is the impact of canine therapy on reading scores of students with learning difficulties?	DIBELS	<i>t</i> test and ANCOVA	Control and Experimental
What is the impact of canine therapy on the behavior of students with learning difficulties?	The Pearson Boss Parent Questionnaire	<i>t</i> test and ANCOVA Qualitative—analyzing themes	Control and Experimental Experimental
What is the impact of canine therapy on the motivation of students with learning difficulties?	CSAWPBS	<i>t</i> test	Experimental

Presentation of Results

The results that were found utilizing *t* tests and ANCOVA were presented through the use of tables. Each area that was analyzed (reading, behavior, and motivation) had a table to show the results that were found. The control group and the experimental group were each represented on the charts. Student names were not presented, and numbers

were assigned to the students to keep their names confidential. The qualitative information was presented in a table that showed the themes that were seen across the responses.

Conclusion

This study utilized multiple forms of assessments to analyze whether canine therapy had an impact on reading achievement, behavior, and motivation of students. The utilization of a mixed-methods approach in this study allowed a more valid study to occur. While this study only occurred in one school, the multiple forms of data utilized provided a picture of the effects canine therapy has across multiple facets of education. This study provided additional research to the educational field where canine therapy research is currently limited. Any positive impacts found within this study have the potential of making schools more open to the idea of utilizing canine therapy as an intervention. Chapter 3 provided an overview of the study including the instruments used and the type of data analysis that was utilized in the study. Chapter 4 presents the results of the study.

Chapter 4: Results

Introduction

The purpose of this study was to determine whether canine therapy was effective in increasing reading achievement, increasing motivation of students, and decreasing off-task behavior of students with learning difficulties. The following research questions were answered through this study.

1. What is the impact of canine therapy on reading scores of students with learning difficulties?
2. What is the impact of canine therapy on the behavior of students with learning difficulties?
3. What is the impact of canine therapy on the motivation of students with learning difficulties?

This chapter presents the findings to the research questions and the hypotheses.

Data for this study were collected through both qualitative and quantitative components. The qualitative component was in the form of a questionnaire to the parents of students who participated in canine therapy that gained answers from parents via phone calls or email. The quantitative data for this study came from the DIBELS assessment, BOSS, and CSAWPBS. The DIBELS assessment provided the scores related to student achievement. BOSS provided the scores related to students' off-task behavior in the classroom, and CSAWPBS provided the scores related to student motivation in relation to participation in canine therapy.

Population Selection and Demographic Characteristics

The elementary school chose nine students to participate in the canine therapy program. Parent invitations were sent out to the rest of the students in the general

education classrooms to gain permission for their participation as a control group. The parent consent form that was utilized can be found in Appendix E. When the invitations were returned, the researcher chose nine students for the control group similar in characteristics to the experimental group. This choice was made based on conversations that occurred with the teachers of the students in order to best determine students who were similar in reading skills and off-task behavior.

For this study, there were 18 participants in total. Nine students were part of the experimental group who participated in the canine therapy. The other nine students were considered the control group and received no canine therapy. During the course of the study, two of the students in the control group moved. The researcher was able to gain all final data for one of the students who moved but was not able to gain the behavioral data for the second student who moved. There were six students in first grade who participated in the therapy and three students in fourth grade. The same numbers for the grade level of students remained when selecting the control group.

A total of 12 therapy sessions occurred during this study. The nine students were divided into two groups for dog visitations. The first group had canine therapy on a weekly basis in 30-minute sessions. The second group had canine therapy every other week for 30 minutes but for an overall total of 12 sessions, with both the canine and experimental groups having nine participants for a total of 18 participants. This differentiation in the groups occurring was due to the availability of the canine handlers at the school. There were three different canine handlers and three different canines that were utilized in the canine therapy sessions. The handler who began with the students was also the same handler who was working with the students at the end of the 12 sessions. Table 2 shows the students and the number of canine therapy sessions they had.

The canine therapy sessions occurred in the library in a corner away from other distractions that were occurring within the library. During the sessions, the handler would sit slightly separate from the canine and the student. The canine would lay on a large dog pillow and the student would sit or lay beside the canine and read to the canine. The canines were calm and stayed still during the reading unless the handler indicated that the canine needed to react to a misread word or if the students were earning paw prints from the canine for reading books. These paw prints are made by the canine in a book that the students get at the very end of canine therapy. The handler sat close enough to provide cues to the canine but far enough away that it was not distracting to the student.

Table 2

Experimental Group's Therapy Sessions

Student ID Number	Number of Canine Therapy Sessions
1	12
2	12
3	12
4	10
5	12
6	12
7	12
8	12
9	12

Research Question 1

What is the impact of canine therapy on reading scores of students with learning difficulties?

Quantitative data for Research Question 1. Prior to the beginning of canine

therapy, data were collected from the school on the DIBELS scores for the students in both the control and the experimental groups. The scores were collected again at the end of 12 sessions of canine therapy. The scores were broken down by the various assessments within DIBELS. The kindergarten group of students had scores reported for correct letter sounds and whole word reading; and the fourth-grade group of students had scores reported for words per minute, accuracy, and comprehension.

There were three students in the control group and three students in the experimental group who had scores that were utilized in the DIBELS Words per Minute Read assessment. A dependent *t* test was run on the pretest and the posttest data to ensure that differences were accounted for between the control and the experimental groups. The control group score (M=85.33, SD=55.10) was higher than the experimental group score (M=67.00, SD=23.52). When the posttest was given, the same number of students remained in the groups, three experimental students and three control students. The control group score (M=129.67, SD=23.46) was higher than the experimental group score (M=92.00, SD=28.79). On the pretest for Words per Minute Read assessment, there was homogeneity of variances for the control and experimental groups as assessed by Levine's test for equality of variances ($p=.207$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups. On the posttest for Words per Minute Read assessment, homogeneity of variances for the control and experimental groups was found again, as assessed by Levine's test for equality of variances ($p=.607$).

An ANCOVA was utilized to determine if students' words per minute was impacted after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. The table that shows this analysis

follows.

Table 3

Test of Between-Subjects Effect of Words per Minute

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3734.076 (adjusted r squared)	2	1867.038	4.859	.115	.764
Intercept	5740.930	1	5740.930	14.941	.031	.833
Words Read per Minute Read	1605.909	1	1605.909	4.179	.133	.582
Experimental/Control	1178.347	1	11778.347	3.067	.178	.505
Error	1152.757	3	384.252			
Total	78591.000	6				
Corrected Total	4886.833	5				

Note. R Squared=.764 (Adjusted R Squared=.607).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group, $F(1)=3.067$, $p=.133$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. Therefore, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Words per Minute Read when compared to the growth of the control group.

The same six students' scores were gained for the DIBELS Words per Minute Accuracy assessment. A dependent t test was run on the pretest and the posttest data to

ensure that differences were accounted for between the control and the experimental groups. The experimental group score ($M=92.67$, $SD=2.31$) was higher than the control group score ($M=88.33$, $SD=17.62$). When the posttest was given, the same number of students remained in the groups, three experimental students and three control students. The control group score ($M=96.67$, $SD=2.08$) was higher than the experimental group score ($M=92.67$, $SD=0.58$). On the pretest for Words per Minute Accuracy assessment, the assumption of homogeneity of variances was violated, as assessed by Levine's test for equality of variances ($p=.026$). When the pretest scores were analyzed using the t test for equality of means, there was not a statistical difference in the mean experimental scores for the control group and the experimental group, $t(2.069)=.422$, $p=.713$. On the posttest for Words per Minute Accuracy assessment, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.089$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups.

An ANCOVA was utilized to determine if students' words reading accuracy was impacted after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 4 shows this analysis.

Table 4

Test of Between-Subjects Effect of Accuracy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	28.791 (adjusted r squared)	2	14.396	9.509	.050	.864
Intercept	573.169	1	573.169	378.589	.000	.992
Accuracy	4.791	1	4.791	3.165	.173	.513
Experimental/Control	27.516	1	27.516	18.175	.024	.858
Error	4.542	3	1.514			
Total	53804.000	6				
Corrected Total	33.333	5				

Note. R Squared=.864 (Adjusted R Squared=.773).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=3.165$, $p=.173$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. Therefore, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Accuracy when compared to the growth of the control group.

The same three students in the control group and the three students in the experimental group had their scores collected for the DIBELS comprehension assessment. A dependent t test was run on the pretest and the posttest data to ensure that

differences were accounted for between the control and the experimental groups. The control group score (M=25.33, SD=2.52) was higher than the experimental group score (M=22.33, SD=8.33). When the posttest was given, the same number of students remained in the groups, three experimental students and three control students. The control group score (M=42.33, SD=5.68) was higher than the experimental group score (M=27.67, SD=14.36). On the pretest for the comprehension assessment, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.098$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups. On the posttest for the comprehension assessment, homogeneity of variances for the control and experimental groups was found again, as assessed by Levine's test for equality of variances ($p=.119$).

An ANCOVA was utilized to determine if students' ability to re-tell was impacted after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 5 shows this analysis.

Table 5

Test of Between-Subjects Effect of Re-tell

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	322.726*	2	161.363	1.014	.461	.403
Intercept	320.981	1	320.981	2.018	.251	.402
Re-tell	.059	1	.059	.000	.986	.000
Experimental/Control	298.647	1	298.647	1.877	.264	.385
Error	477.274	3	159.091			
Total	8150.000	6				
Corrected Total	800.000	5				

Note. R Squared=.403 (Adjusted R Squared=.006).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=1.877$, $p=.264$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. So, the quantitative data indicate that canine therapy did not cause a larger amount of growth in re-tell when compared to the growth of the control group.

There were six students in the control group and six students in the experimental group who had scores that were utilized in the DIBELS Correct Letter Sounds assessment. A dependent t test was run on the pretest and the posttest data to ensure that differences were accounted for between the control and the experimental groups. The control group score ($M=29.00$, $SD=10.08$) was higher than the experimental group score ($M=28.83$, $SD=12.50$). When the posttest was given, the same number of students remained in the groups, six experimental students and six control students. The experimental group score ($M=58.83$, $SD=30.71$) was higher than the control group score ($M=56.00$, $SD=16.28$). On the pretest for Correct Letter Sounds assessment, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.498$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups. On the posttest for Correct Letter Sounds assessment, the assumption of homogeneity of variances was violated, as assessed by Levine's test for equality of variances ($p=.020$). Homogeneity of variance violation occurs when there is unequal variance between the two groups. The violation that occurred was corrected by analyzing the t statistic. When the posttest scores were analyzed using the t test for equality of means, there was not a statistical difference in the mean experimental scores for the

control group and the experimental group, $t(7.606) = .200$, $p = .847$.

An ANCOVA was utilized to determine if students' ability to identify correct letter sounds was impacted after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 6 shows this analysis.

Table 6

Test of Between-Subjects Effect of Correct Letter Sound

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	39.913*	2	19.956	0.30	.971	.007
Intercept	4014.309	1	4014.309	5.996	.037	.400
CLS	15.829	1	15.829	.024	.881	.003
Experimental/Control	24.397	1	24.397	.036	.853	.004
Error	6025.004	9	669.445			
Total	45625.000	12				
Corrected Total	6064.917	11				

Note. R Squared=.007 (Adjusted R Squared=-.214).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1) = .036$, $p = .853$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. So, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Correct Letter Sounds when compared to the growth of the control group.

The same 12 students' scores were utilized in the DIBELS Whole Word Read assessment. A dependent t test was run on the pretest and the posttest data to ensure that

differences were accounted for between the control and the experimental groups. The experimental group score ($M=3.17$, $SD=5.46$) was higher than the control group score ($M=1.83$, $SD=2.32$). When the posttest was given, the same number of students remained in the groups, six experimental students and six control students. The control group score ($M=17.17$, $SD=6.37$) was higher than the experimental group score ($M=15.17$, $SD=14.20$). On the pretest for Whole Word Read assessment, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.283$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups. On the posttest for Whole Word Read assessment, the assumption of homogeneity of variances was violated, as assessed by Levine's test for equality of variances ($p=.005$). Homogeneity of variance violation occurred due to the unequal variance between the two groups. The violation that occurred was corrected by analyzing the t statistic. When the posttest scores were analyzed using the t test for equality of means, there was not a statistical difference in the mean experimental scores for the control group and the experimental group, $t(6.932)=-.315$, $p=.762$.

An ANCOVA was utilized to determine if students' ability to read whole words was impacted after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 7 shows this analysis.

Table 7

Test of Between-Subjects Effect of Whole Word Read

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	157.731*	2	78.865	.666	.537	.129
Intercept	2860.688	1	2860.688	24.154	.001	.729
WWR	145.731	1	145.731	1.230	.296	.120
Experimental/Control	1.797	1	1.797	.905	.024	.002
Error	1065.936	9	1.514			
Total	4360.000	12				
Corrected Total	1223.667	11				

Note. R Squared=.129 (Adjusted R Squared=-.065).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=.015$, $p=.905$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. So, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Whole Words Read when compared to the growth of the control group.

Qualitative data for Research Question 1. A qualitative component was gathered as a component of this study. Parents were sent a questionnaire to provide responses. Six of the nine questionnaires were returned for the students who participated in the canine therapy. On the questionnaire, there was one question that was related to child's academic skills. Parents were asked to describe any changes they saw in relation to their child's academic skills since students had begun participating in canine therapy. All but one of the responses provided positive responses to their child academics. The

one questionnaire that did not have a positive response stated no, indicating that the parent did not observe any changes in her child's academic skills. One of the parents stated that she believed her child is reading more fluently not only to herself but also out loud. A second parent also noted that her child was reading more fluently. One parent stated that her daughter's reading had improved and her classroom teacher had been bragging about her improvements with other teachers and the principal. Two of the parents noted that there was overall progress in academics and did not cite a specific area. One of the parents did state that while her child was progressing, the child was still below grade level.

While the quantitative data did not indicate that there was a statistically significant difference between the control and experimental group, the qualitative component of this study showed overall positive feedback from the parents of the students. Parents noted that they were seeing increases in their child's reading fluency and in other academic areas.

Research Question 2

What is the impact of canine therapy on the behavior of students with learning difficulties?

Quantitative data for Research Question 2. Prior to the canine therapy beginning, the researcher collected data on off-task behavior of students in the control and experimental groups utilizing the Pearson's BOSS. Data were collected for the control and experimental groups after the completion of 12 sessions of canine therapy. The students were observed over three sessions 20 minutes long prior to canine therapy and again after 12 sessions of canine therapy were completed to gain a percentage for off-task behavior. The three components of off-task behavior that were observed included

off-task verbally, off-task passively, and off-task motor.

There were nine students' scores that were utilized in the preassessment for the experimental group and eight students' scores that were utilized in the control group. One student's scores could not be accessed due to the student moving. A dependent *t* test was run on the pretest and posttest data to ensure that differences were accounted for between the control and the experimental groups. When the postassessment data were collected, there were nine students' scores utilized in the experimental group and eight students' scores utilized in the control group. When observed for the percentage of time that students were off-task with motor behaviors, the control groups' score ($M=10.19$, $SD=9.22$) was higher than the experimental groups' score ($M=6.24$, $SD=7.49$). When the postassessment data were gathered, the control groups' score ($M=15.00$, $SD=18.02$) was higher than the experimental groups' score ($M=5.12$, $SD=4.61$). On the preassessment for the percentage of time the students were off-task with motor behaviors, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.818$). The homogeneity of variance indicates that the control and experimental groups had the same or similar differences between the groups. On the postassessment for off-task with motor behaviors, the assumption of homogeneity of variances was violated, as assessed by Levine's test for equality of variances ($p=.049$). Homogeneity of variance violation occurs when there is unequal variance between the two groups. The violation that occurred was corrected by analyzing the *t* statistic. When the posttest scores were analyzed using the *t* test for equality of means, there was not a statistical difference in the mean experimental scores for the control group and the experimental group, $t(7.816)=-1.508$, $p=.171$.

An ANCOVA was utilized to determine if students' off-task motor behavior

decreased after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 8 shows this analysis.

Table 8

Test of Between-Subjects Effect of Off-Task Motor

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	496.583*	2	248.291	1.474	.263	.174
Intercept	520.758	1	520.758	3.091	.101	.181
BOTP	83.192	1	83.192	.494	.494	.034
Experimental/Control	313.384	1	313.384	1.860	.194	.117
Error	2358.986	14	168.499			
Total	4476.900	17				
Corrected Total	2855.569	16				

Note. R Squared=.174 (Adjusted R Squared=.056).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=1.860$, $p=.194$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. Therefore, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Off-Task Motor Behavior when compared to the growth of the control group.

This same group of students had scores collected for off-task passive behaviors. One student's scores could not be accessed due to the student moving. A dependent t test was run on the pretest and the posttest data to ensure that differences were accounted for between the control and the experimental groups. When the postassessment data were collected, there were nine students' scores utilized in the experimental group and eight

students' scores utilized in the control group. When observed for the percentage of time that students were off-task with passive behaviors, the control groups' score ($M=22.94$, $SD=8.13$) was higher than the experimental groups' score ($M=19.42$, $SD=7.06$). When the postassessment data were gathered, the control groups' score ($M=28.07$, $SD=9.96$) was higher than the experimental groups' score ($M=26.85$, $SD=8.45$). On the preassessment for the percentage of time the students were off-task with passive behaviors, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.813$). The homogeneity of variance indicates that the control and experimental groups had the same or similar differences between the groups. On the postassessment for the percentage of time the students were off-task with passive behaviors, homogeneity of variances for the control and experimental groups occurred again, as assessed by Levine's test for equality of variances ($p=.830$).

An ANCOVA was utilized to determine if students' off-task passive behavior decreased after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 9 shows this analysis.

Table 9

Test of Between-Subjects Effect of Off-Task Passive

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.587*	2	3.793	.042	.959	.006
Intercept	1480.962	1	1480.962	16.413	.001	.540
BOTVi	1.290	1	1.290	.014	.907	.001
Experimental/Control	7.265	1	7.265	.081	.781	.006
Error	1263.234	14	90.231			
Total	14060.058	17				
Corrected Total	1270.821	16				

Note. R Squared=.006 (Adjusted R Squared=-.136).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=.081$, $p=.781$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. Therefore, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Off-Task Passive Behavior when compared to the growth of the control group.

Both the control and experimental groups contained nine students. The preassessment had 18 students' scores. The postassessment contained 17 students' scores. One student's scores in the control group could not be accessed due to the student moving. A dependent t test was run on the pretest and the posttest data to ensure that differences were accounted for between the control and experimental groups. When the postassessment data were collected, there were nine students' scores utilized in the experimental group and eight students' scores utilized in the control group. When

observed for the percentage of time that students were off-task verbally, the control groups' score (M=7.63, SD=4.88) was higher than the experimental groups' score (M=4.78, SD=3.47). When the postassessment data were gathered, the control groups' score (M=8.38, SD=4.74) was higher than the experimental groups' score (M=7.05, SD=6.44). On the preassessment for the percentage of time the students were off-task verbally, there was homogeneity of variances for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.572$). The homogeneity of variance indicates that the control and the experimental groups had the same or similar differences between the groups. On the postassessment for the percentage of time the students were off verbally, homogeneity of variances occurred again for the control and experimental groups, as assessed by Levine's test for equality of variances ($p=.819$).

An ANCOVA was utilized to determine if students' off-task verbal behavior decreased after 12 sessions of canine therapy. The experimental and the control groups' growth were compared from beginning to end. Table 10 shows this analysis.

Table 10

Test of Between-Subjects Effect of Off-Task Verbally

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.907*	2	3.954	.113	.894	.016
Intercept	329.310	1	329.310	9.447	.008	.403
BOTVE	.375	1	.375	.011	.919	.001
Experimental/Control	7.873	1	7.873	.226	.642	.016
Error	488.046	14	34.860			
Total	1497.733	17				
Corrected Total	495.953	16				

Note. R Squared=.016 (Adjusted R Squared=-.125).

There was no statistically significant difference seen in the growth of the experimental group when compared with the control group after 12 sessions of canine therapy, $F(1)=.226$, $p=.642$. This means that the null hypothesis was supported in this study and that the groups' differences were comparable from the pretest to the posttest in relation to growth. Therefore, the quantitative data indicate that canine therapy did not cause a larger amount of growth in Off-Task Verbal Behavior when compared to the growth of the control group.

Qualitative data for Research Question 2. There were two questions that were given on the parent questionnaire that provided qualitative feedback for the impact on behavior as a result of the canine therapy. Nine parent questionnaires were sent and six were returned to the school. The two questions that related to the impact of behavior were (1) Please describe any changes towards your child's attitude about school work, and (2) Please describe any changes towards your child's attitude towards completing homework since the child has been participating in canine therapy sessions. Five of the six parents who responded provided positive feedback in relation to these two questions. One of the parents responded no, indicating no changes were seen in the attitude of their child in relation to schoolwork and completing homework. One of the parents indicated that previously her daughter did not like doing homework, but since beginning canine therapy she was more excited about knowing and understanding her homework. This same parent indicated that her daughter had a display of greater confidence since beginning canine therapy. One parent noted seeing improvement in her child's ability to read when doing school work and that her child is more confident in completing homework without help and her ability to read and re-tell the story easier. One parent noted that her child was much more excited about learning to read and she has shown

interest in reading to others. This same parent also noted that her child now does her homework and is eager to show her parent how much she knows. Another parent noted improvements in reading and attention with homework at home. A second parent indicated there were improvements in reading and her child is always excited to tell her about the dog visits.

The quantitative data in relation to off-task behavior in school did not show statistically significant differences when the data were compared between the control and experimental groups. The qualitative data indicated that parents overall saw improvements in their child's willingness to read and complete homework at home. Parents also noted seeing their children become more independent with their homework at home. This indicates that there have been positive behavior differences seen at home since students began participating in canine therapy.

Research Question 3

What is the impact of canine therapy on the motivation of students with learning difficulties?

Quantitative data for Research Question 3. During the first week of canine therapy, the researcher had the canine therapy teams give the CAEPBS to students who were participating in the therapy. The control group was not given this scale because it was specific to canine therapy. Students responded to 27 perception statements intended to measure their feelings related to various aspects of canine therapy. There were nine total participants who responded to every question except for two questions where only eight participants responded. The two statements that only received eight responses were 11 (The dog knows when I am happy), and 14 (The dog tries to comfort me). In order to determine the percentages, the number of responses for each section was averaged.

These percentages were collected both at the beginning of the canine therapy sessions and again after 12 sessions of canine therapy sessions had occurred.

Table 11

Percent of Responses on the CSAWPBS Prior to Canine Therapy

	More often true percent	Sometimes true percent	Neutral percent	Sometimes not true percent	More often not true percent
Dog visitor likes me	88.9%	11.1%	0%	0%	0%
I talk to dog visitor	66.7%	33.3%	0%	0%	0%
I confide in dog visitor	55.6%	33.3%	11.1%	0%	0%
Dog understands me	66.7%	11.1%	22.2%	0%	0%
Dog knows when I feel bad	33.3%	33.3%	22.2%	11.1%	0%
Dog is glad to see me	88.9%	11.1%	0%	0%	0%
Dog prefers me	33.3%	66.7%	0%	0%	0%
Dog is my friend	88.9%	11.1%	0%	0%	0%
I look forward to getting up when I see dog	88.9%	11.1%	0%	0%	0%
I tell others about dog	44.4%	33.3%	22.2%	0%	0%
Dog knows when I am happy	37.5%	50%	12.5%	0%	0%
I would like dog to come to my home	88.9%	11.1%	0%	0%	0%
I will remember dog after program	77.8%	22.2%	0%	0%	0%
Dog tries to comfort me	66.7%	22.2%	0%	11.1%	0%
Dog makes me feel better	62.5%	37.5%	0%	0%	0%
Dog visits are boring	22.2%	22.2%	0%	0%	55.6%
I feel attached to dog	55.6%	33.3%	11.1%	0%	0%
Dog visits give me energy	44.4%	44.4%	11.1%	0%	0%
I miss dog between visits	77.8%	0%	0%	22.2%	0%
Dog doesn't judge me	66.7%	0%	33.3%	0%	0%
I look forward to dog visits	66.7%	33.3%	0%	0%	0%
Dog visits make me happy	88.9%	0%	11.1%	0%	0%
Dog accepts me the way I am	77.8%	22.2%	0%	0%	0%
I make the dog feel better	88.9%	11.1%	0%	0%	0%
I make the dog feel happy	77.8%	22.2%	0%	0%	0%
Dog takes my mind off troubles	55.6%	33.3%	0%	11.1%	0%
Dog makes me feel secure	88.9%	11.1%	0%	0%	0%

The students had high ratings in the most often true section, with most of the perception statements having over a 50% rating. The perception statement the dog knows when I feel bad rated at 33.3% rating under the most often true section. When looking further at this perception statement, there was a little more scatter across all of the fields (sometimes true was 33.3%, 22.2% neutral, 11.1% felt this perception statement was

sometimes not true). The perception statement telling others about the dog was 44.4%. Within the rest of the rating scale, no students stated not true in relation to this perception statement. The dog knows when I am happy rated a percentage of 37.5%. Within the rest of the rating scale for this perception statement, there were no percentages in the not true sections. Dog visits are boring rated a percentage of 22.2%. For this perception statement, the optimal rating would be in the not true section; 44.4% of students rated this perception statement in the true section, and 55.6% of students felt this perception statement was more often not true. Dog visits give me energy gained a percentage of 44.4%. Within the rest of the rating scale for this perception statement, 0% occurred in the not true section.

After 12 sessions of canine therapy occurred, the same survey was given to the students to gain posttest responses. The posttest responses were provided by one less student who dropped out the last week of the study due to canine induced allergies. The responses to the survey are located on Table 12 below.

Table 12

Percent of Posttest Responses on the CSAWPBS Prior to Canine Therapy

	More often true percent	Sometimes true percent	Neutral percent	Sometimes not true percent	More often not true percent
Dog visitor likes me	100%	0%	0%	0%	0%
I talk to dog visitor	87.5%	12.5%	0%	0%	0%
I confide in dog visitor	25%	25%	25%	0%	25%
Dog understands me	62.5%	12.5%	12.5%	0%	12.5%
Dog knows when I feel bad	62.5%	12.5%	12.5%	0%	12.5%
Dog is glad to see me	100%	0%	0%	0%	0%
Dog prefers me	75%	12.5%	0%	0%	12.5%
Dog is my friend	100%	0%	0%	0%	0%
I look forward to getting up when I see dog	87.5%	12.5%	0%	0%	0%
I tell others about dog	50%	12.5%	25%	0%	12.5%
Dog knows when I am happy	75%	0%	12.5%	12.5%	0%
I would like dog to come to my home	87.5%	0%	0%	0%	12.5%
I will remember dog after program	100%	0%	0%	0%	0%
Dog tries to comfort me	62.5%	12.5%	12.5%	0%	12.5%
Dog makes me feel better	87.5%	0%	0%	0%	12.5%
Dog visits are boring	0%	0%	0%	0%	100%
I feel attached to dog	87.5%	12.5%	0%	0%	0%
Dog visits give me energy	100%	0%	0%	0%	0%
I miss dog between visits	87.5%	12.5%	0%	0%	0%
Dog doesn't judge me	100%	0%	0%	0%	0%
I look forward to dog visits	87.5%	0%	12.5%	0%	0%
Dog visits make me happy	87.5%	12.5%	0%	0%	0%
Dog accepts me the way I am	87.5%	0%	0%	12.5%	0%
I make the dog feel better	100%	0%	0%	0%	0%
I make the dog feel happy	87.5%	0%	12.5%	0%	0%
Dog takes my mind off troubles	87.5%	0%	0%	0%	12.5%
Dog makes me feel secure	100%	0%	0%	0%	0%

Overall, there were increases in the more often true sections of the survey for the responses. The dog visitor likes me, the dog is glad to see me, the dog is my friend, I will remember the dog after the program, the dog visits give me energy, the dog doesn't judge me, I make the dog feel better, and the dog makes me feel secure all received 100% of students responding that this is more often true. The other response that showed a 100% increase in the more often false section was the dog visits are boring. These responses increased from when the survey was initially given to students in the fall. Some of the

perception statements that were varied in the responses from statements were I confide in the dog visitor, the dog understands me, the dog knows when I feel bad, the dog prefers me, I tell others about the dog, the dog knows when I am happy, and the dog tries to comfort me. Table 13 shows the comparison of pre and post responses on all of the statements.

Table 13

Combined Pre/Post Table for Comparison

	More often true percent		Sometimes true percent		Neutral percent		Sometimes not true percent		More often not true percent	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Dog visitor likes me	88.9	100	11.1	0	0	0	0	0	0	0
I talk to dog visitor	66.7	87.5	33.3	12.5	0	0	0	0	0	0
I confide in dog visitor	55.6	25	33.3	25	11.1	25	0	0	0	25
Dog understands me	66.7	62.5	11.1	12.5	22.2	12.5	0	0	0	12.5
Dog knows when I feel bad	33.3	62.5	33.3	12.5	22.2	12.5	11.1	0	0	12.5
Dog is glad to see me	88.9	100	11.1	0	0	0	0	0	0	0
Dog prefers me	33.3	75	66.7	12.5	0	0	0	0	0	12.5
Dog is my friend	88.9	100	11.1	0	0	0	0	0	0	0
I look forward to getting up when I see dog	88.9	87.5	11.1	12.5	0	0	0	0	0	0
I tell others about dog	44.4	50	33.3	12.5	22.2	25	0	0	0	12.5
Dog knows when I am happy	37.5	75	50	0	12.5	12.5	0	12.5	0	0
I would like dog to come to my home	88.9	87.5	11.1	0	0	0	0	0	0	12.5
I will remember dog after program	77.8	100	22.2	0	0	0	0	0	0	0
Dog tries to comfort me	66.7	62.5	22.2	12.5	0	12.5	11.1	0	0	12.5
Dog makes me feel better	62.5	87.5	37.5	0	0	0	0	0	0	12.5
Dog visits are boring	22.2	0	22.2	0	0	0	0	0	55.6	100
I feel attached to dog	55.6	87.5	33.3	12.5	11.1	0	0	0	0	0
Dog visits give me energy	44.4	100	44.4	0	11.1	0	0	0	0	0
I miss dog between visits	77.8	87.5	0	12.5	0	0	22.2	0	0	0
Dog doesn't judge me	66.7	100	0	0	33.3	0	0	0	0	0
I look forward to dog visits	66.7	87.5	33.3	0	0	12.5	0	0	0	0
Dog visits make me happy	88.9	87.5	0	12.5	11.1	0	0	0	0	0
Dog accepts me the way I am	77.8	87.5	22.2	0	0	0	0	12.5	0	0
I make the dog feel better	88.9	100	11.1	0	0	0	0	0	0	0
I make the dog feel happy	77.8	87.5	22.2	0	0	12.5	0	0	0	0
Dog takes my mind off troubles	55.6	87.5	33.3	0	0	0	11.1	0	0	12.5
Dog makes me feel secure	88.9	100	11.1	0	0	0	0	0	0	0

Qualitative data for Research Question 3. The parents of children participating

in canine therapy were sent a questionnaire. Six of the nine questionnaires were returned. One of the questions on the questionnaire asked parents to describe changes to their child's self-esteem since the student began participating in the canine therapy sessions. All six of the parents provided positive responses to this question. One parent noted that the student had always had positive self-esteem and that had not changed. One parent noted that the child was happier than normal. One parent noted that her child was no longer shy about speaking up and answering questions and also seemed more confident. A second parent also noted seeing their child as having more confidence. One parent noted that her child liked to read aloud more since starting program.

One last question on the questionnaire asked about any other significant observations that were noted by parents. The responses to this question also seemed to be related to motivation. One of the parents responded that her child was more open. Two parents noted that their students loved the dog and had positive things to say about the dog. One parent noted seeing her daughters' interest in reading increase.

Both the quantitative data and the qualitative data from this component of the study indicated that students' motivation increased while participating in canine therapy. CSAWPBS indicated student motivation to participate in the canine therapy increased overall, and the qualitative data indicated that overall students had an increase in self-esteem and an increased interest in reading. Three of the parent surveys also specifically stated their child's positive view of the dog and their child's enjoyment about reading to the dog.

Summary

This study sought to determine if canine therapy had an impact on reading achievement, off-task behavior, and motivation of students. A mixed-methods approach

was utilized to answer the research questions in this study. The quantitative components of this study indicated that there was not a statistically significant difference noted between the control and experimental groups for the academic and behavioral assessments that were given as part of this study. This study indicated that the null hypothesis was supported for reading achievement and off-task behavior of students. Overall, the students rated canine therapy in a positive manner on the rating scale that was utilized to measure student's motivation while in canine therapy both prior to the canine therapy sessions beginning in the fall and after the 12 sessions of therapy occurred. Overall, there was an increase in the positive responses on the rating scale after the 12 sessions of therapy occurred. This indicated that students did show an increase in motivation to participate in canine therapy. The qualitative data gathered for this study overall indicated that parents noted positive changes to their child's reading improvement, behavior, and motivation.

Chapter 5: Discussion

Introduction

The purpose of this study was to determine if reading achievement, off-task behavior, and motivation of students were impacted by canine therapy. The participants in this study included 12 first graders and six fourth graders and focused on analyzing the impact of canine therapy over a 12-week period utilizing a control and experimental group. This chapter includes an introduction which reviews the purpose of the study, the research questions and the findings related back to theories and current research, implications of the study, significance of findings, limitations, and future recommendations. This study was designed to provide evidence as to whether a canine therapy dog would increase reading achievement, decrease off-task behavior, and increase the motivation of students with learning difficulties. The researcher in this study hypothesized that increases would be seen in reading achievement, decreases would be seen in off-task behavior, and student motivation within the therapy sessions would increase. The effectiveness of canine therapy was evaluated utilizing DIBELS to measure reading achievement, BOSS to measure off-task behavior, CSAWPBS to measure student motivation in therapy sessions, and a parental questionnaire to obtain qualitative data regarding parental perspective of the effectiveness of canine therapy.

Research Questions, Findings, and Conclusions

The purpose of this study was to determine whether canine therapy was effective in increasing reading achievement, increasing motivation of students, and decreasing off-task behavior of students with learning difficulties. The quantitative data component of this study did not show that canine therapy was effective in increasing reading achievement and decreasing off-task behavior when growth was compared between a

control group and an experimental group from preassessments to postassessments.

This study examined the issue of school districts' reluctance to use canine therapy. The hope was to add to the current research so schools would feel more compelled to consider canine therapy. The lack of current and compelling research related to canine therapy was thought to be one of the reasons why schools are hesitant to implement a canine therapy program. The results of the research from this study did not resolve the problem. The research results did not find canine therapy to be an effective intervention in closing academic gaps and decreasing off-task behaviors. While this study did not support canine therapy as an effective intervention, it should be noted that the sample size utilized in this study was small, which likely had an impact on the findings.

This study was grounded in Albert Bandura's social cognitive theory. The assumptions of this theory are (1) personal, behavioral, and environmental factors influence one another in a reciprocal function; (2) people have an ability to influence their own behavior and environment in a purposeful, goal-directed fashion; and (3) learning can occur without an immediate change in behavior (Denier et al., 2014). This study was also based on the theory that children can relate to animals in a way that capitalizes on improving the child's achievement, behavior, and motivation (Chandler, 2012). These theoretical frameworks were not found to be true within the quantitative results of this study for achievement and behavior which could have been impacted by the sample size in the study and the brevity of the study. However, the theoretical framework was found to have an impact on the motivation of the students who participated in canine therapy, along with academics and behavior qualitative data. The positive impact on motivation and the positive impact on academics and behavior that

occurred relate to Albert Bandura's social cognitive theory that people have an ability to influence their own behavior and environment in a purposeful, goal-directed fashion. Motivation is a component that is controlled by an individual; and with students having an increased motivation, this impacted the academics and behavior that were observed by parents at home. These results also relate to the third component of the social cognitive theory which states learning can occur without an immediate change in behavior. The qualitative data suggest that changes have occurred in relation to academics and behavior at home. These same changes may take more time to be noticeable in quantitative data. The theory by Chandler (2012) was supported by the qualitative results and the results of the quantitative data gained from CSAWPBS. The students did show a positive impact on academics, behavior, and motivation. Chandler's research found that children relate to animals in a way that capitalizes on improving a child's achievement, behavior, and motivation. It was theorized for this study that the relationship that occurs between a canine and a child in a therapy session can give hope to a child, eliminate their fears associated with reading, allow a relationship of trust to build, and increase their self-esteem. The parents saw some of these changes at home, along with the pet bonding scale showing increased percentages in areas related to feeling an increased bond with the canine.

Research Question 1

What is the impact of canine therapy on reading scores of students with learning difficulties? The quantitative data for this study did not indicate that there was a statistically significant impact on the reading scores of students when the pre and postassessment scores were compared between the control and experimental groups of students. The qualitative data gathered in this study from the parent questionnaire

indicated that five of the nine parents saw improvements in their child's reading since the students began canine therapy. Three questionnaires were not returned, and it could not be determined if parents felt there was an impact on reading achievement for those three students.

Hypothesis 1

Reading scores will increase as measured by the DIBELS assessment.

Overall, there was an increase in scores seen from preassessment to postassessment on the DIBELS subtests. All students who participated in canine therapy had an increase in the percentages. However, when the growth was compared to the growth that the control group experienced from the preassessment to the postassessment, the data did not indicate that the canine therapy had any greater effect on the growth of students than the students who did not participate in canine therapy. The qualitative data gained from this study indicated five of the nine parents did notice improvement in their child's reading. While the quantitative data did not support this hypothesis, the qualitative data were supportive that reading improved as a result of the canine therapy. Paradise (2007) completed a study and stated that

The children who were assigned to registered therapy dogs were in an environment where they did not have to worry about failure or embarrassment; therefore, these students were able to demonstrate higher levels of achievement and outperformed their peers who had one on one instruction with a certified teacher but were not assigned to registered therapy dogs. (p. 139)

This finding in one study could explain the reasons parents are seeing improvements in their children at home.

Research Question 2

What is the impact of canine therapy on the behavior of students with learning difficulties? The quantitative data for this study did not indicate that there was a statistically significant impact on the off-task behavior of students when the pre and postassessment scores of the experimental and control groups were analyzed. The qualitative data gathered related to behavior did not specifically look at on-task behavior. The questionnaire just asked the parent to make general observations toward his or her child's attitude toward school work and homework. Five of the parents noticed positive improvements in the attitude of their child. One parent did not note any changes in behavior, and three of the questionnaires were not returned. Overall, there were positive behavioral changes according to parents, with some parents indicating his/her child being more eager to complete homework at home. These positive changes could have an impact on executive functioning of these students with more time participating in canine therapy. One of the components of executive functioning that impacts early academic achievement was self-regulation as noted in a study by Blair and Raxxa (2007). The parents' responses on the questionnaire noted improvements in attitude and more eagerness to complete work related to self-regulation. Over time, this increase in self-regulation could allow for students to be more successful academically, supporting the research by Scholtens et al. (2013) that found students having positive expectations for their future had a positive effect on students' academic achievement.

Hypothesis 2

Students' on-task behavior in the classroom will increase as measured by the Pearson BOSS. The majority of students in both the control and experimental groups had an increase in the off-task behavior that was observed. There were certain categories

within the off-task behavior that showed decreases; however, overall the percentage of off-task passive behavior showed increases. These data indicated that canine therapy sessions did not have an impact on students being on task in the classroom more often. The qualitative data did not note any specific responses to on-task behavior, other than parents' stating that their child was more willing to complete homework at home. The quantitative and qualitative data for this study did not support the hypothesis of student's on-task behavior increasing in the classroom. However, there were positive improvements seen in behavior outside of on-task behavior as indicated by the qualitative data that were collected. Schuck et al. (2013) studied the impact of therapy dogs on behavior that supports the findings of the qualitative data from this study. In this study, they found a live dog might prompt a child to maintain attention or refocus on the dog and task at hand. These interactions with a live animal, therefore, could become an opportunity to train attention, where the animal serves as a prompt to refocus attention on the therapeutic activity (Schuck et al., 2013, p. 134). The parents' responses that were gained from the parent questionnaire supported that parents saw their students being more motivated to complete work. The canine allowed the children to refocus on reading a text and, thus, that had an impact on their ability to focus on tasks at home with parents.

Research Question 3

What is the impact of canine therapy on the motivation of students with learning difficulties? When students began the canine therapy sessions, they rated the majority of the statements on the CSAWPBS above 50% in the mostly true section. This showed that overall the students were motivated to participate and interact with the canine. This same scale was given to students after 12 sessions of canine therapy and the scale reflected that overall there was an increase in several perception statements in the

most often true section. This indicated that overall there was an increase in student motivation to participate in canine therapy sessions after 12 sessions of therapy. The quantitative data that were collected from six of the nine parents indicated positive responses with relation to student self-esteem. Three of the parent questionnaires indicated that the parent's child was excited about reading to the dog. Therefore, the quantitative data overall indicated there was a positive impact on motivation of the children who participated in canine therapy.

Hypothesis 3

Student motivation will increase which will have an impact on reading achievement as measured by CSAWPBS. The quantitative data collected during this study supported the hypothesis that student motivation would increase. Overall, there was an increase in the positive responses that were provided on the scale. However, there was not a significant impact from canine therapy on reading achievement; so this component of the hypothesis was not supported with the quantitative data that were obtained. The qualitative data obtained as a component of this study supported the hypothesis that motivation increased. The responses to the questionnaire also indicated that parents observed impacts on his/her child's reading achievement since beginning canine therapy. The hypothesis that motivation would increase was supported by the qualitative data that were gathered as a component of this study. Dimitrijević (2009) discussed how animal therapy impacted children suffering from mental illness. Dimitrijevec stated that "Animal-assisted therapy in a natural environment brings about the encounter between a patient and an animal, which elevates the motivation and strength of the individual" (p. 236). The results of this study in relation supported Dimitrijević's statement, since there were elevations in motivation found with the results

gathered on CSAWPBS and from the qualitative questions on the parent questionnaire.

Significance and Implications Based on the Findings

This study is significant because it adds to the limited research that is in the field and because it provides school systems with more research on the impact that canine therapy has in relation to academics, behavior, and motivation. In order for canine therapy to grow in acceptance as an intervention, information on the impact of canine therapy was needed. This study added to that research and provided information on where canine therapy has made an impact on student learning, behavior, and motivation.

This study showed that there was not a statistically significant impact when canine therapy was utilized over a period of 12 sessions when quantitative data were analyzed in the areas of reading achievement and off-task behavior. However, the data that were collected in this study were heavily impacted by the sample size and the short timespan over which the study occurred. The students, based on CSAWPBS, were motivated to participate in the canine therapy sessions when this study began. The qualitative data gained from parents through the parent questionnaire indicated that the canine therapy had an impact on their child's academics, behavior, and motivation.

According to TDI (2015),

By sitting down next to a dog and reading to the dog, all threats of being judged are put aside. The child relaxes, pats the attentive dog, and focuses on the reading.

Reading improves because the child is practicing the skill of reading, building self-esteem, and associating reading with something pleasant. (p. 1)

While this study did not show a statistically significant impact when students participated in canine therapy, it does not mean that the students still did not benefit from the canine therapy. The qualitative data from this study showed that there were impacts seen at

home in relation to students' self-esteem increasing and motivation increasing. Students were not embarrassed with dogs and overall seemed to be excited and relaxed as they participated in the canine therapy sessions. TDI suggested that students are able to relax and focus on reading; and through this practice, self-esteem is built and reading becomes pleasant. While this study did not support academic growth or changes in behavior, student motivation while participating in canine therapy was elevated. They found the interactions with the canine pleasant. The enjoyable experience they were having, over time, could impact scores further in relation to both behavior and academics. This was seen in a study completed by Paradise (2007):

The children who were assigned to registered therapy dogs were in an environment where they did not have to worry about failure or embarrassment; therefore, these students were able to demonstrate higher levels of achievement and outperformed their peers who had one on one instruction with a certified teacher but were not assigned to registered therapy dogs. The students who were not assigned to registered therapy dogs did not have the advantage of the low-risk environment provided by the dog. (p. 139).

Court cases related to allowing therapy dogs in schools have shown schools' reluctance to embrace canine therapy. The case of *C.C. vs. Cypress School District* (Ensminger, 2011) that occurred in 2011 involved a child with severe autism. This child utilized a service dog for comfort at home to help with his anxiety and fears while at school. The school district was against the use of the service dog. The results from this study, in relation to motivation with the use of canine therapy, would help support that a canine can reduce anxiety and fears of students. This study could have an impact on future court cases that address these same concerns. Unfortunately, the academic and

behavioral quantitative data were not as impactful, and schools may remain reluctant to embrace canine therapy due to the results of this report. However, schools should keep in mind that the results of this study were impacted by the sample size and the brevity of the study. If school systems reviewed the qualitative data from this study, they would reveal that parents are seeing an impact on their child's reading, behavior, and motivation. Hopefully, school systems will not review the quantitative data as the sole support of whether to implement canine therapy programs in their school and, instead, will utilize all results of this study to make informed decisions.

This study added to the limited research that is currently in the educational field on canine therapy. Schools will have more information from this study to utilize when making a determination on embracing canine therapy as an intervention. However, other research should be considered because reports by Paradise (2007), Fisher and Cozens (2014), and Treat (2013) all show positive impacts that have occurred with the use of therapy dogs in schools.

Limitations of the Study

This study had several limitations that could have had an impact on the final results. These limitations included the sample size of the group, location, and the length of intervention.

One of the major limitations was the size of the group that participated in the study. For this study, there were a total of 18 participants. When trying to determine if there is a statistically significant impact, it is better to have larger groups of participants in a study. This study also only occurred in one location, which was a second limitation. Canine therapy is occurring in several areas across the state of North Carolina; and if the program were looked at across the state, the larger dataset may provide a better picture of

the effectiveness of canine therapy programs. A third limitation that had an impact on the results of this study was the length of the intervention. This study only lasted over 12 sessions of canine therapy. These 12 sessions were not consistent due to winter weather and holiday breaks. This could have had an impact on how effective the canine therapy was on achievement, behavior, and motivation. The fourth limitation that occurred in this study related to the availability of the canine handlers. One of the handlers was only available every other week, which could have impacted the results of the group. Even though data were collected after students received 12 sessions of therapy, this group did not receive the same consistency in treatment as the group that received weekly treatments.

Recommendations for Future Research

The results of this study allowed for several recommendations for future studies to occur. This study only lasted for 12 therapy sessions and within that span were two holiday breaks and winter weather occurred that impacted the weeks occurring concurrently. Eight of the nine students in the experimental group had 12 sessions of canine therapy. One of the nine students developed allergies to the canine and only received 10 sessions of canine therapy. It would be beneficial to study whether canine therapy has an impact on student achievement and behavior over a longer period of time that includes long-term impacts of canine therapy. Fung and Leunghad (2014) had a study that occurred over 14 sessions of canine therapy, which did not provide a picture of whether canine therapy had a long-term impact. Fisher and Cozens (2014) completed an 8-week study of canine therapy. Again, this is a study that did not look at long-term effects and was a short amount of sessions when looking at impact on instruction.

This study only analyzed the effects that canines have on academics, motivation,

and behavior. Further research could analyze if other animals have the same impact on students as the canines do. Some animal therapy programs utilize birds, cats, or rodents in place of canines. Chandler (2005) referred to Pet Partners using animals outside of canines, but there is limited research on whether these other animals have any impact on academics, behavior, and motivation.

This study contained a small study group. There were only nine participants in the canine therapy program. Further research would be beneficial to see if these same results are duplicated with a larger study group and over multiple school settings. It would also be beneficial to have a larger group so that the data could be analyzed further to determine if canine therapy has a larger impact on the different subgroups within the study (gender, race, and grade levels). Studies by Silva et al. (2011) and Fisher and Cozens (2014) focused on one student. The other studies that have been completed on the effectiveness of canine therapy also have small study groups, and no other studies that were found on canine therapy utilized a control and experimental group to allow for further analysis. This lack of research shows a need for further research with larger sample sizes.

Schools are reluctant to embrace canine therapy. Research that examines public school policies would be beneficial to look further into the policies that may not allow canines to be in the schools. This could include safety policies that schools have in place to protect students from allergic reactions and also to protect students from aggressive animals. Many school districts have policies that allow for service dogs, so further research on policies may allow for an understanding of the difference between canine dogs and service dogs and what policies need to be changed in order for canine therapy dogs to be allowed in schools.

Further studies on training that canine therapy dogs undergo would be beneficial. School systems and parents are not always aware of the extensive training programs in place. Each canine therapy program has different ways they train the canines, so having thorough research on what the training looks like and what preventative procedures they have in place would help ease some of the worries of school systems and parents when considering canine therapy.

References

- Anderson, D. (2007). Assessing the human-animal bond. A compendium of actual measures. Retrieved June 4, 2016, from https://habricentral.org/resources/48/download/Assessing_the_Human-Animal_Bond.pdf?token
- Baarda, B., & Edenburg, N. (1995). The role of pets in enhancing human well-being: Effects on child development. Retrieved July 21, 2015, from <http://www.petpartners.org /document.doc?id=25>
- Bassette, L. A., & Taber-Doughty, T. (2013). The effects of a dog reading visitation program on academic engagement behavior in three elementary students with emotional and behavioral disabilities: A single case design. *Child & Youth Care Forum*, 42(3), 239-256.
- Betker, K. (2013). Human+Animal interactions help healing begin at Sandy Hook. *Pet Partners Interactions Magazine*, 2-3. Retrieved July 22, 2015, from <http://www.petpartners.org/document.doc?id=1457>
- Blair, C., & Raxxa, R. (2007). Relating effortful control, executive function and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, 78(2), 647. Doi:10.2307/4139250
- Calvo, P., Bowen, J., Bulbena, A., & Fatjo, J. (2014). Analyzing two instruments to evaluate AAT: CSAWPBS (Center for the Study for Animal Wellness Pet Bonding Scale) and MOPI (Measurement of Pet Intervention) scales. Retrieved July 21, 2015, from <http://www.isaz.net/conferences/Abstractbook2014.pdf>
- Chandler, C. (2001). Animal-assisted therapy in counseling and school settings. ERIC/CASS Digest. Retrieved July 26, 2016, from <https://www.counseling.org/resources/library/ERIC%20Digests/2001-05.pdf>
- Chandler, C. (2005). Animal-assisted therapy in counseling. Retrieved July 21, 2015, from <http://books.google.com/books?id=qRs3sAlnOKcC&pg=PA10&lpg=PA10&dq=use+of+animals+with+the+army+air+corps+convalescent+hospital+in+new+york&source=bl&ots=dmEd6JwgCi&sig=K3EWWV1hPbUfcVkzMHF-iKDFtEk&hl=en&sa=X&ei=eprRUuSTJuegsAT464CADA&ved=0CDQQ6AEwAQ#v=onepage&q=use%20of%20animals%20with%20the%20army%20air%20corps%20convalescent%20hospital%20in%20new%20york&f=false>
- Chandler, C. (2012). Animal-assisted therapy in counseling (Second Edition). Retrieved July 25, 2016, from <https://books.google.com/books?hl=en&lr=&id=Ui-tAgAAQBAJ&oi=fnd&pg=PP1&dq=chandler+c+animal+assisted+therapy&ots=EAIWppatF&sig=YCIIWRYHxX9GqXU1S73uZfAm3Xw#v=onepage&q=chandler%20c%20animal%20assisted%20therapy&f=false>

- Christiensen, P. (2015). Therapy animal information. Retrieved July 20, 2015, from <http://www.therapydoginfo.net>
- Creswell, J. (2014). *Research design*. Thousand Oaks, CA: SAGE Publications, Inc.
- Denier, H., Wolters, C., & Benzon, M. (2014). Social cognitive theory. Retrieved July 20, 2015, from <http://www.education.com/reference/article/social-cognitive-theory/>
- Dimitrijević, I. (2009). Animal-assisted therapy: A new trend in the treatment of children and adults. *Psychiatria Danubina (Zagreb, Croatia)*, 21(2), 236-241. Retrieved July 21, 2015, from http://www.hdbp.org/psychiatria_danubina/pdf/dnb_vol21_no2/dnb_vol21_no2_236.pdf
- Dolphins-World. (2014). Dolphin assisted therapy. Retrieved July 20, 2015, from <http://www.dolphins-world.com/dolphin-assisted-therapy/>
- Ensminger, J. (2011). Bringing service dogs into schools: Different facts, different courts, different results. Retrieved July 21, 2015, from http://doglawreporter.blogspot.com/2011/08/bringing-service-dogsintoschools.html?sm_a_u_=iHVjSMVSNMqT1Tsq
- Fisher, B., & Cozens, M. (2014). The BaRK (Building Reading Confidence for Kids) canine assisted reading program: One child's experience. *Literacy Learning: The Middle Years*, 22(1), 70+. Retrieved July 20, 2015, from <http://go.galegroup.com.ezproxy.gardnerwebb.edu/ps/i.do?id=GALE%7CA361713088&v=2.1&u=nclivegwu&it=r&p=AONE&sw=w&asid=fefa9d30f22c5b5ace49090399177480>
- Friesen, L. (2010). Exploring animal-assisted programs with children in school and therapeutic contexts. *Early Childhood Education Journal*, 37(4), 261-267. Doi:10.1007/s10643-009-0349-5
- Fung, S., & Leung, A. S. (2014). Pilot study investigating the role of therapy dogs in facilitating social interaction among children with autism. *Journal of Contemporary Psychotherapy*, 44(4), 253-262. doi:10.1007/s10879-014-9274-z
- Glickman, C., Gordon S., & Gordon J. (2014). *SuperVision and instructional leadership*. Upper Saddle River, NJ: Pearson Education Inc.
- Good, R. H., Kaminski, R. A., Shinn, M., Bratten, J., Shinn, M., Laimon, D., . . . Flindt, N. (2004). Technical adequacy of DIBELS: Results of the early childhood research institute on measuring growth and development (Technical Report, No. 7). Eugene, OR: University of Oregon.

- Granados, A., & Agis, I. (2011). Why children with special needs feel better with hippotherapy sessions: A conceptual review. *Journal of Alternative & Complementary Medicine, 17*(3), 191-197. Doi:10.1089/acm.2009.0229
- Green Chimneys. (2014). Green chimneys: A lifetime commitment to children and animals. Retrieved July 20, 2015, from <http://www.greenchimneys.org/about/history/>
- Greene, J. P., & Winters, M. A. (2005). The effect of residential school choice on public high school graduation rates. Education working paper No. 9. New York: Manhattan Institute for Policy Research.
- Helping Paws International (2000-2016). B.A.R.K.S. FAQ. Retrieved June 4, 2016, from <http://www.helpingpawsintl.org/barks.html>
- Hess, F. M. (2011). Our achievement-gap mania. *National Affairs*, 9113-129. Retrieved July 26, 2016, from <http://www.nationalaffairs.com/publications/detail/our-achievement-gap-mania>
- Huck, S. (2012). *Reading statistics and research*. Boston, MA: Pearson Education.
- Kennedy, R. (2012). Animal-assisted therapy: Right for your patients? Retrieved July 21, 2015, from <http://www.neurosciencecme.com/activity/content/664.asp>
- Laird, J., DeBell, M., & Chapman, C. (2006). *Dropout rates in the United States: 2004* (NCES 2007-024). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved July 25, 2016, from <http://nces.ed.gov/pubsearch>
- Levinson, B. M. (1972). *Pets and human development*. Springfield, IL: Charles C. Thomas Publisher, LTD.
- Mariani, V., & McCullough, A., (2012). Canines and childhood cancer. Examining the effects of therapy dogs with childhood cancer patients and their families. Retrieved July 21, 2015, from <http://www.americanhumane.org/interaction/programs/animal-assisted-therapy/january2012clcompressed.pdf>
- Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106*(1), 121-131. doi:10.1037/a0033546
- Mostert, W., & Glasswell, K. (2012). Dreams to reality: Closing the reading achievement gap with a focus on fluency. *Practically Primary, 17*(3), 16+. Retrieved July 21, 2015, from <http://go.galegroup.com.ezproxy.gardnerwebb.edu/ps/i.do?id=GALE%7CA306356476&v=2.1&u=nclivegwu&it=r&p=AONE&sw=w&asid=77342afde8fcda79da3c50b683c6cbae>

- National Education Association. (2014). Strategies for closing the achievement gaps. Closing Achievement Gaps an Association Guide, 18-19. Retrieved July 21, 2015, from <http://www.nea.org/home/1052.htm>
- Nightingale, F. (1898). Notes on nursing what it is, and what it is not. Retrieved July 20, 2015, from http://www.nursingplanet.com/Nightingale/chattering_hopes_and_advices.html
- North Carolina Pet Partners. (2012). What is North Carolina Pet Partners. Retrieved July 25, 2015, from <http://www.ncpetpartners.org>
- Office of Information Services. (2014). Attention deficit hyperactivity disorder. Center for Disease Control. Retrieved July 20, 2015, from <http://www.cdc.gov/nchs/fastats/adhd.htm>
- Paradise, J. L. (2007). An analysis of improving student performance through the use of registered therapy dogs serving as motivators for reluctant readers. (Order No. 3256937, University of Central Florida). ProQuest Dissertations and Theses, 212-212. Retrieved from <http://search.proquest.com/docview/304745715?accountid=11041> (304745715)
- Pet Partners. (2014). Animal-assisted therapy. Retrieved July 20, 2015, from <http://www.petpartners.org/page.aspx?pid=320>
- Pollock, J. E., Black, M. M., & Ford, S. M. (2012). *Minding the achievement gap one classroom at a time*. Alexandria, VA: ASCD.
- Professional Association of Therapeutic Horsemanship International. (2011). Learn about EAAT. Retrieved July 25, 2016, from <http://www.pathintl.org/resources-education/resources/eaat/194-eaat-benefits>
- Professional Association of Therapeutic Horsemanship International. (2014). PATH Intl. centers. Retrieved July 22, 2015, from <http://www.pathintl.org/path-intl-centers/path-intl-centers>
- Rising Hope Farms. (2010). Testimonials. Retrieved July 20, 2015, from http://risinghopefarms.com/?page_id=72
- Sadeh, S., Burns M., & Sullivan, A. (2012). Examining an executive function rating scale as a predictor of achievement in children at risk for behavior problems. *School Psychology Quarterly*, 27(4), 236-246. doi: 10.1037/spq0000012
- Scholtens, S., Rydell, A., & Yang-Wallentin, F. (2013). ADHD symptoms, academic achievement, self-perception of academic competence and future orientation: A longitudinal study. *Scandinavian Journal of Psychology*, 54(3), 205.

- Schuck, S., Emmerson N., Fine A., & Lakes K. (2013). Canine-assisted therapy for children with ADHD: Preliminary findings from the positive assertive cooperative kids study. *Journal of Attention Disorders*, XX(X), 1-13. Doi: 10.1177/1087054713502080
- Schunk, D. H., & Pajares, F. (1997). The development of academic self-efficacy. In A. Wigfield & J. Eccles, *Development of achievement motivation* (pp. 15-30). San Diego, CA: Academic Press.
- Serpell, J. (2000). Animal companions and human well-being: An historical exploration of the value of human-animal relationships. *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*, 3-17. Doi:10.1016/B978-012369484-3/50003-7
- Shapiro, E (2013). Conducting systematic behavioral observations in schools: Using the behavioral observation of students in schools (BOSS) app for iPhone and Android. Retrieved June 4, 2016, from <http://images.pearsonclinical.com/images/Assets/BOSS/BOSS-Webinar-Handout-10-2013.pdf>
- Shore, K. (2013). The student with low self-esteem. EducationWorld. Retrieved July 21, 2015, from http://www.educationworld.com/a_curr/shore/shore059.shtml
- Silva, K., Correia, R., Lima M., Magalhaes, A. & de Sousa, L. (2011). Can dogs prime Autistic children for therapy? Evidence from a single case study. *Journal of Alternative & Complementary Medicine*, 17(7), 655-659.
- Stanley, C. (2010). "Foreword," *Handbook on Animal-Assisted Therapy*. San Diego, CA: Academic Press.
- Statistic Brain Research Institute. (2014). High school drop out statistics . Retrieved July 21, 2015, from <http://www.statisticbrain.com/high-school-dropout-statistics/>
- Swanson, C. (2004). *Who graduates? Who doesn't? A statistical portrait of public high school graduation, class of 2001*. Washington, DC: The Urban Institute, Education Policy Center.
- Swanson, H., & Hoskyn, M. (1998). Experimental intervention research on students with learning disabilities: A meta-analysis of treatment outcomes. *Review of Educational Research*, 68(3), 277-321. doi:10.3102/00346543068003277
- Szathmary, Z. (2014). Outrage at school that won't let seven-year-old boy who suffers from seizures take his service dog to class. Retrieved July 21, 2015, from news/article-2846876/Woman-fights-school-district-help-son-suffers-seizures-7-use-service-dog-class.html

- Therapy Dogs International. (2015). Children reading to dogs. Retrieved July 20, 2015, from <http://www.tdi-dog.org/OurPrograms.aspx?Page=Children+Reading+to+Dogs>
- Tipper, B. (2011). "A dog who I know quite well": Everyday relationships between children and animals. *Children's Geographies*, 9(2), 145. doi:10.1080/14733285.2011.562378
- Tomlinson, C. (2000). What is differentiated instruction. Retrieved July 21, 2015, from <http://www.readingrockets.org/article/what-differentiated-instruction>
- Treat, W. A. (2013). Animal-assisted literacy instruction for students with identified learning disabilities: Examining the effects of incorporating a therapy dog into guided oral reading sessions. (Order No. 3599249, University of California, Santa Cruz). ProQuest Dissertations and Theses, 220. Retrieved from <http://search.proquest.com/docview/1461459605?accountid=11041> (1461459605)
- Volpe, R., DiPerna, J., Hintze, J., & Shapiro, E. (2005). Observing students in classroom settings: A review of seven coding schemes. *School Psychology Review*, 34(4), 454-474.
- Wicker, J. D. (2005). A human-animal intervention team model in an alternative middle/high school. (Order No. 3200707, Colorado State University). ProQuest Dissertations and Theses, p. 117. Retrieved from <http://search.proquest.com/docview/305013632?accountid=11041> (305013632)

Appendix A
Participation Selection Form

Student's Number Assigned	Gender	Ethnicity	Grade	Birthdate	Exceptional Children's Category (If Applicable)	Current Academic Scores on DIBELS Assessment	How many repeated grades?
1 (E)							
2 (E)							
3 (E)							
4 (E)							
5 (E)							
6 (E)							
7 (E)							
8 (E)							
9 (E)							
10 (C)							
11 (C)							
12 (C)							
13 (C)							
14 (C)							
15 (C)							
16 (C)							
17 (C)							
18 (C)							

Appendix B
Parent Interview Questions

1. Please describe any general changes if any you have observed in your child's attitude towards schoolwork since your child began the therapy sessions.
2. Please describe any general changes if any you observed in your child's attitudes towards completing homework since your child began therapy sessions
3. Please describe any general changes if any you have observed in your child's academic skills since your child has begun therapy sessions.
4. Please describe any general changes if any you have observed in your child's self-esteem since they began therapy sessions.
5. Please describe any other significant observations if any you have made of your child since beginning therapy sessions.

Appendix C

The Center for the Study of Animal Wellness Pet Bonding Scale (CSAWPBS)

Below are some statements about people's views about their visits with dog visitors.

Please mark the number after each statement that best describes your views.

- | | More often true | | | | | More often false | | | | |
|--|-----------------|---|---|---|---|------------------|---|---|---|---|
| 1. The dog visitor likes me | | | | | | 1 | 2 | 3 | 4 | 5 |
| 2. I talk to the dog visitor. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 3. I confide in the dog visitor. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 4. The dog visitor understands what I say. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 5. The dog visitor knows when I feel bad. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 6. The dog visitor is always glad to see me. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 7. The dog visitor prefers me to others. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 8. The dog visitor has become my friend. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 9. I look forward to getting up in the morning
on days when I will see the dog visitor. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 10. I tell others about the dog visitor | | | | | | 1 | 2 | 3 | 4 | 5 |
| 11. The dog visitor knows when I feel happy. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 12. I would like to have the dog visitor
come to my home. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 13. I will remember the dog visitor after
my program | | | | | | 1 | 2 | 3 | 4 | 5 |
| 14. The dog visitor tries to comfort me. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 15. The dog visits make me feel better. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 16. The dog visits are boring. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 17. I feel attached to the dog visitor. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 18. The dog visits give me energy. | 1 | 2 | 3 | 4 | 5 | | | | | |
| 19. I miss the dog visitor between visits. | 1 | 2 | 3 | 4 | 5 | | | | | |

20. The dog doesn't judge me. 1 2 3 4 5
21. I look forward to the dog visits. 1 2 3 4 5
22. The dog visits make me feel happy. 1 2 3 4 5
23. The dog accepts me just the way I am. 1 2 3 4 5
24. I make the dog feel better. 1 2 3 4 5
25. I make the dog feel happy. 1 2 3 4 5
26. The dog takes my mind off my troubles. 1 2 3 4 5
27. The dog helps me feel secure. 1 2 3 4 5

Appendix D

Permission Letters to Utilize Instruments

Permission letter for CSAWPBS:

Dear Maria,

Thank you for your email message. Yes, you have permission to use our instrument in your dissertation! I would refer you to the abstracts of the ISAZ conference held in Vienna in 2014 in which one of the oral presentations was directly using and testing the reliability of our instrument—it held up well.

Many thanks,

Dr. Johnson

Rebecca A. Johnson, PhD, RN, FAAN, FNAP

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Appendix E

Parent Consent for Child Participation Letter

October 20, 2015

RE: Permission to Conduct Research Study

Dear Parent:

I am writing to request permission to conduct a research study with your child. I am currently enrolled in the Doctor of Curriculum and Instruction Program at Gardner Webb University in Statesville, NC and am in the process of writing my dissertation. The study is entitled The Effects of Canine Therapy Dogs on Academics, Behavior and Motivation.

I hope that the school administration will allow me to recruit thirty students from the school to anonymously participate in the study. Due to the nature of the study, I hope to recruit the parents of these students to anonymously complete their own questionnaire. Interested students, who volunteer to participate, will be given a consent form to be signed by their parent or guardian and returned to the primary researcher at the beginning of the survey process. Parents who volunteer to participate will also be given consent forms to be signed and returned to the primary researcher. Students will also be observed for their off-task behavior in the classroom setting. Your child's scores on the DIBELS and behavioral observations will also be gathered as part of this research.

Parent participants would complete the interview over the phone or through email communication. The teacher's will be sent the surveys on student behavior to complete through email. The survey results will be pooled for the project and individual results of this study will remain absolutely confidential and anonymous. Should this study be published, only pooled results will be documented. No costs will be incurred by either your school district or the individual participants.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my email address: mrector623@gmail.com.

If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope.

Sincerely,

Maria Rector

Gardner Webb University

Approved by:

Print your name and title here	Signature	Date