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Do Teachers Participating in a Therapy Dog Program Perceive an Impact on Students' Attitudes and Behaviors Toward Reading?

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Philadelphia College of Osteopathic Medicine

Department of Psychology

DO TEACHERS PARTICIPATING IN A THERAPY DOG PROGRAM PERCEIVE
AN IMPACT ON STUDENTS' ATTITUDES AND BEHAVIORS TOWARD READING?

By Jenna M. Dragani-Reagan

Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Psychology

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PROFESSIONAL AND
PSYCHOLOGY™

DISSERTATION APPROVAL

This is to certify that the thesis presented to us by **Jenna M. Dragani-Reagan** on the 15th day of March, 2019, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

COMMITTEE MEMBERS' SIGNATURES

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ABSTRACT

This study investigated teachers' perceptions of a Therapy Dog Elementary School Reading Inspiration Program. Teaching students to read is important to promote safety, aid in communication, and predict future academic success. Students who lack motivation avoid practicing reading. Reading practice helps influence reading fluency and comprehension. Research related to animal-assisted therapy indicates that animals help decrease anxiety and increase motivation for tasks. This research investigates the perceived effect of an animal-assisted literacy program, as viewed from a teacher perspective. Through surveyed data respondents indicated a perceived benefit in areas of reading interest, reading skill and reading related behaviors, following the Therapy Dog Program. Respondents noted social-emotional improvements as well, including student's decreased levels of anxiety and an increase in relaxation when reading aloud, increased mindfulness, an increase in social skills in those who were previously reluctant to speak in class, as well as improved communication skills, and improved student attitudes toward reading.

Keywords: animals, dogs, pet therapy, reading, literacy

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CHAPTER 1

INTRODUCTION

Children typically learn the basic fundamentals of reading during their preschool and kindergarten years. Research suggests that the benefits of reading begin as early as preschool and are evident throughout many aspects of development. Reading benefits include cognitive development (Byford, Kun, & Richards, 2012; Kozulin, 2004), linguistic development (Brown, 2007; Hargrave & Sénéchal; 2000; Stanovich, 2000), vocabulary development (Capraro & Capraro, 2006; Krashen, 2004; Stanovich, 2000), and psychological development (Elkin, Train, & Denham, 2003). Reading continues to enhance students' educational experiences throughout their primary, secondary, and postsecondary educations by promoting increased reading comprehension (McNeil, 1976), improved writing skills (Krashen, 1989; Krashen, 2004; Lee & Krashen, 2002; Mason & Krashen, 1997), decreased writing apprehension (Lee & Krashen, 2002), and improved general intelligence (Ritchie, Bates, & Plomin, 2015). Increased reading has also been correlated with higher test scores (Fielding, Wilson, & Anderson, 1986) and higher overall academic performance (Watkins & Edwards, 1992). Finally, reading has also been found to enhance language acquisition in English language learners (Costantino, Lee, & Cho, 1997; Krashen, 2004) and to facilitate communication in children learning English as their primary language (Duursma, Pan, & Raikers, 2008, & Layne, 2009).

The literature also shows that reading has an impact on many aspects of life outside the classroom. Reading promotes safety (Fry, 2007; Tang, Lin, & Hsu, 2008), social skills (Dodell-Feder & Tamir, 2018), and has been linked to improved vocabulary, fluency, and comprehension. Reading can help people become powerful communicators and thus further their educations and careers (Layne, 2009; Watkins & Edwards, 1992). Understanding the relationship

between reading and educational and career outcome may be particularly relevant to benefiting children who are at high risk of dropping out of High School, as children with poor emergent literacy are at greater risk of not graduating from high school (Hernandez, 2011), as well as being unemployed when they reach adulthood (Caspi, Wright, Moffitt, & Silvia, 1998). Reading positively impacts life experiences, and in general, both the quality and quantity of the reading are important to and impactful on an individual's education.

Motivation and Enjoyment of Reading

Data indicating the number of students who report they enjoy reading is inconsistent. A study by the National Literacy Trust (Clark & Rumbold, 2006) indicated that 90% of young children reported they enjoyed reading at least "a bit," whereas the Nestle Family Monitor (2003) reported that only two thirds of students surveyed between 11 and 18 years old found reading enjoyable. Research also indicates that as students' ages increase, students' reading enthusiasm declines. For example, the number of students who reported enjoying reading at the primary level decreased by more than half when students at the secondary level were surveyed (Hall & Coles, 1999).

Students who enjoy reading and read for fun for at least 10 minutes a day showed a positive increase in reading test scores (Greaney & Hegarty, 1987), as well as an increased ability in areas of comprehension, verbal fluency, and general knowledge (Krashen, 2004). An increase in overall academic performance was also evident when students who read for fun were compared to nonreaders (Watkins & Edwards, 1992). Self-reported reading enthusiasm positively correlates to increased time spent reading, with this increase resulting in positive outcomes in areas of cognition, fluency, vocabulary, comprehension, academic success, behaviors, and social skill development. Increasing students' enthusiasm for reading will

increase the time they spend reading for fun. Reading for fun, in turn, resulted in positive social implications, as it increased verbal interactions (Cullinan 2000). Similarly, Faulkner (2002) and Eyre (2003) showed that pleasure reading helped prepare young people for becoming an adult, as employers rank reading and writing among the top deficiencies in new hires. Additionally, employers rate reading comprehension as “very important” (Howard, 2011).

Improving Reading Motivation

Efforts have been made to determine effective methods to motivate children to increase their reading. Many incentive programs, including Pizza Hut Book it! and Accelerated Reader, are designed to promote children’s reading. Cox and Guthrie (2001) asked the following question: Does reading motivation increase time spent reading? Their results confirmed their hypothesis that students who are motivated to read do, in fact, read more often than reluctant readers. In a sample of 251 third and fourth graders, Cox and Guthrie (2001) found that motivation accounted for an increase in student-reported reading, specifically in third graders, for whom motivation contributed to an additional 5% of variance in school reading. In addition, the researchers felt that information obtained from this study suggested the amount of reading for enjoyment is primarily determined by motivation (Cox & Guthrie, 2001).

One method of increasing motivation is to pair students with a dog. Animal-assisted therapy has been shown to have many therapeutic benefits, including decreased anxiety (Barker & Dawson, 1998; Bueche, 2003; House, Neal, & Backels, 2018; Kertes, Liu, Hall, Hadad, Wynne, & Bhatt, 2017), as well as lower blood pressure and heart rates (Harris, Rinehart, & Gerstman, 1993; Katcher, Friedmann, Beck, & Lynch, 1983). When working with an animal during therapy, patients reported joy when being with the animal, as well as increased participation in activities and a decrease in reported anxiety (Cullen, Titler & Drahozal, 2003).

The presence of a dog has also been shown to have a physiological impact on children, resulting in significant decreases in systolic blood pressure, mean arterial pressure, and heart rate (Nagengast, Baun, & Leibowitz, 1997).

In addition to therapeutic benefits, several studies have investigated the impact of animals, specifically dogs, in a learning environment. Using animals in the classroom has demonstrated many benefits, including increased empathy and social development (Daly & Suggs, 2010). In addition, introducing animals into a classroom school setting increased positive attitudes to school and learning (Beetz, 2013). Finally, pairing students with non-caged animals during science class resulted in a more positive attitude toward science (Sorge, 2008).

Animals have also been shown to increase interest and motivation for students who typically dislike reading (Inklebarger, 2014). Reading intervention programs utilized dogs in the classroom and have been designed to increase reading motivation and decrease anxiety. R.E.A.D. is a reading intervention program designed to transform reluctant readers into willing and confident readers (Shaw, 2013). Literacy dogs can be an effective tool for promoting reading and confidence in children who have low self-esteem, as children tend to feel comfortable reading to a dog and forget their own limitations while practicing reading, thus improving their reading skills (Pillow-Price, Yonts, & Stinson, 2014).

Statement of the Problem

The benefits of reading have been documented extensively over the past few decades, and research has shown that increasing the time students spend reading may benefit them both academically, by increasing reading skills in the classroom, and non-academically, by increasing their chances of graduating from high school. However, despite beneficial outcomes of reading for fun, approximately one third of students reported being reluctant readers, with 16% of boys

and 7% of girls stating they never read for fun, and 11% of children saying they never read books outside of the classroom (Nestle Family Monitor, 2003). Similarly, 38% of students indicated that they would read more if doing so was more fun (Nestle Family Monitor, 2003). Increasing students motivation to read increases the time reluctant readers spend reading for fun. Students who lack motivation or have a poor attitude toward reading are less likely to practice reading or engage in reading activities than students who enjoy reading (Nestle Family Monitor, 2003). Students who dislike reading are likely to have low confidence, and therefore to avoid reading (Baker & Wigfield, 1999; McKenna, Kear & Ellsworth, 1995). Students who lack confidence in reading are less motivated to both practice reading and volunteer to read aloud in class.

Purpose of the Study

The purpose of this study is to evaluate the perceived effectiveness of the Therapy Dogs: Elementary School Reading Inspiration, Elementary School Reading Inspiration Program (Therapy Dogs Program). The Therapy Dogs Program is a reading intervention program that utilizes the calming effects of a therapy dog to help young students become confident readers. Students who struggle with reading fluency, or who are uncomfortable reading aloud in front of their peers gain much needed confidence with a non-judgmental canine friend by their side. Through surveys and teacher reports, the Therapy Dogs Program will be evaluated to determine whether teachers perceive a change in student attitude toward reading when they have the opportunity to participate in the Therapy Dogs Program. This study is designed to determine whether teachers perceive a change in students' attitude toward reading after several sessions with the Reading Inspiration team. The goal of this study is to determine whether the program improves perceived attitudes towards reading in reading-reluctant students once they become a

participant in an animal-assisted literacy program. Teachers' perceptions will be evaluated, and survey questions will ask about students' attitudes toward reading when the dog/trainer team is present.

Hypotheses

Hypothesis 1: Confidence and Interest

H₀: Teachers will report no differences in perceived student attitudes toward reading (confidence and interest) after students read to a literacy dog.

H_A: Teachers will report a significant improvement in perceived student attitudes (confidence and interest) after students read to a literacy dog.

Hypothesis #2: Reading Comprehension and Fluency

H₀: Students will show no differences in teacher-reported reading comprehension and reading fluency levels after reading to a literacy dog once a week for 3 months.

H_A: Students will show a significant improvement in teacher-reported reading comprehension and reading fluency levels after reading to a literacy dog once a week for 3 months.

Hypothesis #3: Reading Behaviors

H₀: Students' behaviors will not change following the Therapy Dogs Program, and no significant differences will be seen in the number of times they volunteer to read to the class and no significant differences will be seen in their observed reading avoidance.

H_A: Students will show an increase in the number of times they volunteer to read to the class, and a decrease in reading avoidance, according to teacher report, after reading to a literacy dog once a week for 3 months.

CHAPTER 2

LITERATURE REVIEW

According to many state standards, reading is typically taught beginning at approximately 5 years old. Reading instruction continues through elementary school, with increased skills in reading comprehension as students begin to develop the skills necessary to make them more efficient readers. Reading can be broken down into several subcategories, including word recognition (i.e., phonological awareness, decoding skills, word-processing rate) and reading comprehension (Vellutino, Scanlon, & Tanzman, 1994).

Students are typically taught to read through a series of steps beginning with teaching decoding and vocabulary. Children are taught using sight words, including *the, of, and, a, to, in, is, you, that,* and *it*. Students are next taught to develop phonics skills, and eventually learn to incorporate their skills into comprehending, writing, and speaking about what they have read. Once students have developed basic reading skills, they need to read aloud and silently to practice and increase fluency and comprehension (Fry, 2007).

The process of teaching students to read has been studied and revised over the years, but the importance of teaching students to read has remained constant. Reading is important, as it contributes to many areas of life and helps promote safety (Fry, 2007), comprehension (Nathan & Stanovich, 1991), writing skills (Lee & Krashen, 2002; Mason & Krashen, 1997), cognition (Sullivan & Brown, 2015), academic success, communication (Layne, 2009), and positive social interactions (Quirnbach, Lincoln, Feinberg-Gizzo, Ingersoll, & Andrews, 2009).

Reading for Safety

At the basic level, reading promotes safety. Reading is a crucial survival asset in a fast-paced world of technology (Layne, 2009). Teaching students to read helps inform them of when

something is “too hot to touch,” and teaches them how to read traffic signs and labels on medications. Fry (2007) discussed the importance of reading signs to increase safety. Reading positively promotes safety, as it grants people access to important information that would not be obtained without being able to read and comprehend.

Reading Improves Comprehension and Language

Reading is a critical skill for language acquisition. Through reading, students strengthen both reading skills and oral comprehension. Collins (1980) and Hafiz and Tudor (1990) promoted sustained silent reading. Hafiz and Tudor (1990) noted significant gains in both reading fluency and accuracy following a 90-minute extensive reading program. Reading comprehension involves an interaction between the text, the students’ knowledge base, the task, and the activities surrounding the reading (Kintsch & Kintsch, 2005). Reading is a complex interplay of many factors, including motivation, cognitive ability, and linguistic resources (Kintsch & Kintsch, 2005). Krashen (2004) discussed the important role that reading plays in comprehension in his *comprehension hypothesis*. According to Krashen, the comprehension hypothesis is the theory that people acquire language by understanding it. The importance of comprehending reading begins as soon as students begin to learn to read.

Exposing students to literacy can strengthen both oral and written comprehension skills. One study utilized Dialogic Reading to engage students with delayed language skills. Dialogue reading is described as an interactive language facilitation technique, designed to teach readers to utilize “who” and “what” questions to increase engagement during reading. Students exposed to reading programs such as Dialogic Reading effectively improved expressive language skills. The use of Dialogic Reading at pre-test promoted linguistic skills for students with language delays and resulted in an increase in the use of language (Crain-Thoreson & Dale, 1999).

Reading skills impact both oral comprehension and reading comprehension by expanding and developing student's vocabulary skills. Students require more advanced word-identification skills in order to advance both listening and reading comprehension skills. Vocabulary exposure is another important aspect of both reading and oral comprehension. Students with a more developed vocabulary are able to reach advanced levels of reading fluency, higher than those of students with a less extensive vocabulary, thus resulting in stronger comprehension skills (Pikulski & Chard, 2005). In one study of preschool students, the frequency of classroom shared reading activities positively impacted children's short-term receptive vocabulary growth (Zucker, Cabell, Justice, Pentimonti, & Kaderavek, 2013). In this study, children were exposed to a 30-week book-reading schedule that required four whole-class readings per week, the study concluded after 120 prescribed reading sessions. Children in the experimental group maintained a standard reading schedule and were compared to children in a control group. The frequency of shared classroom reading predicted outcomes in preschool students' vocabulary skills, as time spent reading in the classroom correlated positively with children's receptive vocabulary growth. These results were similar to findings presented by Bojczyk, Davis, and Rana (2016), who investigated predictors of preschoolers' vocabulary development for families of low socioeconomic status. Results presented by Bojczyk et al. support those of Zucker et al., by confirming that students can enhance expressive vocabulary skills (a person's ability to communicate their wants and needs) by actively participating in shared reading activities in the classroom. The impact of reading on comprehension skill development was further supported in the home setting, in a study investigating the role of fathers as the primary reader. Quach et al. (2018) sought to determine whether language and literacy at age four could be predicted by reading activity at age two and utilized fathers as the reading facilitator. Results aligned with

those outlined in Zucker et al. (2013), and Bojczyk et al. (2016) and demonstrated that reading activity did correlate to children's expressive and receptive language (a person's ability to understand words and language).

The impact of reading on developing comprehension skills extends to students who learn English as their second language. Mason and Krashen (1997) evaluated several aspects of reading comprehension and its impact on English Language Learners and established positive implications for reading and learning English. The overall results note the positive impact of reading in the development of language for students that are learning English as a second language. Mason and Krashen (1997) reviewed the impact of reading on language in three different ways, measuring a method of reading called "extensive reading." Extensive reading is defined by Mason and Krashen (1997) as reading in which the students conduct self-selected reading and write a brief summary about what they read. In Experiment 1, Mason and Krashen (1997) enrolled students from two different English as a Foreign Language classes from a university in Japan. Students from the experimental class were reluctant readers who were re-taking the class after failing it previously. The comparison group was comprised of students in their second year of college who attended classes in a general education setting. For the first semester, both classes followed the traditional curriculum. Prior to the intervention, students in both classes were assessed using the Cloze Reading Test. Students in the experimental group performed significantly lower on the Cloze reading assessment test than students in the comparison group. Intervention was implemented during the second semester, when students in the comparison group continued to learn using traditional teaching methods, while the students in the experimental group used extensive reading to supplement classroom instruction.

At the end of the semester, students receiving alternative instruction through the extensive reading program had shown significant improvements in areas of reading comprehension as measured by the Cloze test. The gains made by the experimental group were significantly greater than the gains made by students in the comparison group, resulting in post intervention scores that were similar for both groups. Mason and Krashen (1997) provided further evidence to support the impact of “extensive reading” on reading comprehension skills when comparing students at a four-year college to those at a two-year college in Experiment 2. Prior to intervention, all students underwent the same pre- and post-test assessments used in the first experiment. As expected, the two-year college students had lower pre-test scores than the students in the four-year university. On the post-test, however, the gap in scores decreased significantly for students in the extensive reading group.

Reading Impacts Writing Skills

Krashen (1997) defined the concept of “Free Voluntary Reading,” as one of the most effective tools in teaching language to students, and outlined the positive implications reading has on writing skills. Reading has been found to have a positive impact on writing skills for students that are English Language Learners. Mason and Krashen (1997) found a positive relationship between extensive reading and writing skills for English Language Learners. Similarly, findings were presented in 1989 by Krashen, who promoted free reading programs as a means of developing vocabulary, grammar and writing, and oral language ability.

Additionally, research has shown reading can decrease writing anxiety. Free Voluntary Reading is a concept that encourages students to read by allowing them to read materials they want to read, with the option to report to class what they have read. Lee and Krashen (2002) utilized a Free Voluntary Reading Intervention on students, to confirm previous research

supporting a decrease in reported writing apprehension, theorizing that students that read more have more competence in the written language, which lowers apprehension.

Cognition

Reading involves cognitive processing, and the cognitive neuroscience involved in reading is complicated and still under investigation. Several models of reading have been investigated over the span of 30 years. Of these models, the Dual Route Cascaded model (DRC) (Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001) and the Triangle Model of reading (Plaut, McClelland, Seidenberg, & Patterson, 1996) have been researched most often to outline the cognitive process utilized during reading. Both models review the neural process involved in reading aloud, and highlight reading from a cognitive perspective, assuming a bottom-up information process. According to the DRC model, word pronunciation can be generated in two ways, by either converting graphemes (e.g., letters) of a word into their corresponding phonological representations (i.e. phonemes) or through a direct route from words' spelling to pronunciation. The Triangular Model offers a contrasting explanation, stating that a word pronunciation is generated through an Orthographic Input Lexicon and Phonological Output Lexicon prior to becoming phonological representations known as phonemes. Hoffman, Ralph, and Woodlams (2015) investigated the neural basis of an implemented computational model of word reading. This model, The Triangle Model of reading proposes that semantic knowledge plays an integral part in pronouncing words correctly. Through a whole brain analysis, Hoffman et. al., (2015) reviewed the brain regions involved in word reading, resulting in findings consistent with previous research on reading studies. Specifically, word reading activity occurred in the posterior temporal, inferior parietal, and premotor regions. An increase in brain activity

was also observed in the ventral surface of the ATL (anterior fusiform/inferior temporal gyrus) during word reading.

Reading involves a significant amount of cognitive activity. The amount of cognitive ability required depends on several factors, and tasks that require the reader to process many ideas at the same time, including summarizing concepts, involve greater cognitive demand than tasks that require the reader to process one idea at a time (Stevens et al., 2015). While reading involves varying levels of cognitive demand, research suggests that frequent participation in cognitively demanding tasks (such as reading) is associated with reduced risk of Alzheimer's Disease (Wilson et al., 2002). Similarly, Zou et al. (2015) collected epidemiological data pertaining to Parkinson's Disease to investigate potential risk and protective factors. Their findings suggested that reading and physical activity were independent factors that protected against Parkinson's Disease.

Reading and Academic Success

Evidence suggests that in addition to reading impacting safety, comprehension, writing and cognition, reading also has a direct impact on academic performance in the classroom. Within the brain, memory representation for math involves the same phonological and semantic systems that are utilized to support areas of reading. Based on prevalence rates, difficulties in mathematics co-occur with reading difficulties at a high rate (Dirks, Spyer, van Lieshout, & Sonnevile, 2008), indicating a higher than expected rate of overlap between the two subject areas. One theory regarding this overlap in learning cites a potential domain-general deficit in an area such as working memory or processing speed (Vellutino, Fletcher, Snowling, & Scanlon, 2004). The overlap in processing between regions of the brain utilized in math and those utilized in reading may be one explanation for findings noted by Sullivan and Brown (2015), who

concluded that parents' education and children's reading make a difference in children's progress in both vocabulary and mathematics. Capraro, Capraro and Rupley (2012) outlined prior research on the relationship between reading and mathematics achievement. Through the development of comprehension and the process of integrating text information with one's prior knowledge, people also develop the ability to make inferences about the context of the information during problem solving (Capraro & Capraro, 2006). Conceptual mathematics understanding is linked to reading comprehension, as well as the ability to translate text into understanding and, later, problem solving.

In addition to predicting academic success in mathematics, reading can influence many subject areas including history, and science. Whitten, Labby and Sullivan (2016) conducted a nine-week study utilizing eleventh grade students in Texas to compare pleasure readers to non-pleasure readers. The study evaluated two groups, one group included students who read for enjoyment, compared to the second group, who read only when required. Results of this study indicated that pleasure readers averaged higher grades in all four measured areas: English, History, Math, and Science (Whitten, Labby, & Sullivan, 2016). Most interestingly, the results indicated that pleasure readers experienced an increase in scores across all academic areas, an even greater difference was found between the two groups (i.e. readers and nonreaders) when comparing the groups' scores in Math and History over English and Science. Reading is an important skill and even reluctant readers need to practice in order to reach full potential.

Reading Positively Impacts Social Interaction

Reading can also influence social skill development. Social Story Interventions has been used as a method of increasing social interaction and social skills for students with Autism Spectrum Disorder. Quirnbach, Lincoln, Feinberg-Gizzo, Ingersoll, & Andrews (2008) utilized

Social Stories Interventions on students with ASD. This study utilized 45 students, aged 7-14, and determined Social Story interventions were effective in eliciting, generalizing, and maintaining the targeted social skills.

Reading impacts students' behavior in the classroom. Students that experience difficulty reading, or are reluctant to read, spend less time engaging in reading related activities. The term "Struggling Reader" has historically been used in the literature to describe students who are not successful in reading at school (Triplett, 2007). Children that struggle to learn and read also rate higher on both teacher and self-reported behavior problems (Heiervang , Lund, Stevenson, & Hugdahl,2001).

Motivation and Enjoyment of Reading

Despite the extensive benefits associated with reading for fun, children are not reading enough. According to the PISA, "engagement in reading activities" can be defined as reading for school, reading for enjoyment, time spent reading for enjoyment, using diverse reading materials and also includes an array of online reading activities (OECD, 2010). Students that read for enjoyment and who self-direct their learning performed well in the PISA reading assessment (OECD, 2010). In order to become efficient readers, students need to develop both the skill and the will to read (Gambrell, 1996). Reports by the Nestle Family Monitor indicated that 65% of students interviewed reported they enjoy reading (Nestle Family Monitor, 2003), and documented gender differences, as 7% of girls indicate they never read compared to 16% of boys stating they never read (Nestle Family Monitor 2003). In a study of 470,000 students in 34 countries, the Organization for Economic Co-operation and Development (OECD) found that 37% of students reported that they never read for enjoyment. Similarly, another one-third of students across OECD Countries read for 30 minutes or less per day.

Additionally, reports suggest that only a small number of children enjoy reading, and that many children avoid reading. Whitehead, Capey, Maddren, & Wellings (1977) estimated that children over the age of ten read an average of less than three books a month, with 13% not having read a book in the month preceding the initiation of the research. In an online study initiated by the National Literacy Trust, schools were invited to complete a survey asking 32 questions exploring young people's reading and writing behavior, reading enjoyment, perceived reading ability and attitude during reading. The results were similar to those reported in other studies. The findings of this survey of over 17,000 students throughout England, Wales, Scotland, and Northern Ireland suggested that 51% of young people enjoy reading either "very much" or "quite a lot," whereas only one-third of the young people surveyed reported enjoying reading a little bit, and 10% reported they do not enjoy reading at all (Clark, De Zoysa, & National Literacy Trust, 2011). Further evidence noted that 41% of students surveyed reported reading only when they have to, and 24% reported that reading is a waste of time. Children who are motivated to read will spend more time engaging in reading related activities.

Several factors influence student's feelings toward reading, including location of the reading, type of reading, and gender. On average, boys report enjoying reading less than girls. In addition to measuring student's engagement for reading in the traditional setting (i.e. books, magazines, articles) the Programme of International Student Assessment (OECD, 2010) also surveyed students on their feelings in alternative settings. Students were asked to report on engagement in online reading activities such as, how often they read emails, chatted online, read online news, used an online dictionary or encyclopedia, searched online information to learn about a particular topic, took part in online group discussions and searched for practical information online. Although reading online resulted in better reading performances in all PISA

participating countries except Liechtenstein (OECD, 2010), online reading only accounted for 5% of the students reading. Student's that report reading fiction for their own enjoyment several times a month were more proficient than students who do not read fiction or who repeated only reading fiction occasionally. Similarly, students who are highly engaged in diverse reading activities and who are aware what strategies work best for reading and understanding texts performed better on the PISA reading assessments (OECD, 2010). Positive feelings about reading motivate students to read more (Yamashita, 2004).

Factors that influence reading are not limited to gender and setting of the reading, family socio economic status and parent education level also factor into students interest toward reading. Evidence suggests that 72% of socioeconomically advantaged students read for enjoyment, while only 56% of disadvantaged students report reading for enjoyment (OECD, 2010). In contrast, parents' highest level of education did not have a strong impact on students who did not engage in daily reading or learning strategies. Instead, students that did not read daily had lower scores than students that are highly engaged in reading, and who approach learning positively despite parental education level (OECD, 2010).

Reading behavior has been researched to further identify the circumstances surrounding children's reading habits. The National Literacy defined "reading behavior" as the frequency, width, and breadth of a person's reading. Reports on how often students read, indicate approximately 23% of students report reading everyday due to homework or school necessity (Nestle Family Monitor, 2003). When asked how often students read outside of class, 32% of young people read outside of class every day, 29% reported reading two to three times a week and 7% of students report not reading outside of class (Clark, De Zoysa, & National Literacy Trust, 2011).

Outside of school, 83% of students report they read in their spare time for fun, 16% of which report reading in their spare time daily (Nestle Family Monitor, 2003). Interestingly, 11% of students report never reading outside of school, with 4% of students reporting not reading even in school (Nestle Family Monitor, 2003). The rates of reading are considered alarming, as recent research suggests an increase in failure rates in the literacy skills of children in America (Hansen, Levesque, Valant, & Quintero, 2018).

Students understand the benefits of reading, however report negative emotions associated with reading. Approximately half of the students surveyed understand the benefits of reading, (2 in 5 children reported reading as educational, and 1 in four students indicated it was informative), however, 26% of students aged 14 and under, reported reading was “boring.” Similarly, Triplett (2004) found that students report experiencing negative emotion associated with reading. Negative emotions associated with reading include frustration, alienation, anger and fear (Triplett 2004). Students that report reading as “boring, hard, frustrating or report negative feelings” are considered “reluctant readers.”

Impacts of Anxiety on Motivation to Read

Reading is important to promote cognition, learning, success and development, however not all students have positive or neutral feelings about reading. Evidence suggests that for some students, reading produces feelings of anxiety. Wallbrown, Brown, and Engin (1978) first defined reading anxiety as an emotional and/or unpleasant physical reaction when children perform or think or activities that involve reading.

Students that are reluctant to read often report experiencing symptoms of anxiety. Symptoms associated with generalized anxiety include the presence of excessive anxiety and worrying about a variety of topics with worrying experienced as very challenging to control. The

worry is associated with cognitive symptoms such as edginess or restlessness, tiring easily, impaired concentration, increased muscle aches or soreness, or difficulty sleeping (DSM-5; American Psychiatric Association, [APA], 2013). Anxiety in the classroom, although presents with similar symptoms to generalized anxiety, is typically a more state dependent anxiety. Anxiety referred to in reading research is typically either: trait anxiety (A-Trait) or state anxiety (A-State). State anxiety is dependent on a situation and the emotional state or condition that is characterized by subjective and perceptive feelings of a heightened autonomic nervous system (Spielberger, Gorsuch, & Lushere, 1970).

Reading anxiety is an anxiety that learners experience while they are reading in their new target language (Zhou et al., 2017). Reading anxiety is a specific, situational phobia toward the act of reading that has physical and cognitive reactions. Physical reactions associated with anxiety include release of adrenaline, sweating, rapid breathing and “butterflies” in the stomach, as well as other physical symptoms (Zbornik, 2001). Cognitive reactions to anxiety include an overwhelming sense of dread, low self-esteem, feelings of helplessness and expectations of humiliation (Zbornik, 2001). Students that suffer from reading anxiety often exhibit symptoms that are associated with physical anxiety such as increase sweating and increased heart rate (Zbornik, 2001).

Reading anxiety has implications on many areas of reading. Research looking at comorbidity with reading disabilities, increased levels of anxiety can be associated with reading difficulties (Willcutt & Pennington 2000). Specifically, increased levels occur as a consequence of literacy difficulties (Willcutt & Pennington, 2000). In a study assessing reading comprehension skills, results indicate that anxiety experienced while reading aloud negatively impacted comprehension scores, and underrepresented students’ ability to comprehend

information they read aloud (Tysinger, Tysinger, & Diamanduros, 2010). Students in this study experienced restricted working memory access caused by anxiety, indicating the low scores on reading comprehension measures reflected performance anxiety rather than a skill deficit in the area of reading comprehension (Tysinger et al., 2010).

Evidence suggests an association between reading anxiety and reading performance (Piccolo et al., 2017). A sample of 281 general education students were identified at the beginning of first grade as either performing on grade level, or as having reading difficulties based on scores on standardized assessments. Students were followed and assessed for reading abilities for the duration of the school year. At the end of the school year, students had to complete achievement assessments and provide data on levels of anxiety. Results of this study indicated that achievement at mid-year assessment predicted end of year anxiety levels (Grills-Taquechel, Fletcher, Vaughn, & Stuebing, 2012). Additionally, anxiety at mid-year predicted end of year scores in reading; indicating that without intervention designed to improve reading strategies, students feel increased levels of anxiety (Grill-Tequeches et al., 2012). Grills et al., (2014) examined student's anxiety using students in a general education setting, receiving daily reading instruction focusing on phonics, word study, and reading comprehension. Results investigated whether anxiety predicted end of the school year outcomes following intervention noting that end of the year anxiety was decreased after intervention and with the passing of time (Grills et al., 2014). Similar results presented by (Magno, 2010) found that reading intervention improves not only proficiency, and reading fluency, but also produced decreased levels of anxiety (Magno, 2010).

In addition to reading anxiety, reading and learning based disorders such as dyslexia make reading additionally challenging for some students. Dyslexia is characterized by

difficulties with accurate and/or fluent word recognition, and by poor spelling and decoding abilities. Secondary problems to dyslexia include problems in reading, comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge (Lyon, 2003). Dyslexia is only one reason why students experience difficulty reading; however, it has been studied extensively in the area of anxiety. Tsovili (2004) investigated anxiety as experienced by students with dyslexia. Students with dyslexia reported significantly higher levels of reading anxiety compared to adolescents without dyslexia (Tsovilli, 2004). Additional research in the area of anxiety and dyslexia has yielded results similar to those noted in Tsovilli (2004). Some students with reading difficulties described feelings about reading as “stressful” and “threatening” (Tsovili, 2004). Adults with dyslexia report an increase in feelings of stress and anxiety during reading activities (Carroll & Iles, 2006). Despite evidence suggesting increased levels of anxiety are present in students with reading disabilities, Meer, Breznitz, and Katzir (2016) reported no differences on self-reported anxiety among individuals with reading disabilities, when compared to skilled readers.

Animal Assisted Therapy

Animal Assisted Therapy is defined as the positive interaction between an animal and a patient within a therapeutic framework (Giuliani & Jacquemettaz, 2017). The use of animals in therapeutic situations has a long history. The history of therapy dogs, for example, dates back to the 1800’s when therapy dogs were first introduced into a therapeutic role. Prior to the 1800’s pet therapy was utilized in other areas of the world, but Florence Nightingale documented the first benefits of pets for ill patients, while summarizing her views on best practice in nursing. Nightingale documented the value of providing patients with things they fancied, fresh air and light, a clean-living space and bedding, desired food, good news and access to small pets. “A

small pet animal is often an excellent companion for the sick, for long chronic cases especially” (Nightingale & Nightingale, 1982). In the 1900’s the utilization of animals in therapeutic roles continued, including the use of dogs with psychiatric patients at St. Elizabeth’s Hospital in Washington DC, and in a US military hospital in Pawling, New York. Although animals were utilized in many different settings, the effectiveness of animal assisted therapy was not analyzed until Dr. Levinson presented his findings at the American Psychological Association in 1961 (Hooker, Freeman, & Stewart, 2002). A milestone study in favor of utilizing pets to increase quality of life was conducted by Friedman, Katcher, Lynch, and Thomas (1980), utilizing 92 outpatients from a cardiac care unit. The findings of this study confirm the theory that social affiliation and companionship have important and long-standing health benefits (Friedman et al., 1980). Pet ownership played a significant role in survival in patients with heart conditions due to the decrease in perceived social isolation (Friedman et al., 1980), theorizing that familiar social contacts have the ability to lessen the painful, physiologically arousing feelings that are associated with uncertainty, loneliness, and isolation (Friedman et al., 1980). This theory was investigated further when Friedman and Thomas (1995), utilized patients from a Cardiac Arrhythmia Suppression Trial (CAST). At baseline subjects completed a series of indexes including a social support questionnaire, a social readjustment rating scale, pet ownership/attachment survey, state-trait anxiety inventory, self-rating depression scale, Jenkins Activity Survey and expression of anger scale. Data was collected from the CAST clinical site personnel to determine mortality rate. Pet ownership status was assessed with 1 item contained in the demographic’s questionnaire subjects completed at baseline. This study investigated the number of survivors at one-year following the baseline assessment. The results of this study indicated that pet ownership (i.e. owning either a dog or a cat) did not significantly impact

survival rates, however when pet ownership was analyzed by specific type of pet, researchers noted a significant impact on survival rates for dog owners (Friedman, et al., 1995).

Dual theories exist as to why animals have therapeutic benefits during pet-human interaction. The first of these theories introduces physiological changes in the brain resulting in decreased cortisol production. Evidence to support the physiological theory describes humans interacting with animals decreases levels of cortisol in the brain, when the interaction is positive. Several studies measured cortisol responses to pairing animals and humans, Odendaal and Meintjes (2003) compared cortisol production across three conditions, when dog owners pet their own dogs, when pet owners pet an unfamiliar dog, and when pet owners were quietly reading a book without the presence of a dog. A decrease in cortisol production was seen in both conditions involving dogs, but not in the condition when people were reading. Similarly, children with Autism Syndrome Disorders benefited from decreased levels of cortisol when dogs were present. Cortisol Awakening Response was measured before and during the introduction of a dog to the family. Cortisol Awakening Response was measured again when the dog was removed. Before the introduction of dogs, researchers measured a 58% increase in morning cortisol after awakening, which diminished to 10% when service dogs were present. Cortisol levels increased to 48% once the dog was removed from the families (Viau et al., 2010). The results of this study suggest the benefit of utilizing dogs to decrease cortisol production in students with ASD.

This reduction in cortisol levels were seen in many populations, including children with insecure or disorganized attachment who revealed a significantly faster drop in cortisol levels after the presentation of a stressor when they were supported by a real dog (Beetz, Julius, Turner, & Kotrschal, 2012). Similarly, the lower levels of cortisol were evident when children with insecure or disorganized attachment were paired with a real dog, rather than when paired

with a toy dog, or a friendly female student (Beetz, Kotrschal, Uvnäs-Moberg, Turner, & Julius, 2011).

The second theory utilized to explain the therapeutic benefits during pet-human interaction is the concept of social support. The social support experienced between a dog and human during a positive interaction. Cobb (1976) defined social support as “information leading the subject to believe that he or she is cared for and loved, esteemed, and a member of a network. Social relationships can provide protection from anxiety and depression and related illnesses (Cobb, 1976). Cobb (1976) details the importance of social support and supportive relationships to promote both physical and mental health. As noted by Fine (2006) social support from pets can supplement or even replace support from other humans as it can act as a cushion against fluctuations in human support and decreasing or eliminating feelings of awkwardness in seeking support. Additionally, pets may help provide a refuge from the strains of human interactions (Fine, 2006).

The social benefits of animals have been studied as a social outlet for people that are coping through major stressful events. Research, including a study by Siegel (1990) noted the benefits of social interactions with dogs. During a study with elderly dog owners feelings of less stress during times of stress than people who had other types of pets was reported. Reports indicated that owners of dogs felt less impacted by less stress events and reported spending more time with their dogs than owners of pets excluding dogs. Cohen (2002) set out to understand the relationships people have with their pets. The aim of their study was to determine what people mean when they stated, “My pet is a member of the family,” and estimated that many people with pets feel as though their pets fit inside of the family circle, similar to a human family member. Cohen (2002) discovered to pet owners, pets provide comfort and companionship.

Although pet owners do not consider their dogs as human, pet owners do believe that their pet occupies an overlapping but different space from humans that exists within the family structure (Cohen, 2002). McNicholas and Collis (2001) measured the impact of pets (cats and dogs) on individuals during the bereavement process. Results from this study indicated that at three months after bereavement, owners of cats and/or dogs reported significantly fewer symptoms of distress than non-owners or owners of other types of pets (McNicholas & Collins, 2001). Fine (2006) argues that relationships with pets are similar to relationships with people, as described by pet owners. Fine outlined pet owners' descriptions of dog/owner relationships in terms of social interactions and social relationships; often using words such as "good friend," "just like a family member," "stops me from feeling alone," "loves me," and "someone to talk to" (Fine, 2006). Correspondingly, children aged seven to eight years were asked to list all the people and animals important to them and then select a list of their 10 most special relationships. McNicholas and Collis (2001), found that children in this study often ranked relationships with pets higher than some of their human relationships. This evidence supports Bryant's (1985) claims that children consider relationships with pets as friends within their social network. Bryant (1985) and McNicholas and Collis (2001) highlight the significance of pets in children's social networks.

Additional research to outline animal assisted therapy as a social construct, was presented by Kotrschal and Ortbauer (2003) who investigated the behavioral effects of the presence of a dog in a classroom. Further, they hypothesized that the presence of a dog in the classroom would act as a "social lubricant." Behavioral changes were anticipated as well, as the presence of a dog was predicted to dampen the potentially cumbersome behavior of some of the more outgoing children, thus promoting group social integration (Kotrschal & Ortbauer, 2003). Their study

outlined both behavioral changes in the presence of a dog as well as social integration. Socially, this study presented a conclusion to support the theory that dogs increase social integration as the dog influenced more intense communication between children and between the child and the teacher (Kotrschal & Ortbauer, 2003).

Animal Assisted Therapy in Medical Setting. Research on animals in a therapeutic setting is extensive with findings related to decreasing anxiety, decreasing perceived loneliness and isolation, and increased motivation. A brief overview of the literature indicates that animal-assisted therapy is believed to decrease anxiety through scientific mechanisms. In humans and dogs, β -endorphin, oxytocin, prolactin, phenylacetic acid (a metabolite of b-phenylethylamine), and dopamine increased significantly, and Cortisol decreased significantly in humans (Odendaal, 2000). Patients in a nursing home that were exposed to a pet therapy setting experienced improved physical, psychological and social status of patients involved (Corson, Corson, Gwynne, & Arnold, 1975). Baker and Dawson (1998) researched the use of animal-assisted therapy in patients with a variety of psychiatric diagnosis. When animal-assisted literacy was utilized, hospitalized patients with a variety of psychiatric diagnosis reported significantly reduced levels of anxiety. However, when routine therapy sessions were utilized, only patients with mood disorders indicated reduced feelings of anxiety (Baker & Dawson 1998). In addition to reducing anxiety in patients with psychiatric disorders, dogs have decreased the anxiety in patients with physiological disorders as well including patients with advanced heart failure (Cole, Gawlinski, Steers, & Kotlerman, 2007). Results from Cole et al., 2007 also indicated that patients with advanced heart failure revealed reduced levels of anxiety after only a twelve-minute session with the therapy dog.

Animals in Schools. Animals in the school setting are becoming popular, resulting from increased research highlighting the many areas of benefit. Students interaction with dogs in the classroom setting can increase levels of comprehension (Fry, 2007), decrease anxiety (Kertes, et al. 2017), behavioral changes (Kotrschal & Ortbauer, 2003), and an increase in feelings of social support (O’Haire, 2013). Studies measuring the benefits of animal assisted therapy and animals in the classroom setting have provided compelling evidence to indicate exposure to the benefits of animal assisted therapy across many aspects of education (Brelsford, Meints, Gee, & Pfeffer, 2017). The benefit of having dogs in the classroom extends from students with developmental delays and learning disabilities to typically developing students (Brelsford, Meints, Gee, & Pfeffer, 2017).

Effects on behavior. Behavioral changes have been presented in the literature including in a study conducted by Kotrschal and Ortbauer (2003). This study utilized 24 elementary school students. Children had been developing social relationships within the classroom setting for four-months prior to the intervention. Next, students had a one-month period when a single dog was present every day for the entire time students spent in the classroom. Students were observed in both conditions (control and experimental) and behavioral data was coded into one of nine behavioral conditions, conspicuous behavior, locomotory play, mild aggression, intermediate aggression, strong aggression, escalating aggression, intervene, dog contact, and interest in dog. Additional observation methods were conducting using a scan method, which characterized behaviors into 25 behavioral categories. Results revealed the focal observations of children showed considerable interest of students interacting with dogs, although the differences varied on student gender, as boys spent on average 9.2% of their time in the classroom relating to dogs, when girls spent 10.6% of their time relating to dogs in the classroom. Children showed

conspicuous and troublesome behavior less often when the dog was in the classroom and were significantly less aggressive (Kotrschal & Ortbauer 2003). However other behavioral improvements were also seen in the classroom setting with the presence of a dog on students with Down's Syndrome, as students presented with a more sustained focus toward positive and cooperative interactions when the dog was present (Limond, Bradshaw, & Cormack, 1997). Behavioral changes were also noted in students with Autism Spectrum Disorder as students displayed less self-focused behaviors and negative affect in the presence of animals (O'Haire 2013). Overall, the presentation of dogs in the classroom has shown to have positive benefits on student's behavior including a decrease in extreme behavior, including hyperactivity and aggression (Hergovich, Monshi, Semmler, & Zieglmayer, 2002).

Effects on anxiety. Decreased feelings of anxiety were noted during animal interactions (Kertes et al., 2017). Investigator's measured whether stress-reducing benefits were apparent with the presence of dogs, utilizing a sample of 101 children ranging from 7 to 12 years of age who owned pets. Researchers examined the perceived stress and cortisol responses to stress in children who indicated strong bonds to their pet dogs. Children and their caregivers, as well as their family pets were included in this study and children were randomized to one of three groups. Children started in the "resting room" before entering the testing room with either their caregiver, their pet, or alone. Children were exposed to a stress test that resembled stressors typically experienced during a school day, starting with a 5-minute speech preparation period, a 5-minute speech delivery, and a 5-minute mental arithmetic task, (the TSST-C stress simulation test). Children in the three experimental conditions did not differ significantly at baseline, on measurements of perceived stress or cortisol levels. Nor did they differ in performance in areas of math and verbal measures. However, when a pet dog was present during the TSST-C stress

test, lower levels of cortisol were detected. Results supported notion that pet dogs buffer children's perceived stress response. Further, pet dog presence significantly buffered children's rise in perceived stress compared to children in the alone or parent present conditions (Kertes et al., 2017).

In a single-subject design utilizing 53 subjects, Giuliani and Jacquemettaz (2017) utilized a trained border collie, handler pair for one-hour sessions. Subjects were allowed to choose the activity the he or she wanted to do with the dog including play ball with the dog, pet the dog, or brush the dog. During this time, the therapist intervened to ask questions related to the dogs and related to the patients experience with animals in general in order to see if the activity was working well. In this study patients had a higher anxiety score before the session, whether they were with the dog or not. Results indicated that the men were more sensitive to the presence of the dog than the women which manifests itself by the men's lower anxiety level after the session. Noting that men benefit more from the presence of a dog, theorizing the reason the dog brings about a decrease in anxiety seems to be found in neurobiological mechanisms (e.g. the neural endocrine system; Giuliani & Jacquemettaz 2017). Further research to support the idea that animal assisted interventions promote decreased stress levels was found in a study utilizing college students. Feedback reported from college students after working with therapy dogs in an animal assisted activity on college campuses reported positive interactions (House, Neal, & Backels 2018). Two hundred and thirty-five students completed the survey and participated in animal assisted activities (e.g., students could interact with dogs by petting, asking questions about the dogs, taking pictures of the dogs, and giving the dogs a treat). Of the students surveyed, 68% reported current feelings of homesickness prior to interacting with the dogs; however, after interacting with the dogs, 100% reported that their experience with the dogs

helped decreasing feelings of homesickness. Prior to participating in animal assisted activities, 98% of participants reported feeling stressed; however, following a positive interaction with the dogs, 87% of the college students reported their experience with the therapy dog provided high stress relief. The remaining 13% reported feelings of moderate stress relief, indicating that 100% of subjects felt a decrease in stress relief after interacting with the therapy dog (House, Neal, & Backels, 2018).

Effects on prosocial behavior. Social implications have also been found in research on animal assisted therapy in the classroom setting. Employing ninety-nine children, O’Haire (2013) measured social implications of animals on social interactions of students with Autism Spectrum Disorder. Students with ASD displayed more prosocial behaviors and positive affect in the presents of animals, when compared to a social interaction in the presents of toys.

Social benefits were also evident in a study focused on students in a self-contained setting with severe emotional disorders (Anderson & Olson, 2006). Positive outcomes were listed as a result of the presence of a dog in the self-contained classroom, including an increase in student’s overall emotional stability, positive changes in students’ attitudes toward school, and the facilitation of lessons learned about respect, responsibility and empathy (Anderson & Olson, 2006).

Further evidence to support the pro-social conclusions of animal assisted therapy was described by Tissen, Hergovich, and Spinel (2007) utilizing three different experimental conditions in a classroom setting. Students were assigned to one of three conditions: social training without the presence of a dog, social training while a dog was present, or no formalized social training, but in the presence of a dog. Teachers were given a pre and posttest survey including a social behavior scale and questions to assess student impulsivity, risk behavior and

empathy, and a bullying/victim questionnaire to measure changes in student outcome in each of the different conditions. Outcomes revealed a small but significant effect on social skills, noting a significant increase in empathy (Tissen et al., 2007).

Animal Assisted Literacy

Research conducted in nursing homes, hospitals and therapeutic settings has provided evidence to support the use of dogs to improve patient outcomes. However, research to support the use of animals in an academic setting remains insufficient. Prior research suggests that while interacting with dogs, subjects may experience physiological changes in the body including decreased blood pressure. Therefore, students may benefit from engaging with dogs during academic instruction. Despite the extensive research to support the benefit of animals in therapeutic and medical settings, less research has been conducted to test the belief that dogs will benefit students during academic instruction. One study conducted by Hall, Gee, and Mills (2016) provided evidence to support the benefits of animal assisted literacy. Hall et al. (2016) provided insight into the principles surrounding animal assisted literacy programs such as READ; concluding that animal assisted literacy programs work as the presence of a dog helps motivate children to read by decreasing blood pressure, while simultaneously increasing feelings of relaxation and confidence (Hall, et al., 2016).

Using a small sample of only three subjects, Bassette and Taber-Doughty (2013) evaluated the effects of a reading intervention program that allowed students to read aloud to a dog for thirty minutes a day, each day for four weeks. Students were assessed on their reading comprehension and on-task reading aloud behavior prior to and following the dog intervention. Students were assessed a third time one month following the completion of the intervention program to determine if any of the effects found following intervention were maintained once the

program was terminated (Bassette & Taber Doughty, 2013). The results demonstrated that students spent more time on task when given the opportunity to read aloud to the therapy dog (Bassette & Taber-Doughty, 2013). Similarly, students reported an increase in reading enjoyment (Bassette & Taber-Doughty, 2013). The animal intervention was determined to be highly effective and increases in on-task reading behavior and increased interest in reading aloud were maintained for at least one month following intervention (Bassette & Taber-Doughty 2013).

A similar research design was utilized by Le Roux, Swartz, and Swart (2014), to measure the effects of the presence of a dog on children's reading ability using a pre and posttest methodology. All students in this study were screened using measures of reading ability and only poor readers were enrolled. Students read to the dog and its owner, allowing the students to practice their reading skills while the dog listens to them. Students enrolled in the group that read aloud to dogs showed improvement in reading comprehension, and the results of this study were consistent with other research reporting a canine reading program as a positive experience for young readers (Le Roux et al. 2014).

Additional research was conducted to determine if animals impacted other areas of reading. Kirnan, Siminerio, and Wong (2016) examined the effects of dog-assisted reading programs on student's reading skills and attitudes. Students enrolled in this study ranged from kindergarten to fourth grade. Results from this experiment supported beneficial theories of animal assisted literacy. Several outcomes were produced in accordance with this research, as improvements in reading skills for students in kindergarten were reflected from the animal assisted reading intervention (Kirnan et al., 2016). A second experiment (Kirnan et al., 2016) revealed an improvement in students' attitude toward reading, including increased motivation and confidence, as well as feelings of increased relaxation. Both educators and dog owners noted

increases in student confidence and interest for reading. Additionally, reports from teachers noted an improvement in focus and increased time spent on task (Kirnan et al., 2016). Overall findings from this study support animal-based reading interventions to increase motivation, skills, and confidence (Kirnan et al., 2016).

Fine (2006) argues the potential psychological, physical, social, and behavioral benefits of animals during stressful life events. Although not all human subjects report therapeutic, or anti-stress effects of animals, (Stallones, Marx, Garrity, & Johnson, 1990), a large body of research argues the social, emotional, and physiological benefits of animals, thus supporting the theory that dogs in a classroom, may have positive outcomes on student's behaviors and beliefs about reading. Animals have shown to facilitate lessons in responsibility, empathy, and respect (Anderson & Olson, 2006), as well as reading comprehension (Fry, 2007). Recently, there has been an increase in the number of literacy programs that utilize dogs to increase motivation and decrease anxiety during reading. Reading projects are designed using highly trained obedience dogs coupled with a trained handler, and one or more students in a reading class. Typically, the students that are paired with dogs, are students with reported reading difficulties, or students who are reading reluctant. The theory behind the reading intervention programs that utilize dogs, relies on the idea that interactions with the dogs will promote relaxation, thus decreasing symptoms of anxiety; also, promoting social support by providing an accepting non-judgmental environment. By decreasing anxiety and providing a comfortable social environment, students reading motivation will increase. Furthermore, the READ program attempts to show reduced blood pressure, and promoting a safe, non-judgmental social environment (Hall, Gee, & Mills, 2016). READ and similar animal assisted literacy programs are designed around the previously

reported idea that reading to a dog helps reading reluctant students overcome their fears and insecurities in an environment that feels safe (Hall et. al., 2016).

Animal-assisted literacy increased student motivation, decreased anxiety, and improved student's attitudes toward reading. If animals in the classroom increase student motivation to learn and improve reading attitudes, students are likely to read more, which will improve their skills. By decreasing anxiety toward reading, student's will be less reluctant, and thus spend more time reading for fun. Reading for fun has shown to improve reading skills in areas of both fluency and comprehension, thus determining the impact dogs have on students that are learning to read is crucial to unlocking student's motivation.

CHAPTER 3

METHODOLOGY

In order to determine the effect of the Therapy Dogs: Elementary School Reading Inspiration Program (Therapy Dogs Program), a descriptive research design was used to determine if the program had an impact on students' attitudes and behavior surrounding reading. This study was conducted using teacher surveys to assess perceived changes in reading fluency and comprehension, behavior during reading, and attitude toward reading as children engaged in the Therapy Dogs Program. Students in the Therapy Dogs Program were previously identified as reading reluctant, and thus as a part of the Therapy Dogs Program were visited weekly by an animal assisted literacy dog.

Program Description

The Therapy Dogs: Elementary School Reading Inspiration Program was designed to provide students with a unique, irreplaceable, dependable support system for children. The services are provided free of charge to many school districts throughout Pennsylvania. Although the broader Therapy Dogs Program provides therapy dogs to many different people in need, the Elementary School Reading Inspiration Program (formerly called Literacy for All) targets elementary students that are struggling, or reluctant to read and was the aspect of the Therapy Dogs Program evaluated in this study. This program allows for student and therapy dog interactions totaling approximately 4,000 hours per school year. Each team consists of one handler/owner and one certified therapy dog. On average, 2,000 students participate in the program each week across a school district in Pennsylvania.

Therapy dogs work with students across the area and support students in mainstream classes, learning-support classes, autistic support classes, and multiple-disabilities classes. In

order to be part of the Therapy Dogs Program, teachers first identified students in their classroom for participation in the program. During the first few weeks of school, teachers identified students who could benefit from reading support provided by a Therapy Dogs Program. Once a certified, volunteer Therapy Dogs Program team was requested for a classroom, the team was carefully chosen to match the needs of the children within the class. During the matching process, the Therapy Dogs are matched using a list of factors including the type of class, the age and size of the children in the class, and the location of the school. Student's disabilities are considered as well, for example students with motor skill deficits will be paired with a larger dog, to protect small dogs from injury. Once a team was matched with a class, it remained as the therapy team assigned to that class for the remainder of the year. For each visit, a therapy dog and the handler enter the school, and are taken to their classroom. The dog sits in the classroom, either on a large rug, or carpet placed in either the front or the back of the classroom. Students come to the rug and read aloud to the dog in either a small group or individually. Each classroom structures the reading intervention time differently, ranging from reading one on one to the dog for the entire 30 minutes to an hour, to reading in a group with the dog sitting in the center of the floor. The teacher structures the session to best fit the needs of the students in the classroom.

Method

Measures. A survey was developed by the researcher to assess teachers' perceptions of the Therapy Dogs Program on students' reading fluency and comprehension, reading behaviors, and attitudes toward reading. Teachers were asked a series of questions set forth to determine their perceptions of the impact of the Therapy Dogs Program on their students. Specifically, teachers were asked to assess the impact of the Therapy Dogs Program on students' reading fluency and comprehension, behavior during reading, and attitude toward reading (see Appendix

A for the Teacher Perception Survey). Questions included both Likert style (4-point scale), open-ended and additional space for teachers to offer additional information in narrative form.

In addition, level of participation was addressed including questions related to the number of students in their classroom, the frequency with which those students participated with the animal-assisted literacy pair, and the length of time the pairs worked with their students. Teachers were also asked to answer demographic questions, including grade they taught, number of years they have been teaching, and whether they taught general education or special education.

Procedure. Teachers whose classrooms were visited at least one time each week were eligible for study participation. Once teachers were identified as having met this criterion, they were sent an email by a school district staff member involved in the Therapy Dogs Program and asked to complete a brief online survey that included a Likert scale as well as open ended questions. Responses to the survey were anonymous, and as such, consent was implied by the completion of the survey. Teachers completed one survey as a general assessment of perceived impacts on their students as a whole. For the purpose of this study, teachers were asked to assess students' attitudes utilizing a Likert-type scale and open-ended questions. In addition, teachers were asked to report on changes in students' reading comprehension.

Participants

For the purpose of this study, 131 elementary-school teachers in a school district in Eastern Pennsylvania who had students participating in the Therapy Dog Program, were contacted by email by a member of the school district staff and invited to participate in this survey study. Sixty-three of the 131 teachers that were sent the link completed the survey. Respondents taught grades kindergarten through sixth grade, consisting of 12 general education

classrooms, 20 special education classrooms, 30 classrooms that contained a combination of students in both general education and special education, and one respondent that did not provide demographic information pertaining to age of students or classroom make up. Class sizes ranged from 5 to 27 students with an average of 17.14 students. Tables 1 and 2 provide additional demographic information on the respondents and their classrooms, respectively.

Table 1

Demographic Information of Teachers Completing Teacher Perception Survey

Demographic Variable		<i>n</i>	<i>Percentage</i>
Gender	Female	51	80.95%
	Male	9	14.3%
	Unknown	3	4.7%
Grade Taught	Kindergarten	4	6.56%
	First grade	10	16.39%
	Second grade	11	18.03%
	Third grade	14	22.95%
	Fourth grade	9	14.75%
	Fifth grade	9	14.75%
	Sixth grade	4	6.56%
Population of Students	General Education	12	19.35%
	Special Education	20	32.26%
	Both General & Special Education	30	48.39%

Table 2
Classroom Demographics

Demographic Variable	<i>Students in the classroom</i>	<i>n</i>	<i>Percentage</i>
Number of Students in Each Classroom		<i>M 17.14</i> <i>SD 7.27</i>	
Number of Students in Each Class	5	4	6.4%
	6	4	6.4%
	7	2	3.2%
	8	5	8.0%
	9	2	3.2%
	10	3	4.8%
	11	0	0%
	12	0	0%
	13	0	0%
	14	1	1.6%
	15	2	3.2%
	16	0	0
	17	1	1.6%
	18	0	0
	19	1	1.6%
	20	4	6.4%
	21	3	4.8%
	22	13	20.1%
	23	8	12.9%
	24	4	6.4%
	25	3	4.8%
	26	1	1.6%
	27	1	1.6%
Percent of Students that Read to the Dogs	Less than 10%	1	1.64%
	11%-30%	0	0.00%
	31%-50%	1	1.64%
	51-75%	2	3.28%
	76-90%	6	9.84%
	Greater than 91%	51	83.61%
Number of Minutes Spent Reading to the Dog Each week		<i>M</i> <i>40.80</i> <i>SD</i> <i>15.449</i>	

CHAPTER 4

RESULTS

The study conducted consisted of survey data obtained from teachers from a school district in Eastern Pennsylvania, whose students participated in the Therapy Dogs Program. Teachers participating in this study taught students in grades ranging from kindergarten to sixth grade, and classrooms were made of both general and special education students. Frequency and descriptive data from the Teacher Perception Survey (Appendix) was utilized to compute and present information regarding teacher perception of the Therapy Dogs Program, and its' impact on the students reading. Results related to each research question and hypothesis are provided in the following section.

Respondents included 63 teachers whose students participated in the Therapy Dogs Program, with the number of students in each classroom ranging from 5 to 27, ($M 17.14$, $SD 7.27$). Teacher respondents taught either General Education (19.35%), Special Education (32.26%), or both General Education and Special Education (48.39%).

Confidence and Interest

The first research question was designed to assess whether teachers perceived changes in students interest and confidence in reading after participating in the Therapy Dogs Program. This research question was answered by analyzing questions 1-3, 6, and 9,10, and 12 on the Teacher Perception Survey using descriptive statistics. Respondents were given a series of statements and were asked to indicate how true they felt each statement was. The options ranged from very true, to mostly true, somewhat true, or not true. Complete results by item are provided in Table 3. Results related to confidence and interest indicated positive results. Specifically, when asked to report on whether students in the class appeared more relaxed during reading when the dog was

present in the classroom, 82.54% of respondents indicated this statement was true or mostly true. When given the statement, “Students in the class express an interest in or ask when the dog will be visiting the room,” 100.00% of teachers categorized that statement as very true, or mostly true. Teacher reports on the statement, “Your class appears to enjoy reading more when the dog is present,” indicated very true or mostly true 90.32% of the time. When asked to comment on the accuracy of the following statement, “Students in the class ask to sit near or read to the dog,” 99.41% indicated very true or mostly true, indicating teachers perceived an increased interest in reading to the dogs compared to reading alone. This reveals that most respondents were able to see improvements in reading enjoyment, improved interest, and attitude in students in the class when the animal-assisted literacy pair are present.

In addition to gauging the interest of students in the classroom, teachers were also asked to provide perceptions specifically on students’ who began the school year as reluctant or struggling to read. When asked to report on the changes in interest of reluctant readers, teachers perceived an increased interest in reading 95.24% as very or mostly true. Additionally, students who started the year as struggling readers have shown improved attitudes toward reading in general, even when the dog is not present 76.19% as very true or mostly true. Results indicated that 98.41% of respondents indicated very or mostly true, when asked if reluctant readers showed an increased interest in reading when the dogs are present during reading.

Reading Comprehension and Reading Fluency

The second research question addressed teacher perceptions of students reading comprehension and reading fluency as influenced by participating in the Therapy Dogs Program. This research question was answered by analyzing questions 7 and 8 on the teacher perception survey using descriptive statistics. The options again ranged from, very true, to mostly true,

somewhat true, or not true. It was hypothesized that students that participate in the animal-assisted literacy program will show an improvement in reading comprehension and reading fluency. Results indicated that 65.08% of teachers reported very true, or mostly true when provided the statement, “Students that started the school year as struggling readers have improved in the area of reading comprehension.”

In addition to reading comprehension, this study wanted to determine whether teachers perceived a positive impact on reading fluency following the Therapy Dogs Program. Similarly, to reported improvements in comprehension, when asked to indicate the accuracy of the statement, “Students that started the school year as struggling readers have shown an improvement in their reading fluency,” 73.02% indicated very true or mostly true. Overall, results indicated that a majority of teachers reported an improvement in reading fluency, and an improvement in reading comprehension. See Table 3 for percentage of respondents indicating each likert category.

Reading Behaviors

The third research question in the present study targeted teacher’s perception changes in student behavior when students participate in the Therapy Dogs program. It was hypothesized that students will show an increase in the number of times they volunteer to read to the class, as well as a decrease in reading avoidance according to teacher report. This research question was answered by analyzing questions 4, 5, and 11 on the teacher perception survey. The options again ranged from, very true, to mostly true, somewhat true, or not true. Table 3 also presents all percentage of responses for these items. Again, respondents were mostly positive when answering items related to reading behaviors. Specifically, when reporting on the accuracy of the following statement, “More students volunteer to read aloud or to the class when the dog is

present versus not present,” 80.64% indicated very true or mostly true. Additionally, when teachers were asked to comment on whether a decrease in avoidance behaviors was apparent during reading (i.e., students were less likely to ask to leave the classroom during reading), 88.89% indicated very true or mostly true. When considering the changes in students that start the year as reluctant to read, teacher perceptions indicated that 95.23% of teachers indicated very true or mostly true, to the statement, “the class appears to enjoy reading more when the dog is present.”

Open Ended Responses

After completing the survey, teachers were provided with the option to provide additional information in the form of a narrative. Compiled below are a list of comments provided by survey respondents that provide additional information. It is important to note the narratives included below were in response to the following question, “Any additional comments you wish to make about the animal assisted literacy program.”

The positive impact that our Therapy Dog makes on the class is not only measurable in terms of academic reading progress. Our day is vastly improved by the mere presence of our dog in the room! So, in conducting a study of this nature, please make sure to highlight the collateral improvements experienced in these classes as well as those seen in academic assessments.

[The Therapy Dog Program is] Wonderful for anxiety and mindfulness.

I have personally witnessed students who are reluctant to speak in class ask to read to the dog and I was shocked by what a positive presence the dog brings to our classroom!

It's a wonderful program and we cherish our time with our dog each week! He has become a big part of our class! His visit is very therapeutic for my emotional support student.

It is the highlight of their week. We love this program!

We love reading to our therapy dog and while the class tends to be louder and more excited, it is because they are so into the dog's visit.

I feel that the program has been well received by teachers, parents, and students. It is a very special program that my students look forward to participating in. We love [The Dog Therapy Program]. It has made a big difference for my students over the years.

I've been participating in [The Therapy Dog Reading Program] for a few years and it's wonderful! The students love reading to the dogs and spending time with our handler. The students know when our handler and dog are coming, and you can hear them talk about [the program] from the moment they walk in the door on [our] day. The students get very upset when [our session] gets canceled due to a change in schedule. Students have also expressed that they are more relaxed when reading aloud to the dog and how reading to a dog has helped them be better public speakers. Thank you so much for sharing your time and dogs with us!

Wonderful program that builds student's self-confidence/enjoyment in reading and fosters an organic sense of community within the classroom!

My students actually read the Weekend News that they write each Monday to our dog. So, in addition to becoming better readers, they are also becoming better writers. Our reading dog visits are most definitely a weekly highlight for my students

[The Dog Reading Program] is amazing in so many ways. Of course, the students' fluency and interest in reading has improved. Another effect is that students who are shy become more social and communicate more easily when the dog is present. I'm so glad I am involved in this program.

Table 3
Teachers Perception of the Therapy Dog Program

Area	Item	<i>N</i>	Very True	Mostly True	Somewhat True	Not True
Confidence and Interest	Students in the class ask to sit near or read to the dog.	63	92.06%	6.35%	0.00%	1.59%
	Students in the class express an interest in, or ask when, the dog will be visiting the classroom.	63	90.48%	9.52%	0.00%	0.00%
	Struggling readers in the class appear to enjoy reading more while the dog is physically present.	63	84.13%	11.11%	4.76%	0.00%
	The class appears to enjoy reading more when the dog is present.	62	70.90%	19.35%	9.68%	0.00%
	Students who are reluctant to read appear more willing to participate in reading-related activities when the dog is present.	63	68.25%	26.98%	3.17%	1.59%
	The class appears more relaxed during reading time when the dog is in the room.	63	63.49%	19.05%	12.70%	4.76%
	Students who started the school year as struggling readers have shown improved attitudes toward reading in general, even when the dog is not present.	63	33.33%	42.86%	20.63%	3.17%

Area	Item	<i>N</i>	Very True	Mostly True	Somewhat True	Not True
Reading Behaviors	Students are less likely to ask to leave the classroom during reading (e.g. request to visit the bathroom, nurse, office, etc.), when the dog is present.	63	73.02%	15.87%	9.52%	1.59%
	Students who are reluctant to read showed an increased interest in reading when the dogs are present during reading.	63	68.25%	30.16%	1.59%	0.00%
	More students volunteer to read aloud, or to the class, when the dog is present versus not present.	62	58.06%	22.58%	14.52%	4.84%
Comprehension and Fluency	Students that started the school year as struggling readers, have shown an improvement in their reading fluency.	63	36.51%	36.51%	26.98%	0.00%
	Students that started the school year as struggling readers, have improved in the area of reading comprehension.	63	31.75%	33.33%	32.75%	3.17%

CHAPTER 5

DISCUSSION

The purpose of this study was to examine teacher perceptions of the Therapy Dogs Program, an animal-assisted literacy program. The study examined teachers' perception of changes in students interest, behaviors, and reading ability after participating in the Therapy Dogs Program for several months. A total of 63 teachers whose students participated in the Therapy Dogs Program responded to the survey and provided demographic information about class structure and student population. Respondents participating in this survey included teachers from kindergarten to sixth grade, who taught either general education students, special education students, or both with class sizes ranging from 5-27 students.

Confidence and Interest

The first research question addressed potential changes in students' attitudes toward reading (i.e., confidence and interest) after participating in the Therapy Dogs Program. It was hypothesized that teachers would perceive a positive change in students' attitudes toward reading. Prior research into the impact of animal-assisted literacy dogs on student's attitude toward reading revealed an improved attitude toward reading (Kirnan et al., 2016). The current study was consistent with this literature and found that the majority of teachers reported an improvement in reading attitude, including increased interest, and an increase in reading enjoyment, while participating in the Therapy Dogs Program.

When comparing the data for the individual items on the survey, the majority of teachers indicated that the class appeared more relaxed during reading time when the dog was present in the room and that students appear to enjoy reading more when the dog is present. The notable

increase in relaxation is consistent with previous findings detailing the stress-reducing benefits of animals (Kertes et al., 2017, Giuliani & Jacquemettaz, 2017).

A majority of the teachers surveyed in this study also reported that students appear to enjoy reading more while the dog is physically in the classroom. These reports are consistent with findings from Hall, et al., 2016, who reported people showed increased motivations while interacting with dogs. An overall improvement in student motivation, skill, and confidence, was reported by Kirnan et al.(2016) following an animal-assisted reading intervention program. Similar information as related to reading interest and attitude was gathered in the current survey. A majority of teachers surveyed reported that students who started the school year as reluctant to read showed improved attitudes toward reading after participating in the Therapy Dogs Program, even when the dog was no longer present. Reports in this study appear consistent with existing animal-assisted literacy noting the increased motivation, confidence and an attitude during reading.

Reading Comprehension and Reading Fluency

The current study investigated the perceived effects on reading fluency and reading comprehension following the Therapy Dogs Program. Prior research suggested the presence of a dog impacted children's reading ability (Le Roux et al., 2014). Within the current study teachers were asked using the survey, to determine whether they perceived improvements in students reading comprehension and fluency after participating in the Therapy Dogs Program. Based on information provided in the survey, teachers perceived an improvement in reading comprehension skills for subjects that participated in the Therapy Dogs Program, and the majority of teachers reported a perceived improvement in reading fluency as well. Prior research noted reading enjoyment increased fluency and comprehension, (Greany & Hegarty, 1987),

which is consistent with teacher reports noted in the present study. Research suggests that student motivation impacts student's ability to read as fluency and comprehension are positively influenced by the time students spend reading (Krashen, 2004), therefore increasing students' motivation to read, likely effects their reading ability.

Reading Behaviors

The third research question addressed behavioral changes in the classroom. Survey questions targeted student behavior in the classroom, comparing reading time when the animal-assisted literacy team was present, versus when students were engaged in typical reading instruction. Several reported changes in behavior were noted as outcomes of the survey, including increased student volunteering, increased willingness to participate in reading-related activities, and less students asking to leave the classroom during reading when the dog is present.

In this study, student's reading confidence was measured by analyzing perceived changes in the number of students that volunteer to read when the dog is physically present in the classroom versus reading instruction when the dog is not in the classroom. When teachers were asked to report on increases in student volunteering, more than three-fourths of the teachers surveyed reported an increase in students volunteering to read when the dog was present in the classroom. As previously noted, students that lack confidence in reading are less likely to read aloud in front of the class (Baker & Wigfield, 1999), and this increase shows improvements in areas of confidence as well as social behaviors. These findings support those outlined in Bassette and Taber-Doughty (2013), who noted improvements following an animal-assisted reading intervention program, in both on-task behaviors and reading aloud.

Increasing students time spent reading has positive implications for their reading ability and decreased avoidant behaviors. Children that struggle to learn and read rate higher on both

teacher and self-reported behavior problems (Heiervang et al. 2001). However, by increasing the time students spend engaged in reading-related activities the more skilled at reading they will become (Gambrell, 1996). Teacher reports from this survey indicate an improvement in behaviors, including students avoiding reading-related activities, indicating that students spend more time in the classroom during reading. By decreasing the time spent away from reading lessons, students are exposing themselves to the more reading-based curriculum. We know that increasing time spent reading, increases reading skill and interest in reading. Effective methods for increasing time spent in the classroom, and exposure to curriculum increase student learning. In order to become more efficient readers, students need to develop the will to read (Gambrell 1996), therefore by implementing the Therapy Dogs Program, students are showing an increase in positive behaviors toward reading.

In addition to analyzing student behavior as a whole, questions in this study were designed to target behavioral changes in students that started the school year as reluctant or struggling readers. More than 90% of teachers reported positive changes in the behavior specific to students that started the school year as reluctant readers. Teacher reports indicated that students who were reluctant to read, now appear more willing to participate in reading-related activities when the dog is present. Teachers in this study perceived an increase in reading motivation for students, which is expected as positive feelings about reading motivate students to read more (Yamashita, 2004).

Teacher Comments

After completing the survey, teachers were provided with the option to provide additional information in the form of a narrative. Compiled below is a summary of the comments, provided by survey respondents that provide additional information. The comments in this section of the

survey included positive and specific feedback regarding the effectiveness of the program. Teacher reports noted improved academics reported in areas of writing, reading fluency and reading interest. The improvement in academic areas of reading and writing are likely caused by the increased level of participation in reading related activities, as Fry (2007) noted the importance of reading practice on skill development. Specifically Fry (2007) reports an improvement in reading comprehension following lessons that include an animal assisted therapy dog.

In addition to improvements in academic skills, teachers reported the benefits to their students extended beyond the academic setting and highlighted the collateral improvements to students in their classroom. In this study, respondents noted social-emotional improvements as well. Specific areas of improvement noted by the respondents included student's decreased levels of anxiety and an increase in relaxation when reading aloud, increased mindfulness, an increase in social skills who were previously reluctant to speak in class, as well as improved communication skills, and improved student attitudes toward reading. The positive changes noted in areas of social-emotional growth were consistent with prior research as Beetz (2013) noted increased positive attitudes toward school and learning after introducing animals into the classroom setting, and animal assisted therapy has shown to have a decrease in anxiety (Barker & Dawson, 1998; Bueche, 2003; House, Neal, & Backels, 2018; Kertes et al., 2017). Similarly, (Odendaal 2000) noted decreased levels of anxiety in humans when pairing them with a therapy dog. The impact on dogs, decreasing student anxiety in a classroom setting needs to be further investigated as reading anxiety can negatively impacts reading ability (Tysinger, Tysinger, & Diamanduros, 2010).

Lastly, respondents reported the presence of the dog provides therapeutic support for emotional support students and built student's self-confidence. The comments provided by the respondents are in support of the literature that outlines the benefits of dogs in the therapeutic and medical setting, as Fine (2006) provided evidence to support social, psychological, physical, and behavioral benefits of animals. Prior research has also indicated a decreased in student fears and insecurities in reading reluctant students which is consistent with reports in the current study. Additional research into the emotional benefits of animals in the classroom would be beneficial to help student development in areas of social skills including empathy, compassion, and sharing.

Clinical Implications

Results from the current study indicated that teachers perceived positive effects of the Therapy Dogs Program on students in their class and especially students that began the school year as reading reluctant. With the limited knowledge into the potential benefits of animal-assisted literacy programs, programs such as the Therapy Dogs Program may help increase students motivation to read which in turn will help increase the time spent reading. Based on the information provided in the current study, introducing an animal into the classroom improves student attitude, reading fluency, reading comprehension and behavior during reading curriculum. Results from the current study suggest that personnel see improvements in all areas of reading that were measured in this survey, which may lead to effective intervention strategies for readers that lack motivation, confidence or interest.

Limitations

This study had several limitations as outlined below. The first limitation of the study was the generalizability of the results. Students in this study all attended school in one school district, that has been utilizing the Therapy Dogs Program for almost a decade. The majority of

respondents were also female, suggesting limitations in male respondents and respondents from different geographical locations.

Another limitation of this study pertains to potential confounding variables. Teacher's that participated in this study may or may not have had prior exposure to animal-assisted literacy in their classroom, but it was unclear as to which respondents had prior exposure to the animal-assisted program. Thus, the background exposure to animal-assisted literacy is a potentially confounding factor in this study. It is important to note that teachers requested to participate in this animal assisted reading intervention program, and it is possible they may have been predisposed to perceive the benefits of the program, which would be reflected in their positive scores.

Finally, the last limitation to the study is the study design. This study collected teacher perceptions about the effectiveness of the Therapy Dogs Program. This study was limited in that it did not collect data from student records or include surveying the student's direction. Additionally, this study failed to utilize a comparison group, thus perceived gains in areas of fluency and comprehension could be a result of natural maturation over time and exposure to the curriculum and not necessarily a direct result of the dog therapy program.

Future Directions

This paper is the beginning of a wonderful research initiative: animal-assisted literacy. As the literature review suggests, very little literature exists on the impact of animals as a reading intervention strategy. This may be due to the lack of existing animal assisting literacy programs in school districts currently. Future research into this area of research should target children participating in animal assisted literacy programs across America. In addition to including people from a wide geographical location, this study should collect student reading data at baseline, and

following intervention. Future research would benefit from collecting survey data on students directly as well, in order to gauge their perspective on the effectiveness of the intervention program. This area of research would benefit from utilizing a comparison group, and comparing students reading between students exposed to the reading intervention program versus students receiving standard curriculum instruction. Pre- and post-survey data would be effective as well, to better quantify the changes in attitude and reading ability after intervention. Additional areas worth researching include the implications of animals on student attitudes toward school, and behavior in the classroom.

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APPENDIX

Rating Scale:

(1) The class appears more relaxed during reading time when the dog is in the room.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

(2) Students in class express an interest in, or ask when, the dog will be visiting the classroom?

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

(3) Your class appears to enjoy reading more when the dog is present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

(4) More students volunteer to read aloud, or to the class, when the dog is present versus not present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (5) Students are less likely to ask to leave the classroom during reading (e.g., requests to visit bathroom, nurse, office, etc), when the dog is present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (6) Students in the class ask to sit near or read to the dog.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (7) Students that started the school year as struggling readers, have improved in the area of reading comprehension.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (8) Students that started the school year as struggling readers, have shown an improvement in their reading fluency.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (9) Struggling readers in the class appear to enjoy reading more while the dog was physically present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (10) Students who started the school year as struggling readers have shown improved attitudes toward reading in general, even when the dog is not present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (11) Students who are reluctant to read appear more willing to participate in reading related activities when the dog is present.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

- (12) Students who are reluctant to read showed an increased interest in reading when the dogs were present during reading.

VERY TRUE	MOSTLY TRUE	SOMEWHAT TRUE	NOT TRUE
1	2	3	4

Demographics:

(1) What grade do you teach? Choose one: K 1 2 3 4 5

(2) What is your gender? _____

(3) How many students are in your class? _____

(4) What percent of your students read to the dogs?

Less than 10%	10%-30%	30%-50%	50%-75%	75%-90%	Greater than 90%
1	2	3	4	5	6

(5) On average, how many minutes each week does the animal/handler team spend in your classroom? _____

(6) What percent of your students were reading on grade level prior to the intervention?

Less than 10%	10%-30%	30%-50%	50%-75%	75%-90%	Greater than 90%
1	2	3	4	5	6

(7) Are the students in your reading class general education/special education or both?

Choose one: General Special Education Both

(8) Do students in the class have to leave because of a dog allergy? Choose one: Yes No

(9) Any additional comments you wish to make about the animal assisted literacy program?
