

Differences in Students' Self-Esteem, Prosocial Behaviors, Classroom Climate, and Participation

in Read to Dogs Programs:

A Quantitative Comparative Study

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A Dissertation Presented in Partial Fulfillment

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## **Abstract**

This anonymous quantitative quasi-experimental pre-post-test study was designed to determine differences in students' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate after participating in Read to Dogs (RTD) programs in elementary and middle schools in East Central, New Jersey. Students with reading difficulties have higher incidences of low self-esteem and self-concept, depression, and anxiety that result in internalizing and externalizing behaviors that impact the classroom climate for all students socially and academically. Student participants completed the Rosenberg Self-Esteem Scale and the Strengths and Difficulties Questionnaire, and teacher participants completed the grade-appropriate version of the Elementary Classroom Climate Assessment Instrument-General (CCAI-E-G) or the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G) prior to and at the completion of the study period. The results support that participation in RTD programs leads to increases in self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate. An inverse relationship was discovered: as students' self-esteem increased, they reported performing more social behaviors while experiencing less stress and difficulty getting along with other students. Each student's self-esteem and behaviors impact the overall classroom climate, which impacts all students as well as achievement. Recognizing the connections between self-esteem, the performance of more prosocial behaviors, less stress, the improved classroom climate, and achievement leads to better outcomes for all students. Areas of future research include larger sample sizes, a control group, and possibly expanding the research to include math or public speaking anxieties.

*Keywords:* Read to Dogs (RTD), therapy dog, self-esteem, prosocial behaviors, classroom climate, anxiety, depression, internalizing behaviors, externalizing behaviors

## **Dedication**

Thank you to my family and friends – both human and furry who support, encourage, and believe in me with unconditional love and puppy kisses.

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## **List of Abbreviations**

Alliance for the Study of School Climate (ASSC)

Americans with Disabilities Act (ADA)

Animal Assisted Activities (AAA)

Animal Assisted Interventions (AAI)

Animal Assisted Therapy (AAT)

Analysis of Variance (ANOVA)

Attention Deficit Hyperactivity Disorder (ADHD)

Autism Spectrum Disorder (ASD)

Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G)

Emergency Departments (ED)

Hospital Anxiety and Depression -Anxiety (HADS)

Human-Animal Interaction (HAI)

Institutional Review Board (IRB)

Multivariate Kruskal-Wallis (MKW)

Multivariate of Variance (MANOVA)

Read to Dogs (RTD)

Reading Education and Assistance (READ)

Rosenberg Self-Esteem Scale (RSES)

Secondary Classroom Climate Assessment Instrument- General (CCAI-S-G)

Strengths and Difficulties Questionnaire (SDQ)

Society for the Prevention of Cruelty to Animals (SPCA)

Therapy dog (TD)

## Chapter 1: Introduction to the Study

### Overview

This chapter gives a brief history of the connection between humans and animals, the services they have and continue to provide, and the physiological and psychological benefits to humans. Also covered in this chapter are the development of Animal Assisted Interventions (AAI) and Reading Education Assistance Programs or Read to Dogs (RTD) programs. Developed in 1999, RTD has consistently and empirically been shown to improve children's reading fluency and comprehension (E. Levinson et al., 2017). However, children who struggle with reading face academic and social challenges. Students with reading difficulties consistently have higher incidences of low self-esteem and self-concept, as well as stress, depression, and anxiety that result in internalizing and externalizing behaviors causing difficulties in all their social relationships (Boyes et al., 2018; Lindeblad et al., 2019). Research has shown that AAI decreases stress (Beck & Katcher, 2003), among other physiological benefits – decreased heart rate (Jalongo et al., 2004), decreased blood pressure (Nimer & Lundahl, 2007), elevated mood (Sable, 1995). Linder et al. (2018) noted that stress inhibits learning.

This study aimed to extend the current research demonstrating the physiological and psychological benefits of AAI to investigate the possible psychosocial benefits. Children who participate in AAI are less stressed, and those who participate in RTD programs increase their reading abilities and decrease stress (Jalongo et al., 2004). In this study, it is hypothesized that the decreased stress and increased reading abilities as a result of AAI and participating in RTD will lead to increased self-esteem, more performance prosocial behaviors performed, and overall improved perceptions of the classroom climate, which leads to greater achievement (Shindler et al., 2016).

The human-animal connection dates back over 2.5 million years (Cohen & Diaz, 2013). Animal assisted interventions (AAI) are not a new phenomenon but have a rich history reaching back to Florence Nightingale in the 1800s and include Freud, Jay Haley, and Boris Levinson, the father of AAI. They all found that including animals in hospital and therapy settings had psychological and physiological benefits (Friesen, 2010). The development of RTD programs expanded the benefits of AAI to include increasing reading abilities and being incorporated into school curriculums with educational and psychosocial goals (Intermountain Therapy Animals, 2021). The introduction chapter gives historical context to the proposed study and explains its purpose and significance, followed by a summary. The purpose of the proposed study is to explore the effects of RTD programs on participants' self-esteem, the performance of prosocial behaviors, and the perceptions of the overall classroom climate. This study's significance was expanding the research from anecdotal and qualitative to quantitative. This was one of the first quantitative studies to examine differences in students' self-esteem, performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate due to participation in RTD.

## **Background**

### **Historical Context**

Throughout history, humans have used dogs to perform many tasks, including hunting, carrying loads, pulling sleds, guarding, and companionship (as cited in Morey, 2010, p. 109). Although estimates of when the domestication of dogs occurred range between 14,000 and 31,700 years ago (DeMello, 2012, p. 85), the history of the connection between humans and dogs can be traced back to the Paleolithic age – or more than 2.5 million years (Cohen & Diaz, 2013). Because of this long connection history, dogs have developed the ability to understand human

social and communicative behavior (Cooper et al., 2003; Hare & Tomasello, 2005; Miklosi et al., 2004), or what Glenk et al. (2017) refer to as socio-communicative behaviors. A study by Bräuer et al. (2013) found that dogs can perform prosocial or voluntary behaviors that aim to benefit an individual or group of individuals. There are four types of prosocial behavior: comforting, sharing, informing, and instrumental helping.

As far back as 1860, authors have written about the healing benefits of animals. Florence Nightingale noted, “A small pet animal is often an excellent companion for the sick, for long chronic cases especially” (Nightingale, 2012, p. 103). In the 1930s, Freud’s dog, Jofi, was frequently present in counseling sessions because he noticed that patients relaxed in her presence (Ernst, 2013). Boris Levinson, known as the father of Animal Assisted Therapy (AAT), was the first professionally trained therapist to document how companion animals accelerate the development of the therapeutic alliance (B. Levinson, 1997).

### **Theoretical Context**

Theories, concepts, and hypotheses that guide this study are John Bowlby’s Attachment theory, Rogerian Client-centered therapy, David Elkind’s theory of Adolescent Egocentrism, and the Biophilia Hypothesis - the idea that because of the positive feelings associated with being close to other living things, humans have an innate drive to do so (Mills & Hall, 2014; Wilson, 1984). Two concepts within Elkind’s Adolescent Egocentrism theory - the “Imaginary Audience” and the “Personal Fable” assert that young adolescents are moderately more self-conscious or concerned with how others perceive them than are children of other ages (Elkind & Bowen, 1979, p. 38). These concerns about how they are perceived are heightened for those who experience difficulty reading either out loud or to themselves. This results in increased frustration and anxiety. Research has shown that increased anxiety and frustration lead to



internalizing or externalizing behaviors and reluctance to read (Jalongo et al., 2004; Kirnan et al., 2016). The quiet, attentive, and nonjudgmental audience a therapy dog (TD) provides for readers Rogers's core components of unconditional positive regard, empathy, and congruence (Friesen, 2009; Jenkins et al., 2014). Bowlby's attachment theory is evidenced in the emotional connection between participants and TDs in Read to Dogs (RTD) programs. Evidence suggests that companion animals, specifically dogs, are thought to provide a non-threatening yet socially supportive and interactive audience for children when practicing their oral reading skills (Friesen, 2010).

### **Social Context**

Today, while most dogs are solely for companionship, many are working dogs. The jobs dogs perform range from highly trained military working dogs and service animals assisting individuals with disabilities (i.e., seeing eye) to therapy dogs (Schoenfeld-Tacher et al., 2017). Since service dogs are covered under the Americans with Disabilities Act (ADA), they are legally permitted to go anywhere with their handlers (Hope, 2019). According to the ADA, a service animal is a dog trained to perform actions that assist one individual with a specific disability (U.S. Department of Justice, 2020). No other species of animal is considered a service animal (U.S. Department of Justice, 2020).

Therapy dogs (TD) provide both physiological and psychological benefits ranging from reduction of stress, blood pressure, heart rate, and symptoms of anxiety and depression in a wide variety of populations and settings (Biazar, 2019). In contrast to service animals who assist one individual and, by law, can go anywhere with their handlers, therapy dogs who assist individuals or groups do not have guaranteed access (Biazar, 2019). A therapy dog and handler are a team, and they must be tested and certified together. After passing a general temperament test to ensure

the dog has no aggressive tendencies, the dog and handler must pass a second test demonstrating mastery of 13 basic commands and comfort in situations likely to be encountered in the field (Therapy Dogs International, 2021).

Therapy dogs can be found providing services in various settings. These settings include, but are not limited to, physical and substance abuse rehabilitation facilities, hospitals, nursing homes, funeral homes, counseling sessions, and schools (Therapy Dogs International, 2021). Although research is limited, literature has suggested that the presence of therapy dogs in schools produces positive psychological, social, and academic outcomes in schools (Zents et al., 2017). In schools, therapy dogs provide support through AAI and RTD programs. Because of their natural dispositions of openness, curiosity, and sociability, dogs are frequently used in AAIs. Dogs are often credited with facilitating social relationships between people (Scandurra et al., 2005). Animal Assisted Interventions (AAI) can take the form of providing stress relief to college students during finals. Students can play with, make the dog do tricks, pet, or interact with dogs as they please (S. Barker et al., 2016).

Therapy dogs are also used to increase reading abilities in students who experience challenges learning to read or developing their reading skills. Reading Education Assistance Dogs, or RTD programs, have existed since 1999 (Intermountain Therapy Animals, 2021). Empirical evidence has consistently shown that reading out loud to a dog improves comprehension and fluency (E. Levinson et al., 2017), improved reading fluency and comprehension (Connell et al., 2019), an increase in motivation, competency, and persistence among first through third-grade readers (Rousseau & Tardif-Williams, 2019), and increased confidence, positive emotion, improved pacing, and better posture (Barber & Proops, 2019).

## **Problem Statement**

Despite the mounting evidence that participation in Read to Dogs (RTD) programs increases reading abilities (Jalongo et al., 2004; Kirnan et al., 2016, 2018), it is not known if and to what extent participants' self-esteem, the performance of prosocial behaviors, and perceptions of the overall classroom climate differ as a result of participating in the RTD program. When low performance in reading begins in the early grades, it tends to persist or worsen throughout the child's educational career (Hernandez, 2012). When children struggle with reading, the impacts go beyond their educational attainment. Results range from low motivation to practice reading, an overall dislike of school, and an increased dropout rate (Boyes et al., 2018). Low self-esteem and withdrawal from classroom activities are also common in those who find learning to read challenging (Ecklund & Lamon, 2008). This lack of confidence, accompanied by diminished motivation to practice reading, makes this population of students very difficult to engage. In addition, studies have shown that students who do not learn to read at grade level in elementary school are very likely not to attain grade-level reading abilities (Sloat et al., 2007).

According to the United States National Center for Education Statistics [NCES] (2022), 34% of students are below the basic reading level in the fourth grade, and another 31% are below the proficient reading level. Students with reading difficulties consistently have higher incidences of low self-esteem and self-concept, as well as depression and anxiety. In addition, nearly 10% of all students have substantial difficulties in learning to read, representing two to four children in an average classroom. These students experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). These internalizing and externalizing behaviors cause difficulties in

social relationships, not only in the classroom but all social relationships (Boyes et al., 2018; Lindeblad et al., 2019).

The research and literature have established that AAI has psychological and physiological benefits and that participation in RTD programs increases reading skills. Although research has recognized these benefits to the participants, there is a gap in the literature concerning whether these programs have benefits, such as improving students' self-esteem, the performance of prosocial behaviors, and the overall classroom climate. It is unknown if or to what extent participating in RTD programs increases self-esteem, increases the performance of prosocial social behaviors, or improves the overall classroom climate of kindergarten through eighth-grade students.

Qualitative evidence suggests that RTD programs benefit the learning environment, but this evidence is of poor quality (S.Hall et al., 2016). There is no quantitative evidence regarding RTD programs in schools where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback (Linder et al., 2018). Moreover, the literature consistently points to the need for larger sample sizes and studies of longer duration to eliminate the novelty effect as the cause (Rousseau & Tardif-Williams, 2019). Connell et al. (2019) also identified not having a control group as a limitation and needing more than one location. A qualitative study by Henderson et al. (2020) pointed to the need for baseline data to allow for a comparison with post-program data. The study also suggested that multiple locations and data from teachers and students would allow for a "more comprehensive and balanced understanding" (Henderson et al., 2020, p. 7) of RTD programs.

This study filled a gap in the literature noted by S. Hall et al. (2016), Rousseau and Tardif-Williams (2019), Connell et al. (2019), and Henderson et al. (2020). This proposed

quantitative quasi-experimental, pre-post-test study used quantitative measures to assess if and to what extent participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate differed as a result of participation in RTD programs. It was anticipated that this proposed study would provide quantitative data to bolster the existing qualitative and anecdotal evidence.

### **Purpose Statement**

The purpose of this quantitative quasi-experimental pre-post-test study was to determine if and to what extent students' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate differed after participating in RTD programs in elementary and middle schools in East Central New Jersey. While quantitative data already exists to support increases in reading fluency and comprehension resulting from participation in RTD programs (Kirnan et al., 2016, 2018), there is scant research into the impacts of RTD programs on participants' self-esteem, prosocial behaviors, and the teachers' perceptions of the overall classroom climate. What evidence that does exist is anecdotal or qualitative. Further support for the proposed study was found in the empirical research that has shown the various benefits of AAI's. Research supports estimates that over 70% of children of all ages talk to and confide emotions in animals (Podberseck et al., 2005), which indicates a level of trust. From Florence Nightingale to Freud, and more recently, D. Hall (2018) and S. Barker et al. (2016) found evidence that interactions with animals decrease stress. Studies have found that reading in the presence of a dog reduces stress, blood pressure, and the production of cortisol. Friedmann et al. (1983) found that reading aloud to a calm, friendly pet dog reduced stress for children learning to read.

During the stressful task of reading out loud, children who read to the dog had reduced

heart rate and blood pressure readings. It was also found that participants in sessions with the dog present the entire time had stress levels lower than those in the sessions where the dog was introduced halfway through. Guthrie and Cox (2001) and Hidi and Harackiewicz (2000) added to the research with their findings that RTD programs aid in increasing children's motivation to read through decreases in blood pressure while increasing children's levels of confidence and relaxation. Practicing reading in a safe and non-judgmental environment also increases reading abilities.

Dogs are inherently authentic (non-judgmental), congruent, genuine, caring, accepting, warm, and empathic (Chandler et al., 2010). When students have difficulty reading, the genuine caring, empathy, and non-judgment offered by a therapy dog make reading easier. This non-judgment or congruence, along with the empathy and unconditional positive regard (Rogers, 1961) offered by the therapy dog, helps students relax and feel less self-conscious while reading aloud. Studies examining the effectiveness of RTD programs have found improvements in reading accuracy after eight-week (Kline et al., 2019) and 10-week (le Roux et al., 2014) programs, respectively. Reading fluency has also been noted to improve, with studies finding improvements of up to 20–30% and increases of 24 words per minute (Black, 2009; Smith, 2009).

A Beetz et al. (2012) study noted that up to 40% of children in the general population and 90% of children with special education needs display insecure or disorganized attachment patterns, leading to a decreased ability to rely on social support from others to help manage stress. The researchers found that physiological stress response was significantly lower in the dog condition compared to the toy dog or friendly person conditions. The Biophilia Hypothesis and Bowlby's Attachment theory support why RTD and AAI programs are successful. The

secure attachments between students and the therapy dogs have proven to reduce stress. Less stress allows students to relax and focus on learning to read (Beetz et al., 2012).

The concepts of personal fable and imaginary audience from David Elkind's Theory of Adolescent Egocentrism are especially evident in those who experience difficulty reading either aloud or to themselves. Increased self-consciousness, frustration, and anxiety are common in these students, which research has shown leads to internalizing or externalizing behaviors and, sometimes, a reluctance to read (Jalongo et al., 2004; Kirnan et al., 2016). For many who struggle with reading, hesitancy to practice literacy skills may arise from a fear of embarrassment or failure (Stringer & Mollineaux, 2003). Because the therapy dog (TD) does not correct pronunciation, hurry the reader, or ask questions, the relationships between readers and The TDs allow the readers to be less self-conscious while practicing their reading skills.

This study postulated that the decreased stress that allows students to learn also increases self-esteem, which reduces internalizing and internalizing behaviors, allowing for the performance of more prosocial behaviors and an improved overall classroom climate. Students who participate in RTD programs will complete a questionnaire and two instruments before the beginning of the study period (September) and two instruments at the conclusion (December). The results of the pre and post-test scores on the instruments will measure the differences in participants' self-esteem and the performance of prosocial behaviors, two of the dependent variables. Teachers will complete a questionnaire and one instrument measuring perceptions of the overall classroom climate, the third dependent variable at the inception and conclusion of the study.

### **Significance of the Study**

To the researcher's knowledge, this was one of the first studies to extend research on

prosocial behaviors from hard-to-reach populations to general education classrooms. Because the researcher is affiliated with an organization that provides certified therapy dog and handler teams to approximately 19 locations that have the RTD, a study with a relatively large number of participants and varied locations is possible, as well as consistency in the implementation of the programs. Connell et al. (2019) suggested including a no-dog control condition and longer-duration studies. A systematic review of the literature by Brelsford et al. (2017) found great variation in the duration of studies. Of 25 studies reviewed, nine were single interventions, and the remaining 16 varied in duration between 1-12 months, with most studies lasting two to three months. The review also found a great deal of inconsistency in the length of individual intervention sessions.

The study was approximately four months, from September until December 2023. This study followed the recommendations of Henderson et al. (2020) by gathering pre and post-test data, using multiple measures, and having multiple locations. The researcher attempted to enlist control groups at each location but was unsuccessful. As other research found, in research with dogs, no one wanted to be in the control group (Saunders et al., 2017).

Nearly 10% of all students have substantial difficulties in learning to read; this represents two to four children in an average classroom. Students with reading difficulties consistently have higher incidences of low self-esteem and self-concept, as well as depression and anxiety. These students experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). These internalizing and externalizing behaviors cause difficulties in social relationships, not only in the classroom but all social relationships (Boyes et al., 2018; Lindeblad et al., 2019).



Positive social relationships are an integral component of the classroom climate and student achievement (Shindler et al., 2016). This connection between classroom climate and student achievement is well-established in the literature (Freiberg et al., 1999; Hoy & Hannum, 1997; Kober, 2001; Loukas & Robinson, 2004; Shindler et al., 2004). A study by Shindler et al. (2016) found that classroom climate may very well be the single most important factor in predicting academic success. Wilson's (1984) Biophilia hypothesis asserts that the presence of friendly animals has a calming effect on humans, particularly children. This increased calmness results in increased alertness and attention, ultimately enhancing concentration and persistence in challenging tasks (McNicholas & Collis, 2000).

RTD programs have also been credited with increasing motivation, persistence, and perseverance, which are essential in conquering challenging tasks (Rousseau & Tardif-Williams, 2019) and are essential components in academic achievement. In addition to unconditional love, stress relief, and empathy, the therapy dog's presence increases oxytocin, which creates feelings of safety that allow clients to open up to connections with others (Friesen, 2010). Dogs are often credited with facilitating social relationships between people (Scandurra et al., 2005). Studies have shown that RTD increases the production of oxytocin, improves mood (Ernst, 2013), and decreases depression, anxiety heart rate, and blood pressure (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). RTD programs also improve reading skills (Jalongo et al., 2004; Kirnan et al., 2016, 2018), further improving the classroom climate and achievement (Shindler et al., 2016).

While participating in RTD programs, the therapy dog provides students who have difficulty reading with a nonjudgmental audience on which to practice their reading skills (Glenk et al., 2017). Thus far, the quantitative research on participation in RTD programs has focused on

improving individuals' reading skills, and AAI explored the physiological and psychological benefits to individuals. This quasi-experimental quantitative study will examine if and to what extent participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate differ as a result of participation in RTD programs. Although self-esteem is an individual construct and the performance of prosocial behaviors starts with the individual, each student's self-esteem and behaviors impact the overall classroom climate, a construct that impacts all individuals in the class and achievement (Shann, 1999; Shindler et al., 2004). This study was unique in that it extended the benefits of RTD from the individuals to the group environment – the overall classroom climate. A better learning environment is beneficial socially and academically to all students, not just those who struggle with reading.

To add to the existing literature, the proposed study addressed the variables of students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Specifically, the researcher addressed existing gaps, as noted by S.Hall et al. (2016), Linder et al. (2018), and Kropp and Shupp (2017). Linder et al. (2018) identified an absence in the research regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback. S. Hall et al. (2016) also identified a need to examine the effects on the learning environment. Furthermore, research by Henderson et al. (2020) recommended gathering baseline data to compare with post-intervention data using multiple instruments and locations.

Thus, this proposed study filled the gap identified by Linder et al. (2018), S. Hall et al. (2016), Rousseau and Tardif-Williams (2019), and Henderson et al. (2020) by examining if and to what extent the RTD program predicted an increase in self-esteem, the performance of

prosocial behaviors, and the teachers' perceptions of the overall classroom climate in elementary and middle schools in East Central New Jersey.

### **Research Questions**

Because it was not known if and to what extent participants' self-esteem, the performance of prosocial behaviors, and the teacher's perceptions of the overall classroom climate differ as a result of participating in the RTD program, the research questions and hypotheses presented are non-directional with the intent to conduct a multiple linear regression to test the null hypothesis. To fill recommendations from the existing literature, the proposed study addressed the variables of participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Linder et al. (2018) identified an absence in the research regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback. S.Hall et al. (2016) also identified a need to examine the effects on the learning environment.

The researcher looked to address existing gaps, as noted by S. Hall et al. (2016), Linder et al. (2018), and Kropp and Shupp (2017). Linder et al. (2018) identified an absence in the research regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback. S. Hall et al. (2016) also identified a need to examine the effects on the learning environment. Furthermore, research by Henderson et al. (2020) that evaluated a dog-assisted reading program to support student well-being recommended gathering baseline data to compare with post-intervention data using multiple instruments and locations. Thus, this proposed study filled the gap identified by S.Hall et al. (2016), Linder et al. (2018), Kropp and Shupp (2017), Rousseau and Tardif-Williams (2019), and Henderson et al. (2020) by examining if and to what extent the participants' self-

esteem, the performance prosocial behaviors and teacher's perceptions of the overall classroom climate differ as a result of participation in RTD programs in elementary and middle schools in East Central New Jersey.

The researcher collected primary data by administering three pencil and paper surveys completed by the student participants at the outset and two completed at the end of the study period. The three inventories administered at the beginning of the study period were a demographic questionnaire asking the participants' grade, age, and identified gender: the Rosenberg Self-esteem Scale (Rosenberg, 1965) and the Strengths and Difficulties Questionnaire (Goodman, 1997). Participating teachers completed the grade-appropriate version of Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) for second through sixth grade or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G) for sixth through 12<sup>th</sup> grade. The data collected through these tools addressed the following research questions:

RQ1: Do elementary and middle school students who participate in Read to Dogs (RTD) differ in self-esteem scores following participation in the RTD program?

RQ2: Do elementary and middle school students differ in performance of prosocial behaviors scores following participation in the RTD program?

RQ3: Do elementary and middle school teachers' classroom climate scores differ following participation in the RTD program?

Research Question 1 sought to determine if participants' self-esteem scores differed due to participation in the Read to Dogs (RTD) program. Students who struggle with reading experience low self-esteem, self-concept, depression, and anxiety more than those who do not

(Boyes et al., 2018; Lindeblad et al., 2019). A qualitative study by Noble and Holt (2018) found that participating in RTD improved student self-efficacy, motivation to read, and engagement in reading. Qualitative evidence was found by Jalongo et al. (2004) that students' self-esteem improved as a result of RTD participation. Self-efficacy is the belief or confidence in one's ability to perform specific tasks or reach specific goals (Cherry, 2023), while self-esteem is an individual's overall self-worth and self-value (Azrain, 2022). The increase in reading ability that occurs as a result of RTD is well established. Research by Jalongo et al. (2004) confirmed that participation in RTD improved students' comprehension and fluency, and another study posited physiological benefits of AAI as manifested by decreased stress, increased production of oxytocin, and improved mental outlook (Ernst, 2013).

Furthermore, research into the use of therapy dogs with hard-to-reach populations has shown that it is effective at decreasing anxiety, depression, and internalizing and externalizing behaviors (Ambrosi et al., 2019; Becker et al., 2017; Creagan et al., 2015; Seivert et al., 2018). A study of students with autism spectrum disorders (ASD) in a social skills group with a therapy dog found that the group showed decreases in externalizing and internalizing behaviors. The changes were significant compared to those in the traditional social skills group (Becker et al., 2017).

Research Question 1 and its corresponding hypothesis were created in response to the literature recommendations and findings from the existing literature on AAI and RTD. 1.) The decreases in depression, anxiety, internalizing, and externalizing behaviors found in hard-to-reach populations (Becker et al., 2017); 2. The physiological benefits are improved mood, decreased stress, and increased oxytocin production (Ernst, 2013); and 3.) Qualitative evidence of improved self-efficacy and self-esteem resulted from Read to Dogs (RTD) participation

(Jalongo et al., 2004). The combination of all these benefits of RTD leads to the hypothesis that RTD leads to increased self-esteem.

Research Question 2 strove to find out if participants differed in the performance of prosocial behavior scores as a result of participation in RTD programs. The research found that students who have difficulty reading experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Students with reading difficulties also consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. These internalizing and externalizing behaviors negatively impact social relationships in the classroom and all areas of life (Boyes et al., 2018; Lindeblad et al., 2019). Within hard-to-reach populations of children with autism spectrum disorders and those in the juvenile justice system, AAI supports the link between increased prosocial behavior and decreased levels of stress, depression, and anxiety as a result of the production of oxytocin (Seivert et al., 2018; Sprinkle, 2020).

Specifically, with children with ASD, the research found that AAI increased theory of mind, improved social skills, and decreased internalizing and externalizing behaviors (Becker et al., 2017). Similarly, studies with college students have found that AAI led to better mental and physical well-being (S. Barker et al., 2016) and elevated mood (Griscti & Camilleri, 2020) both in the present as well as in the future (Fiocco & Hunse, 2017). This study hypothesized that as students participate in RTD programs, they would perform more prosocial behaviors because they were less stressed, experienced reduced amounts of depression and anxiety (internalizing behaviors), and exhibited fewer externalizing behaviors.

Lastly, research question three asked if participating teachers' classroom climate scores

differed due to participation in RTD programs. Decreased stress and improved self-esteem lead to decreased internalizing and externalizing behaviors, more prosocial behaviors, and, ultimately, a better overall classroom climate. Support for the hypothesis that RTD improves the overall classroom climate was found in research with hard-to-reach populations. A Sikstrom et al. (2020) qualitative study with individuals hospitalized with serious mental illness indicated that the presence of a therapy dog increased the motivation to participate, helped to build rapport with participants, and facilitated connections. Studies by Ambrosi et al.(2019) and Creagan et al. (2015) with institutionalized senior citizens suggested that AAI elicited positive emotional responses and validated those interactions with therapy dogs shift individuals' thoughts away from depressive symptoms to more peaceful states of mind, which led to elevated mood and more social interactions.

Also, in a study by Becker et al. (2017), a therapy dog was introduced to a social skills group for children with ASD. Results showed decreased feelings of isolation and depressive symptoms, increased theory of mind, and improved social skills. The hypothesis that participating in RTD led to an overall improved classroom climate was the cumulative effect of the increased self-esteem and performance of prosocial behaviors; as students' self-esteem increased, they performed more prosocial behaviors that, in turn, led to an overall improved classroom climate. A qualitative study by Henderson et al. (2020) found that following participation in an RTD program increased concentration and confidence and suggested decreases in internalizing and externalizing behaviors, which influenced "the learning environment" (p. 6).

### **Definitions**

For this study, the following terms were utilized. Familiarity with the terms and

definitions is important to give the reader a full understanding of the proposed study. The following list provides the reader with a literature-based definition of the terms used within this proposed study.

*Classroom Climate* - The classroom climate is the unique instructional environment created by individual teachers. Classroom-based interactions with peers and teachers shape students' school experiences (Schweig et al., 2022).

*Pro-social Behaviors* - Pro-social behaviors are a wide range of behaviors to help others. The concern for the welfare, rights, and feelings of other people characterizes them. Pro-social behaviors are expressed by feeling empathy and concern for others and performing behaviors that show sharing, helping, cooperating, and comforting others (Cherry, 2020).

*Read to Dogs Programs (RTD)* - Children read aloud to a non-judgmental therapy dog to better their reading skills and gain confidence in their abilities (Monmouth County Society for the Prevention of Cruelty to Animals, 2018).

*Socio-communicative Abilities* - The abilities of dogs to understand human social and communicative behaviors that have developed over the millions of years that humans and dogs have been connected (Glenk et al., 2017).

*Self-esteem* - Self-esteem refers to an individual's general beliefs and feelings about their self-worth. The continuum on which individuals view their qualities and characteristics as positive. It encompasses all aspects of self-concept, including views of physical self-image, achievements, abilities, values, and perceptions of successes and failures, as well as how others view and respond to that person—the more positive this overall perception of these qualities and characteristics, the higher one's self-esteem. A reasonably high degree of self-esteem is an important ingredient of mental health, whereas low self-esteem and feelings of worthlessness are



common depressive symptoms (APA Dictionary of Psychology, 2022).

*Sociability* - The tendency and accompanying skills to seek companionship, engage in interpersonal relations, and participate in social activities; a disposition of being social (APA Dictionary of Psychology, 2022).

*Therapy Dogs* - Dogs trained and certified to provide comfort, support, and affection to individuals in various settings, from schools to hospitals, counseling settings, or disaster areas. They are not Service Dogs trained to aid one individual with a disability (Odendaal, 2000).

*Animal-Assisted Interventions (AAI)* - Interactions with a human-animal team for educational, recreational, emotional, or motivational purposes that are planned and goal-oriented (Pendry et al., 2017).

### **Summary**

Difficulties students experience learning to read cause anxiety and depression that result in internalizing and externalizing behaviors that result in higher incidences of low self-esteem, self-concept, and depression and anxiety. These internalizing and externalizing behaviors cause difficulties in the classroom and all social relationships (Boyes et al., 2018; Gans et al., 2003; Lindeblad et al., 2019). The RTD programs have proven to increase reading abilities from 2-4 grade levels depending on the frequency and duration of the programs (Jalongo et al., 2004). As well as improving reading abilities, the use of therapy dogs in various settings has shown to have physiological and psychological benefits and increased production of oxytocin, mood, and decreased blood pressure and heart rate (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Research done with hard-to-reach populations such as individuals with serious mental illness (Sikstrom et al., 2020), hospitalized in the juvenile justice system (Seivert et al., 2018; Sprinkle, 2008), and children with ASD (Carlisle, 20157) has proven to

increase motivation to engage, increased empathy, prosocial behaviors. Evidence for the positive impacts of AAI on self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate is sparse and anecdotal. Thus, this study filled the gap identified by Linder et al. (2018), S. Hall et al. (2016), and Henderson et al. (2020) by examining if and to what extent participants' self-esteem, the performance of prosocial behaviors and the teacher's perceptions of the overall classroom climate differ as a result of participation in RTD programs in East Central New Jersey.

Chapter One gave a brief overview of the proposed study. Chapter Two, the literature review, will provide an in-depth look into the theoretical concepts that provide the foundation for the relationship between humans and dogs and explain why AAI and RTD programs are successful. It will also offer empirical evidence for the physiological and psychological benefits of these interventions and which populations and settings in which AAIs are studied. Chapter Three will provide a detailed explanation of how the study was carried out, while Chapters Four and Five will examine the findings of the study and the conclusions drawn, respectively.

## Chapter Two: Literature Review

### Overview

This chapter will briefly explain the history of the relationship between humans and dogs. The background is followed by the conceptual and theoretical framework in which this study is grounded. The literature review details the principles of Animal Assisted Therapy (AAT), its physiological and psychological benefits, the locations where it is used, and the populations with which it has proven effective. Evidence of increased empathy and prosocial behaviors has been found in research with hard-to-reach populations, including those who suffer from serious mental illnesses, youth involved with the juvenile justice system, and children with autism spectrum disorder (ASD). The research gap is identified, and the chapter concludes with a summary.

The review of the literature was conducted using WorldCat Discovery and Google Scholar. Keywords used included Service Dogs, Comfort Animals, Therapy Dogs, Animal-Assisted Interventions (AAI), Animal Assisted Therapy, Read to Dogs (RTD) programs, self-esteem, prosocial behaviors, and classroom climate. The research thus far has centered on several themes: (1) The physiological and psychological benefits of interactions with therapy dogs; (2) Settings where therapy dog interactions are beneficial (e.g., hospitals, rehabilitation facilities, and schools); (3) Benefits of animal-assisted interactions with hard-to-reach populations such as individuals with mental illnesses, in the juvenile justice system, and children with ASD; and (4) Children with reading challenges. However, scant quantitative research has been done on therapy dog interactions and RTD programs on participants' self-esteem, prosocial behaviors, and participating teachers' perception of the overall classroom climate. The research that does exist is primarily qualitative and anecdotal.

## Background

Humans and dogs have a long-recognized, special bond. Descended from wolves, dogs have been near humans since the Paleolithic age, or more than 2.5 million years (Clark et al., 2020). Mitochondrial DNA evidence has shown that the split between dogs and wolves occurred more than 100,000 years ago. Exactly when dogs became domesticated has been debated, with estimates ranging between 14,000 and 31,700 years. This estimate is based on evidence of dogs being found buried alongside humans (DeMello, 2012, p. 85). Dogs offered and continue to provide guarding, hunting, and companionship to humans (Cohen & Diaz, 2013).

Today, dogs provide comfort and perform various tasks ranging from retrieving a newspaper from a driveway to highly trained military working dogs. The use of dogs in nursing and therapy is also well-documented (Ernst, 2013; B. Levinson, 1969; Nightingale, 2012). Recent research has shown that dogs understand human behaviors and emotions. In a 2017 article, Glenk et al. wrote, "It has been evidenced that the adaptation of several socio-communicative abilities in dogs and humans has contributed to the development of special social skills that allow dogs to comprehend human social and communicative behavior" (p. 1). A 2018 study by Siniscalchi et al. (2018) advanced the idea that dogs are sensitive to emotional cues conveyed by human faces. While eating, dogs were unexpectedly shown 2-D pictures depicting human faces expressing the six basic emotions (anger, fear, happiness, sadness, surprise, disgust, and neutral). The pictures were simultaneously displayed to the left and right visual hemispheres. Dogs tended to turn their heads to the left, indicating right hemisphere arousal when faces expressed emotions of anger, fear, and happiness. When the pictures displayed expressions of surprise, a tendency to turn to the right was observed, indicating left hemisphere arousal. Additionally, when researchers presented pictures of emotionally aroused faces, the dogs

displayed higher behavioral and cardiac activity. The study results support the existence of an asymmetrical emotional modulation of the canine brain to process basic human emotions (Siniscalchi et al., 2018).

In addition to socio-communicative behaviors, dogs perform prosocial behaviors. Bräuer et al. (2013) investigated the prosocial behavior of instrumental helping behaviors in dogs. Instrumental helping is defined as acting for another to reach a goal. In this study, pet dogs (n=12), as opposed to service or therapy dogs, were trained to open a door by stepping on a button. An individual needing assistance opening the door was introduced. The dogs opened the door in four different conditions where help was needed. Most frequently, the dogs helped when the goal of opening the door was made obvious (e.g., pointing or a gaze toward the door) and when the individual communicated naturally with the dog (without a predetermined command). The results were the same with their owner and a stranger. The experimenters concluded that dogs are motivated to help humans (Bräuer et al., 2013).

The socio-communicative abilities and the motivation to help humans make dogs powerful tools to assist humans in many capacities. This quasi-experimental quantitative study explored the benefits of Read to Dogs (RTD) programs. Specifically, it was designed to investigate the differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate following participation in RTD programs. Understanding and responding to emotion is the foundation of socio-communicative and prosocial behaviors. Understanding and responding to emotions also lead to attachment (Bowlby & Bacciagaluppi, 2013), trust, and feelings of acceptance rather than judgment (Jenkins et al., 2014), which are necessary components in relationships. Therapy dogs bring these qualities to relationships with humans (Miller et al., 2022).

## **Theoretical Framework**

Support for increases in self-esteem, prosocial behaviors, and improved classroom climate due to participation in Read to Dogs (RTD) programs is found in the Biophilia Hypothesis (Wilson, 1984) and other theories such as John Bowlby's Attachment theory (Bowlby & Bacciagaluppi, 2013), Rogerian Client-centered therapy (Rogers, 1961), and David Elkind's concepts of the imaginary audience and the personal fable from his theory on adolescent egocentrism (Elkind & Bowen, 1979). However, Animal Assisted Therapy (AAT) and Interventions (AAI) are considered adjuncts to the therapeutic process; they are not limited to use with one theory but are other tools available for teachers and counselors to use (Uyemura, 2018). Chandler et al. (2010) found that AAT is effective across various theoretical frameworks, including (1) person-centered, (2) cognitive behavioral therapy (Therapy CBT), (3) Adlerian (short-term, goal-oriented) therapy; (4) Gestalt, (5) existential; (6) reality therapy; and (7) solution-focused.

### **Attachment Theory**

Attachment Theory proposes that children search for secure attachments with those in their environment. The attachment consists of four components: (1) safe haven, (2) secure base, (3) proximity maintenance, and (4) separation distress (Sincero, 2022). From infancy, comfort and support during emotional situations are most frequently given by the mother, a primary caretaker, or a family member, creating a safe haven (Bowlby & Bacciagaluppi, 2103). Developing this secure base gives children the confidence to explore the larger world independently. Children can return to their caretakers or their haven for reassurance (Santrock, 2018).

Separation distress occurs when the caretaker is absent. It is a normal response in a

healthy relationship. The child wants to remain near their source of comfort and security. As children age, this comfort is sought from individuals other than family. The attachments become more expansive as children spend less time with parents and engage in more activities with peers, teachers, and others during middle and late childhood (Santrock, 2018). These early attachments result in enduring relationship patterns (Diener & Monroe, 1979) that exist on a continuum between secure (healthy) and insecure (unhealthy). An insecure attachment pattern results from a child being abandoned, rejected, and/or not having had the basic needs met (Bowlby & Bacciagaluppi, 2103). Children who develop secure attachment patterns become confident and trusting that they will be cared for because their attachment figures have been caring, encouraging, and reassuring. These strong attachments create a secure base from which a child can explore the world.

This attachment is not always exclusive to human relationships. The Biophilia Hypothesis (Wilson, 1984) proposed that humans are instinctively attracted to nature and some living creatures while having aversions to other living creatures. Common aversions are to snakes and spiders, while attractions are to dogs and other domesticated animals. Humans are known to attach to animals and express emotions in their presence. Podberseck et al. (2005) found that most (over 70%) children and adults talked to and expressed emotions to animals. This attachment and emotional expression make therapy dogs (TD) an especially powerful tool in counseling. In school settings, children with special educational needs (up to 90%) and those in general education (up to 40%) exhibit insecure or disorganized attachment patterns, leading to increased stress. Student performance and learning are inhibited by stress. The Biophilia Hypothesis and Bowlby's Attachment Theory provide support for why RTD programs are beneficial. The secure attachments between students and the TD have proven to reduce stress.

Less stress allows students to relax and focus on learning to read (Beetz et al., 2012). This study postulated that the decreased stress that allows students to learn also increases self-esteem, which reduces internalizing and internalizing behaviors, allowing for more prosocial behaviors and an improved overall classroom climate.

## Figure 1

### *Components of Bowlby's Attachment Theory*

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*Note.* Attachment theory postulates that secure attachments early in life create a secure base to explore the world, while insecure attachments can cause distress. Therapy dogs can provide this same sense of secure attachment (Miller et al., 2022).

The therapeutic alliance consists of several components, including a mutual agreement on treatment goals, interventions used, and the affective bond or the amount of care and trust between the client and therapist (Bordin, 1979). Attachment is a key component in the therapeutic alliance. A meta-analysis by Arnou and Steidtmann (2014) found that a secure client attachment style is one of the few dependable predictors of excellent therapeutic alliances. A therapeutic alliance strives to create a safe environment where clients can explore and work through difficult events, memories, thoughts, and emotions in counseling. Feelings of attachment, safety, and security can be brought about through interactions with a TD. Bowlby refers to this as the client's wish to "work in synergy" with the therapist (Bowlby & Bacciagaluppi, 2013, p. 113).

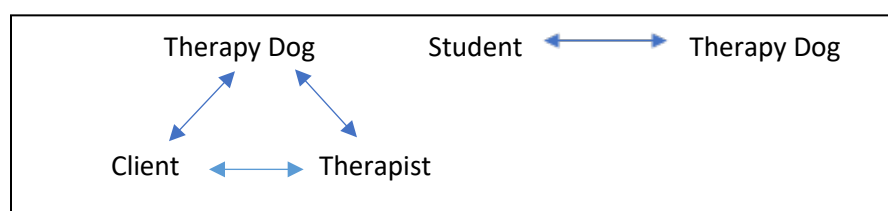
Unlike human counseling relationships, affection, especially touch, is always allowed between clients and therapy dogs (TD). Touch is a powerful tool in therapy because it creates



feelings of safety (Zents et al., 2017). These feelings of trust and safety are enhanced using a TD through what develops into a trust triangle. The child feels safe and trusts the TD, as does the counselor. Through these mutual positive relationships with a TD, the counselor and the client's trust and safety are strengthened (Zents et al., 2017). In RTD programs, the TD handler is not a therapist but is there to manage the TD solely.

## Figure 2

*A Trust Triangle Develops Between Therapy Dog, Client, and Therapist*



*Note.* The therapy dog facilitates and enhances trust and safety between the client and therapist. In RTD programs, the student develops an attachment to the therapy dog (Zents et al., 2017).

## Rogerian Client-Centered Theory

Rogerian client-centered therapy principles also provide empirical support for the efficacy of therapy dogs. In *On Becoming a Person*, Carl Rogers (1961) wrote, “the more I can keep a relationship free of judgment and evaluation, the more this will permit the other person to reach the point where he recognizes that the locus of evaluation, the center of responsibility, lies within himself” (p. 67). Therapy dogs offer clients in counseling and readers in RTD programs a quiet, attentive, non-judgmental audience (Friesen, 2009), as Rogers describes. The judgment-free atmosphere enhances the relationship between the therapist and client, making it safer to work through challenges and for the client or reader to let go of self-judgment.

A 2014 study by Jenkins et al. (2014) also supports Rogers' core components of unconditional positive regard (UPR), empathy, and congruence brought to counseling sessions

by TD. The long history of connections between humans and dogs naturally fosters a safe and warm therapeutic environment (Nimer & Lundahl, 2007). Dogs are inherently authentic (non-judgmental), congruent, genuine, caring, accepting, warm, and empathic (Chandler et al., 2010). When students have difficulty reading, the genuine caring, empathy, and non-judgment offered by a TD make reading easier. “Personal change is aided when the relationship between the client and therapist is genuine and without “front” or façade; being in the moment and allowing emotions to flow as they are felt. This is Rogers’ (1961) concept of “congruence” (p. 73). Thus, counselors can better create conditions that foster positive social, emotional, and educational outcomes.

### Figure 3

#### *Elements of Rogers' Client-centered Theory Create Conditions for Change*

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*Note.* Core elements of Rogers' Client-Centered theory are present in counseling sessions with therapy dogs (Raskin & Rogers, 2005).

Therapeutic alliance building is an important precursor to change in individual and group counseling settings. A strong therapeutic alliance is developed when the three conditions – empathy, congruence, and unconditional positive regard – are present. These elements are essential in creating an environment conducive to change (Rogers, 1961). It is also a necessary component for relationships to progress. The results of a descriptive case study on AAT by Lubbe and Scholtz (2013) centered around five themes. It was noted that having a dog in therapy sessions facilitated relationship building, enabled communication by working indirectly, experienced physical affection through the therapy dog (TD), socialization skills, and enhanced self-esteem. The authors also noted that the purposeful inclusion of a TD in therapy facilitated relationship building, enhanced the therapeutic alliance, and increased clients' self-esteem and socialization skills.

Counselors report that they have an easier time eliciting positive responses and delivering classroom lessons and interventions when therapy dogs are present (Daltry, 2020). Therapy dogs are a “social lubricant” (Corson et al., 1977, p. 63) that creates an environment where it is easier for individuals to communicate. Children are ten times more likely to interact with a student with a disability when a service dog is present (Jalongo et al., 2004). Animals are also believed to promote relationships among peers by encouraging approach others and engaging in social

interactions (McNicholas & Collis, 2000). Developing positive relationships creates openings for counselors and teachers to instill lessons of empathy and socioemotional learning.

### **Elkind's Adolescent Egocentrism**

David Elkind's Theory of Adolescent Egocentrism expanded on Piaget's idea of adolescent egocentrism (Galanaki., 2012) that posits adolescents are preoccupied with themselves and are unable to understand situations from any point of view but their own (Santrock, 2018, p. 195). Preoccupation with themselves, their appearances, and their behaviors are characteristic of adolescents. They also assume that others are as preoccupied with these things as well (Elkind, 1967). Two concepts from Elkind's theory can be applied to children with difficulty reading. They are the Imaginary Audience and the Personal Fable. The Imaginary Audience posits that young adolescents are relatively more self-conscious or concerned with what others think about them than children or older adolescents (Elkind, 1967, p. 1031). The Personal Fable asserts that adolescents believe that their circumstances are unique and that no one can understand or empathize with what they are experiencing (Elkind, 1967, p. 1031).

## Figure 4

### *Elkind's Theory of Adolescent Egocentrism*

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*Note:* The concepts of Imaginary Audience and Personal Fable from Elkind's Theory of

Adolescent Egocentrism can be applied to those with reading difficulty.

These concepts of personal fable and imaginary audience are especially evident in those who experience difficulty reading aloud or to themselves. The result for these readers is increased frustration and anxiety, which research has shown leads to internalizing or externalizing behaviors and, sometimes, a reluctance to read at all (Jalongo et al., 2004; Kirnan et al., 2016). For many who struggle with reading, hesitancy to practice literacy skills may arise from a fear of embarrassment or failure (Stringer & Mollineaux, 2003). According to Friesen (2010), a growing body of research supports Read to Dogs (RTD) programs because the presence of therapy dogs creates an accepting, supportive, and interactive environment for struggling readers where they can practice their oral reading skills. Because the TD does not correct pronunciation, hurry the reader, or ask questions, the relationships between readers and the TDs allow the readers to be less self-conscious while practicing their reading skills.

The effectiveness of RTD programs in increasing the reading abilities of reading-challenged students is well established. Anecdotal and qualitative evidence shows that RTD increases prosocial behaviors and creates a better classroom climate (S. Hall et al., 2016). However, yet to be explored is whether RTD programs quantitatively foster an increase in prosocial behaviors and improve the overall classroom climate. This study was one of the first quantitative studies to explore the effects of RTD on self-esteem, prosocial behaviors, and the

participating teacher's perceptions of the overall classroom climate.

### **Related Literature**

The literature review details the history of AAT and examines hallmark and recent studies on AAT's physiological, psychological, and educational benefits. A clear definition of AAT principles is provided to establish the groundwork for this study further. Previous research has established that AAT has physiological benefits of reduced stress, decreased heart rate, and blood pressure, as well as improved mood because of the activation of oxytocin (Beck & Katcher, 2003; Jalongo et al., 2004; E. Levinson et al., 2017; Nimer & Lundahl, 2007; Sable, 1995). Psychological benefits of AAT include increased social interaction, decreased depressive and anxiety symptoms, and elevated mood. A study found that AAI also reduces feelings of isolation, decreases anxiety, improves mental outlook, and increases the quality of life (Ernst, 2013; Odendaal, 2000).

A clear connection between students with reading challenges and increased incidences of internalizing and externalizing behaviors has been established. Furthermore, research by Boyes et al. (2018) and Lindeblad et al. (2019) has shown that students with reading difficulties consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. These internalizing and externalizing behaviors negatively impact social relationships in the classroom and all facets of life (Henderson et al., 2020).

Several studies have shown increases in reading fluency and comprehension ranging from 2<sup>nd</sup> -5<sup>th</sup>-grade levels in reading depending on the frequency and duration of the interactions (Jalongo et al., 2004), statistically significant reading score improvements in kindergarteners who participated in the RTD program (Kirnan et al., 2016), increased motivation, engagement and increased self-efficacy (Noble & Holt, 2018). However, there is a gap in the literature

concerning whether these programs also improve students' self-esteem, prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Research is lacking regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback (Linder et al., 2018). The literature consistently points to the need for larger sample sizes studies of longer duration (S.Hall et al., 2016; Kropp & Shupp, 2017; Rousseau & Tardif-Williams, 2019), and quantitative pre-test and post-test data on multiple measures (Henderson et al., 2020)

The literature review was divided into several themes to address pertinent areas of existing literature that are essential to the proposed study. These themes include (a) the history, (b) the principles of AAT, (c) the physiological and psychological benefits of AAT, (d) hard-to-reach populations where AAI has proven to be effective, (e) children with reading challenges, (f) dogs in schools; (g) RTD programs; and (h) the research gap. The chapter will conclude with a summary of Chapter Two.

### **Principles of Animal-Assisted Therapy**

Animal Assisted Therapy is founded on two principles. First, according to the Biophilia Hypothesis (Wilson, 1984), people are inherently predisposed to express emotions in the presence of animals. Research supports estimates that over 70% of children will talk to and confide in animals (Podberseck et al., 2005). This encouragement of healthy emotional expression has led to many facilities and schools making AAT a regular component in treatment, whether in counseling, rehabilitation, or school settings. The classroom climate can be significantly impacted socially and academically when students exhibit internalizing and externalizing behaviors because of anxiety and depression (Boyes et al., 2018). The presence of a therapy dog in the classroom has led to increased empathy, socioemotional development, and

better emotional expression (Correale et al., 2017).

The second principle of AAT is that an animal's calm presence decreases stress (Jalongo et al., 2004). Empirical evidence supports the idea that the company of a mellow companion animal reduces stress. It has also been recognized that interactions with animals lower blood pressure and heart rate, reduce loneliness and isolation, and decrease anxiety (Beck & Katcher, 2003; Ernst, 2013; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Stress responses are lowered more by the dog's calm, attentive presence, even more than by the company of an adult or a caring friend. The presence of an animal also improves mental outlook and a person's quality of life (Morrison, 2007), and AAIs reduce the risk of cardiovascular disease and have positive cognitive benefits (Ernst, 2013).

Aside from the health benefits of canine companions, dogs are naturally compassionate and nonjudgmental. Dogs are well-suited to work with individuals who find themselves feeling isolated. Researchers have reported that humans and dogs have developed socio-communicative abilities (Gerencsér et al., 2019). These skills allow dogs to understand "human social and communicative behavior" (Glenk, 2017, p. 1). Social and emotional benefits stem from human interactions with dogs, such as decreases in feelings of depression and anxiety. Normally, shy children or those who experienced rejection by peer groups felt more confident and displayed increased communication when in the presence of dogs (Filiâtre et al., 1986). Children view the dog purely as a friend and not just a dog (B. Levinson, 1969).

The fact that people of all ages confide in and trust dogs is well known. Jalongo et al. (2004) noted that the second principle of AAT is that the presence of a calm animal reduces stress. This reduction in stress leads to physiological and psychological benefits in various settings with varied populations. Schoolchildren, patients in emergency rooms, hospitals,



physical rehabilitation facilities, nursing homes, and counseling settings all have proven to benefit from the presence of AAI's (Friesen, 2010).

### **Physiological and Psychological Benefits**

Since the 1980s, empirical research has continued to support the findings that the presence of calm, well-trained dogs is beneficial to humans' physiological needs in various settings, from hospitals, rehabilitation facilities, counseling, and schools. The benefits of interactions with therapy dogs range from decreased stress to lower heart rate and blood pressure (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). The research continues to confirm that interactions with therapy dogs have emotional responses that include decreased depressive and anxiety symptoms and elevated mood. A study by Ernst (2013) found that AAI's also reduce feelings of isolation, decrease anxiety, improve mental outlook, and increase the quality of life, among the psychological benefits. People regularly around animals describe an increased sense of emotional well-being (Sable, 1995). E. Levinson et al. (2017) found elevated mood when a bonded human and dog interact. This increased mood is attributed to the production of oxytocin.

Relating these effects to the proposed study is important in terms of the RTD programs as a way of reducing stress, feelings of depression and anxiety, increased production of oxytocin, greater feelings of acceptance, improved mental outlook, a better quality of life, and emotional well-being. These factors all contribute to an environment where children's self-esteem is improved. It is also possible that as more prosocial behaviors are performed, the result may be an overall improved classroom climate.

### ***Hospitals, Rehabilitation Centers, and Therapy Settings***

Therapy dogs are regular visitors in hospitals, physical rehabilitation centers, and nursing

home facilities for their physiological benefits to patients, including moderating stress responses, lowering blood pressure, decreasing heart rate, cognitive benefits, and reducing cardiovascular disease risk (Handlin et al., 2018). Several studies have explored the benefits of therapy dogs in settings such as hospitals, rehabilitation centers, and therapy settings. Empirical evidence shows a measurable reduction in anxiety among patients receiving treatment in hospitals, rehabilitation centers, and other therapy settings.

In the 1980s, John Odendaal was among the first to research the physiological benefits of AAT, also known as Human-Animal Interaction (HAI; Odendaal, 2000). Odendaal's study aimed to measure changes in heart rate and blood pressure and, more importantly, gather quantitative data needed to gain medical support for AAT. Pairs of humans (n=18) and dogs (n=18) interacted in positive ways (e.g., petting or playing) for 30 minutes. Results found that  $\beta$ -endorphin, oxytocin, prolactin, phenylacetic acid (a metabolite of  $\beta$ -phenylethylamine), and dopamine levels increased significantly ( $P < .05$ ). A 2010 meta-analysis by Friesen (2010) found that since the 1980s, research has continued to support the use of therapy dogs to promote individuals' well-being. Therapy animals are beneficial in assisting patients or clients in meeting intervention goals in many settings, including hospitals, classrooms, rehabilitation facilities, and therapy settings (Friesen, 2010).

In hospitals, researchers have reported reductions in anxiety and physical ailments. For example, a study by Kline et al. (2019) found that a 30-minute exposure to a therapy dog plus a handler was associated with a 35% decrease in patient-reported anxiety among Emergency Department (ED) patients. Eighty patients in the ED participated in the study. Forty patients experienced a 30-minute visit with a therapy dog and handler, while the other 40 received treatment as usual. Before the therapy dog exposure, median and mean baseline anxiety, pain,

and depression scores were similar between groups. After the therapy dog exposure, median anxiety decreased significantly in the treatment group compared to the control group.

Therapy dog exposure was also associated with significantly lower anxiety following the therapy dog visit and a significant overall treatment effect on two-way repeated-measures ANOVA for anxiety, pain, and depression. After exposure, fewer (1/40) in the dog group needed pain medication versus the control group (7/40). The researchers concluded that exposure to therapy dogs and handlers significantly reduced ED patients' anxiety. Importantly, this anxiety reduction was sustained throughout the stay in the ED (Kline et al., 2019). In addition to anxiety, the benefits of AAT have been seen in patients with cardiac conditions.

For patients hospitalized with heart failure, the benefits of AAT have been reported as positive. Cole et al. (2007) studied the benefits of AAT. Patients (n=76) were randomly assigned to one of three groups: (1) A 12-minute AAT, (2) a 12-minute volunteer-only visit, and (3) treatment as usual. Pre and post-test physiological measurements indicated a significant decrease in systolic pulmonary artery pressure and pulmonary capillary wedge pressure during (eight minutes) and after (16 minutes) of the AAT visit compared with the other two study groups. Significant decreases in epinephrine and norepinephrine levels were also measured both during and after AAT compared to the volunteer-only group. Spielberger's State-Trait Anxiety Inventory measures revealed a significantly greater decrease in reported anxiety for the AAT group than for those who received the 12-minute volunteer visit (Cole et al., 2007).

The AAT has also been found to benefit patients receiving treatment for cancer. A study by Orlandi et al. (2007) evaluated a one-hour Animal Assisted Activity (AAA) session with day-stay oncology patients receiving chemotherapy. The AAA session was divided into three 20-minute segments involving patients watching the dog exercise with the handler, playing with the

dog, and feeding or holding the dog. The AAA groups' self-report measures of anxiety, depression, somatic symptoms, aggression, blood pressure, heart rate, and arterial and oxygen saturation revealed a significant decrease in depression and increased arterial oxygen saturation. Significant reductions in anxiety, aggression, and blood pressure were also reported compared to the control group. However, another random assignment study revealed the benefits of AAAs for patients (n=30) receiving radiation treatment.

Winkle et al. (2008) compared AAA visits to a reading group and volunteer visits. All visits lasted 15 minutes and occurred thrice a week for four weeks immediately before radiation treatment. Results revealed decreased anxiety and improved emotional health were reported. On an exit survey, some patients in all groups rated the intervention as helpful, and the majority indicated they would recommend it to another patient.

In rehabilitation centers, therapy dogs provide patients with the same physiological and psychological benefits as in hospitals. Many empirical studies have been done with long-term care facility residents. Results suggest AAA and/or AAT with populations at these facilities increases social interaction and reduces depression (Brickel, 1986; Crowley-Robinson et al., 1996; Stasi et al., 2004).

One study by Fick (1993) monitored interactions of 36 residents in a nursing home unit at a Veterans Administration medical center when dogs were present for 15 minutes at the beginning or end of four 30-minute group therapy sessions. Social behaviors were assessed 15 times during 10 minutes per session with and without the dog present. Both verbal and nonverbal social interactions were twice as frequent when the dog was present than when the dog was not. Findings for increased social interaction and decreased depression were found in nursing home residents. Fifteen nursing home residents were randomly assigned to one of three treatment

groups: treatment as usual, pet-facilitated psychotherapy, or no treatment (Brickel, 1986). There were two 45- to 90-minute sessions per week for four weeks. The pet therapy group displayed social interactions twice that of the no-pet group, and the researchers also reported significant decreases in depression in the pet therapy group compared to the treatment-as-usual group.

Decreased stress, less confusion, stress, and depression are also witnessed due to interacting with a therapy dog. A study by Crowley-Robinson et al. (1996) found that residents of a nursing home with a resident therapy dog experienced decreased stress, confusion, fatigue, and depression compared to those who experienced a visiting dog. Changes were even greater when levels of stress, confusion, fatigue, and depression were compared to those in the control group with no dog. Changes were measured by the Profile of Mood States questionnaire administered before the dog was introduced to the facility and again at five three-month intervals. Activities such as brushing and caring for a dog are also considered part of occupational therapists' Instrumental Activities of Daily Living (IADLs). These acts are self-care, such as bathing, dressing, and eating, as well as organizing, supervising or caring for pets and service animals (American Occupational Therapy Association, 2016). Patients can practice these skills on a therapy dog as a component of occupational therapy with psychological and physical benefits.

The psychological benefits of AAA and AAT also make therapy dogs beneficial in mental health counseling settings. Sigmund Freud, Boris Levinson, and Jay Haley used dogs in sessions. In the 1930s, Sigmund Freud believed that his dog, Jofi, could sense a patient's tension level (Winkle et al., 2020). Today, this would be interpreted as the patient's stress levels. When Jofi was near a patient, the patient's tension level decreased. Also, Freud noticed that in the beginning stages of psychoanalysis, some patients felt more comfortable talking to Jofi.

Talking to Jofi served as a bridge between Freud and his patient until the patient felt comfortable enough to talk directly to him (Ernst, 2013). In this situation, Jofi is a transitional being. Stuffed animals are often used as transitional beings, but dogs are especially adept because they interact and show affection. They behave more like people than inanimate stuffed toys. Most importantly, dogs do not contradict the words spoken or emotions displayed by the client (Fine, 2010, p. 136). In his 1969 book, *Pet Oriented Child Psychotherapy*, Boris Levinson, the pioneer of AAT, wrote,

A pet is an island of sanity in what appears to be an insane world. Friendship retains traditional values and securities in one's relationship with one's pet. Whether a dog, cat, bird, fish, turtle or what have you, one can rely upon the fact that one's pet will always remain a faithful, intimate, non-competitive friend, regardless of the good or ill fortune life brings us (p. 59).

While working with children, Levinson (1969) noticed that counseling sessions were much more productive when his dog, Jingles, was present. Additionally, he discovered that children were less withdrawn and inhibited and made more attempts to engage in conversation. Eventually, a child who was non-verbal began to communicate when Jingles was nearby (Alliance of Therapy Dogs, 2021). Although he presented his findings at an APA meeting, they were not taken seriously until Freud's experiences with Jofi came to light. Levinson used the term pet therapy (Levinson, 1997) and is now regarded as "the father of AAT" (Fine, 2010, p. 5).

Renowned family therapy therapist Jay Haley also espoused the benefits of having a dog in therapy sessions. Haley is believed to be the first clinician to include a dog in a family therapy session (Parshall, 2003). A qualitative study by Policay and Falconier (2019) found that participants (n=8) who were family therapists believed that using a therapy dog aided in

developing and maintaining the therapeutic alliance with each member of the client system. Participants reported through survey feedback that the therapy dog might facilitate the therapeutic process by enhancing the connections between the therapist, clients, and the dog. The themes that emerged included a safe and light-hearted atmosphere created as a result of the presence of the TD, observing the interactions between the clients and the TD, giving insight into the family dynamics, and the therapy dog creating social connections (Policay & Falconier, 2019).

Scholars have also noted that therapy dogs create a social connection or social lubricant. This is especially true for clients who have difficulty connecting to their therapist or other individuals, such as those with ASD. Participants in the qualitative survey (Carlisle, 2015) on the impacts of companion animals in families with children with ASD were recruited via an online community that links families to information and research. The online survey resulted in 619 responses. The emerging themes revealed a varied range of experiences, but seven major themes were evident.

1. Social interactions were easier, and the dog provided unconditional love, stress relief, and increased family cohesion.
2. The dog's presence created opportunities to teach responsibility and empathy; the dog acted as a social lubricant.
3. Dog ownership had obstacles such as cost, added caregiver responsibility, fear, and sensory challenges for some children with ASD.
4. Fear of becoming attached to the dog and managing the grief when s/he passes
5. Ensuring that the right dog is chosen for the right family.
6. Children with ASD are sometimes aggressive, leading to safety issues for the child and the dog.
7. The possibility that animals other than dogs can have the same benefits.

Although this study involved the presence of companion animals or pets, the benefits of

unconditional love, stress relief, and increased empathy are similar to those found in studies specifically with therapy dogs (Ernst, 2013; Policay & Falconier, 2019). In addition to unconditional love, stress relief, and empathy, the therapy dog's (TD) presence increases oxytocin, which creates feelings of safety that allow clients to open up to connections with others (Friesen, 2010). Qualitative research by Friesen (2010) on the role of the adult mentor in school-based literacy programs found that mentors provide opportunities beyond increasing reading skills. In this type of animal-assisted intervention (AAI), the mentor is more involved than in traditional RTD programs. The reciprocal relationship between the mentor, students, and the TD is genuine and caring. The relationships are also individualized.

Not all students need the same type of support. One student may need gentle and focused attention, which would not be possible without intervention. For extremely shy students or others who are unmotivated or discouraged, the added support and encouragement must be beneficial. Friesen (2010) found that children would likely take advantage of the opportunity to learn with a mentor and TD. The addition of TDs has proven beneficial in schools and counseling settings.

Therapy dogs were described as co-therapists who assisted therapists in balancing the emotional work involved in couples and family therapy sessions. A qualitative study (n=8) by Policay and Falconier (2019) found that therapy dogs had positive impacts when present in couples and family therapy sessions. The themes that emerged included the therapy dogs creating a safe and playful atmosphere, increasing and helping to maintain connections, and allowing the therapist to observe family dynamics and interactions better. Also reported was enhanced self-regulation for therapists and clients in the presence of a therapy dog (Policay & Falconier, 2019). This is consistent with other research findings on a therapy dog's influence on human stress responses and chronic levels of physiological stress indicators (Connor & Miller, 2000;



Friedmann et al., 1983).

The effectiveness of mindfulness, one method of reducing stress, is enhanced by including AAT. A qualitative survey by Matas (2013) found that clinicians (n=55) who used AAT reported that therapy dogs aid clients in developing a mindfulness practice. Similarly, Henry and Crowley (2015) found that when therapy dogs were included in mindfulness training, participants (n=33), following six 50-minute sessions, participants (n=33) reported they experienced less anxiety, fewer depressive symptoms, and increased mindfulness skills than before beginning the program.

Therapy dogs in hospitals, rehabilitation facilities, and counseling sessions have consistently provided evidence of physiological and psychological benefits for decades. The physiological benefits include decreased heart rate, blood pressure, fatigue, risk of cardiovascular disease, and increased cognition (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Psychological benefits include decreased anxiety, depression, confusion, and increased production of oxytocin, resulting in an elevated mood (Levinson et al., 2017; Sable, 1995). While one may expect stress within a hospital setting, research has also proven AAI to be effective in educational settings where students, teachers, and administrators may experience significant stress.

### ***Educational Settings***

It is well-documented that college students experience stress that impacts their physical and mental well-being. In addition to hospitals, rehabilitation centers, and counseling settings, AAI has proven effective in educational settings from elementary schools to college. Empirical research has shown that AAIs effectively reduce the stress experienced by college students (S. Barker et al., 2016; Haggerty & Mueller, 2017). Recently, the awareness that the negative impacts of stress can affect academic performance has come to the forefront. AAIs have proven

effective in mitigating stress responses for college students (Orellana, 2019).

A 2020 mixed methods study by Griscti and Camilleri explored if the presence of a therapy dog would decrease stress and increase the attention span of college nursing students ( $n=24$ ). The participants completed questionnaires regarding their views on the therapy dog's presence in class. Their heart rates were also measured while the therapy dog was in class and when he was absent. Differences in average and maximum heart rates were not statistically significant, but average resting heart rates differed significantly when the dog was present. Written comments paired with students' lower resting heart rates showed that the therapy dog's presence did reduce stress and had a calming effect on the students. Participants' comments centered on two themes. First, the presence of the therapy dog created a "jovial atmosphere" (section 5.2.1). Second, the therapy dog was a "positive distraction (section 5.2.2)." Students reported that having the dog in the classroom created a positive learning environment. There was also a minor improvement in attention and concentration (Griscti & Camilleri, 2020).

Further research with college students continues to bolster the empirical evidence that the presence of therapy dogs has beneficial effects on stress. A 16-week ( $n= 109$ ) study by D. Hall (2018) investigated the long-term effects of a therapy dog on the symptoms of anxiety and depression experienced by nursing students. Pre-test scores indicated no significant difference between the control and treatment groups' scores on the Hospital Anxiety and Depression - Anxiety (HADS) questionnaire. However, post-test scores revealed a significant difference in HADS-Anxiety scores at the end of the semester between the control group ( $M = 10.08$ ,  $SE = .713$ ) and the treatment group ( $M = 7.44$   $SE = .650$ ), indicating that the therapy dog (TD) intervention decreased anxiety symptoms. Not only can exposure to a therapy dog reduce stress in the present, but research by Fiocco and Hunse (2017) found evidence that TD interventions

have benefits for the future. While previous research suggests that dog exposure may aid recovery from the stress response, this study with undergraduate college students (n=61) found that interacting with a therapy dog can lessen physiological reactivity in response to a future stressor.

Adding to the mounting empirical evidence that therapy dog interventions decrease stress, a study by S. Barker et al. (2016) investigated increased perceived and physiological stress in college students (n=78) during finals. Participants who were college students interacted with as many dogs as they desired (e.g., petting the dog, having them perform tricks) for 15 minutes. Students' perceived stress levels were tested before and after interacting with the therapy dogs for 15 minutes. Levels of perceived stress declined significantly, but not physiological (S. Barker et al., 2016). When this study was conducted, few studies targeted exam-related stress, and none included systematic data collection.

The results of these studies are relevant to this study in that the evidence gathered supports the notion that school environments can be stressful. As data has shown, this stress impacts physical and mental well-being. Implementing AAI has been shown to reduce stress among college students, leading to better mental and physical well-being (S. Barker et al., 2016) and elevated mood (Gristi & Camilleri, 2020). AAI has been shown to mitigate stress responses, leading to better mental and physical well-being (Orellana, 2019) both in the present and future (Fiocco & Hunse, 2017). The proposed study seeks to extend the current research from college students to a younger population of students and to explore if participating in AAI increases self-esteem, the number of prosocial behaviors performed, and, in turn, the overall classroom climate, areas where little research has been done.

## **Hard-to-Reach Populations**

In addition to college students, AAI has been shown to have beneficial effects on hard-to-reach populations. Hard-to-reach populations are those in vulnerable or disadvantaged groups that are difficult to access, engage, and retain in activities (Sikstrom et al., 2020). These populations include but are not limited to individuals with mental illnesses, incarcerated youth, and individuals with ASD.

Scant research has been done in schools regarding the differences in self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. However, studies with hard-to-reach populations have shown improvements in concepts similar to those who struggle with reading – anxiety, depression, internalizing and externalizing behaviors, low self-esteem, and connections with classmates. For example, research on individuals with serious mental illness found that AAI increased motivation to participate in group therapy, built rapport, aided in building connections between participants (Sikstrom et al., 2020), and decreased anxiety and depression. Results of studies with incarcerated youth have shown increased empathy and performance of prosocial behaviors (Sprinkle, 2008), and Seivert et al. (2018) found decreases in anxiety, depression, and internalizing and externalizing behaviors. Similarly, empirical evidence garnered from research on individuals with ASD supports the idea that AAI increases the theory of mind, improves social skills, and decreases internalizing and externalizing behaviors (Becker et al., 2017). The proposed study will extend the research from these hard-to-reach populations to students with reading challenges.

### ***Individuals with Mental Illnesses***

Research on the hard-to-reach population of individuals with serious mental illnesses and the effectiveness of AAIs have positive results in motivation and engagement in treatment. A

Sikstrom et al. (2020) study with participants (n=38) hospitalized in seven different facilities ranging from a large urban mental health and addiction hospital due to serious and complex mental illnesses. This qualitative study indicated that the presence of a therapy dog increased the motivation to participate, helped build rapport with participants, and facilitated connections. These findings indicated that certified therapy dogs could be used effectively to engage and motivate participants from hard-to-reach populations in various medical settings.

A similar study was done by Ambrosi et al. (2019) with a random sample of 31 institutionalized patients 65 years of age. This study sought to find out if AAIs would alleviate anxiety and depression. Subjects (n=17) in the treatment group were exposed to 30-minute individual interactions with a therapy dog and handler once a week for ten weeks. The control group (n=14) was not exposed to a dog and handler team or any substitute activity. Before beginning the AAI, all participants were administered the Mini-Mental State Examination, 15-item Geriatric Depression Scale, Positive and Negative Affect Schedule, Generalized Anxiety Disorder 7, Illness Perception Questionnaire, and Numeric Pain Rating Scale. After the study, these measures were again administered. Statistically significant decreases and large effect sizes were found in the 15-item Geriatric Depression Scale scores for the treatment group. The Illness Perception Questionnaire's timeline (acute/chronic) and treatment control subscales showed a clinically relevant, large effect size. These results indicated that AAI effectively reduces symptoms of depression in institutionalized elderly.

Throughout the 10-week experimental phase, there was an increase in verbal interactions with the handlers. This finding suggested that the dog facilitated social interactions and elicited positive emotional responses. These findings validate the belief that AAI helps shift individuals' thoughts away from their depressive symptoms to more peaceful states of mind, leading e In

addition to the mentally ill, incarcerated youth are also a hard-to-reach population studied. The research with this population also concludes that AAI is an effective intervention.

### ***Youth in the Juvenile Justice System***

As with the hard-to-reach population of those with mental illnesses, AAI has proven advantageous to the youth in the juvenile justice system. A 2008 quantitative pretest-posttest design study (n=190) by Sprinkle found that working with and training shelter dogs could interrupt the escalating cycle of aggression by teaching prosocial skills and empathy. The study investigated the effectiveness of participation in Healing Species, an animal-assisted, school-based violence prevention/intervention and character education program. A criminal attorney, the program's founder, noticed two similarities in many of the violent offenders she was assigned to defend.

Many offenders demonstrated a lack of empathy and a history of violence towards animals during childhood. This link between a lack of empathy and a history of cruelty to animals during childhood leading to violent offenses is well documented in the literature (Jules-Macquet, 2015; Welsh & Loeber, 2013). However, this study did not include only troubled students; the researcher sought to determine the program's effect on empathy levels, students' normative beliefs about aggression, and outwardly aggressive and violent behaviors. This study found that the program positively affected participants' normative beliefs about aggression and violent behaviors as measured by out-of-school suspensions, levels of empathy, and teachers' perceptions of outwardly aggressive behaviors. Violence prevention and offender rehabilitation programs have demonstrated the ability to reach even the most resistant, troubled individuals through AAIs.

Another study with youth in the juvenile justice system conducted by Seivert et al. (2018)

further lent support to the link between increased prosocial behavior and decreased stress, depression, and anxiety levels. In a randomized control trial, Seivert et al., (2018) investigated Teacher's Pet, an AAT program implemented with incarcerated youth from two Midwestern United States detention facilities. Participants (n=138) trained dogs for one hour twice weekly for ten weeks, while the control group walked but did not train dogs during the same period. Also, all participants attended one-hour, twice-weekly animal didactics. These results, the increased prosocial behavior and decreased levels of depression and anxiety result from the production of oxytocin, a hormone linked to positive social interaction and stress reduction.

Results indicated an overall significant difference in pre and post-test scores on a questionnaire for internalizing problems, regardless of group assignment. A statistically significant increase from pre- to post-intervention for empathic concern was observed in all youth, regardless of group. In addition, the study found that after working with therapy dogs, participation in AAT decreased both internalizing and externalizing behaviors and increased empathy in incarcerated youth. Researchers attribute increased empathy and decreased internalizing and externalizing behaviors to a combination of engaging with dogs and animal-related didactics (Seivert et al., 2018). Research with individuals with ASD – another hard-to-reach population - has also found that AAI led to increased prosocial behaviors.

### ***Individuals with Autism Spectrum Disorder (ASD)***

Students with ASD can be difficult to reach because of the lack of social skills and the performance of solitary and repetitive behaviors. AAIs have also been shown to benefit students with ASD. Stevenson et al. (2015) conducted a case study (n=3) to evaluate the effectiveness of using a dog as a motivator to increase social interactions. In all three students, levels of interaction, visual interest, and meaningful vocalizations increased in the sessions with the dog

and teacher present. Responses on teacher questionnaires suggested this effect generalized to the classroom setting on at least some measures. Also, parallel reduction in playing alone and sensory/repetitive behaviors occurred within the sessions. This also supports the idea that therapy dogs are a social lubricant that creates a space in which children with ASDs and those without can bond (Carlisle, 2015).

Children with ASD have difficulty with social interactions, leading to their inclusion in the hard-to-reach population category. A cross-sectional descriptive study used a telephone survey (n= 70) to explore the impacts of dog ownership on children with ASD. The study aimed to determine if dogs (or pet ownership) in the home would be associated with benefits to children with ASD – increased social skills and bonding with the dog. Further, in examining the attachment of children with ASD and their dogs, the study found that the strength of the attachment impacted social skills. Stronger attachments lead to increased social skills. Those with trained service dogs had better social skills, especially assertion. Additionally, several small studies have explored the effects of AAI on children with developmental disorders (S. Barker & Wolen, 2008).

Much research has been done on the impact of therapy dogs and children or students with ASD and disabilities. A study involving children with three highly prevalent pediatric disabilities, cerebral palsy, ASD, and Acquired Brain Injury by Yap et al. (2017) found that most participants (n=128) reported that AAT could be an adjunct therapy along with physical therapy or rehabilitation activities (92%), speech-language therapy (76%), as a calming strategy before clinician consultation (83%) and pre-operatively or pre-procedure (80%). The study also found that human emotion and cognition theories are mentioned and “animals as social catalysts” or social lubricants for those with disabilities. Results of other studies with children with ASD



produced similar results.

Children with ASD typically struggle with social interactions. AAT has proven effective in improving social interaction. A study by Becker et al. (2017) involving children with ASDs found that participants in the AAT social skills groups showed significant improvements in social skills. Students ( $n = 31$ ; ages 8–14) with ASD at a specialized school were assigned to either an experimental or control group. Both groups received social skills treatment once a week for 12 weeks. A teacher-rated measure of ASD symptoms found that students in the treatment group were significantly less symptomatic than participants in the traditional social skills group.

Self-report ratings found that participants in the groups with therapy dogs experienced significantly greater decreases in feelings of isolation and depressive symptoms than those in the control group. The study also found that participants in AAT social skills groups displayed increases in the theory of mind, greater than those in the traditional social skills group. In addition, this study found that participants in the AAT social skills group showed decreases in externalizing and internalizing behaviors. The changes were significant compared to those in the traditional social skills group. The results support the hypothesis that including AAT in social skills groups was more effective than in traditional social skills groups (Becker et al., 2017). Other research with hard-to-reach populations has reported similar results.

The research continues to build, supporting that hard-to-reach populations benefit from AAI. Empirical evidence supports that AAI increases the likelihood that individuals with mental illnesses will be more motivated to participate in counseling, aid in rapport building (Sikstrom et al., 2020), and facilitate connections (Ambrosi et al., 2019; Sikstrom et al., 2020). AAI programs have also been proven to increase mood and social interactions (Ambrosi et al., 2019). As part of a violence prevention and offender program, youth who participated in AAI displayed greater

empathy, fewer teacher-reported outwardly aggressive behaviors, and fewer out-of-school suspensions (Sprinkle, 2008). Also, this study found that the program positively affected participants' normative beliefs about aggression and violent behaviors as measured by out-of-school suspensions, levels of empathy, and teachers' perceptions of outwardly aggressive behaviors.

With the hard-to-reach population of children with ASD, empirical evidence supports the idea that AAI increases theory of mind, improves social skills, and decreases internalizing and externalizing behaviors (Becker et al., 2017). Results of studies on the effectiveness of AAI have also shown to support the link between increased prosocial behavior and decreased levels of stress, depression, and anxiety as a result of the oxytocin system's activation (Seivert et al., 2018). Moreover, violence prevention and offender rehabilitation programs have demonstrated the ability to reach even the most resistant, troubled individuals through AAI (Sprinkle, 2008).

Much of the research into the impacts of using Animal Assisted Interventions (AAI) thus far has been with students or children with ASD, those in the juvenile justice system, or those with serious mental illnesses. This research has found that AAI with these populations led to increased empathy and prosocial behavior. The proposed study would be the first to extend the research on empathy, and prosocial behavior increases beyond hard-to-reach populations to general education classrooms and students with reading challenges.

### **Dogs in Schools**

The empirically proven physical and emotional benefits of AAI have led many schools to incorporate therapy dogs into their curriculums. Research into the effects of therapy dogs in schools has shown that AAI is beneficial in this setting. The Biophilia hypothesis asserts that the presence of friendly animals has a calming effect on humans, particularly children (Wilson,

1984). This increased calmness results in increased alertness and attention, ultimately enhancing concentration and persistence in challenging tasks (McNicholas & Collis, 2000).

Alertness, attention, and persistence in challenging tasks create a classroom environment that is more conducive to learning. Also, increased alertness, attention, and persistence will allow children with reading challenges to improve their reading skills, increasing students' self-esteem. Increased self-esteem decreases anxiety, and depression often accompanies difficulty reading. Anxiety and depression are expressed as internalizing and externalizing behavior (Boyes et al., 2018; Lindeblad et al., 2019). This study proposes that the increased self-esteem accompanying improved reading abilities will lead to more prosocial behaviors performed in class, which, in turn, will lead to a better overall classroom climate.

Positive social relationships are an integral component of the classroom climate and student achievement (Shindler et al., 2016). This connection between classroom climate and student achievement is well-established in the literature (Freiberg et al., 1999; Hoy & Hannum, 1997; Kober, 2001; Loukas & Robinson, 2004; Shindler et al., 2004). Shindler et al. added to this research in a 2016 study of urban school districts across five states ( $n = 230$ ) investigating the connection between student achievement ratings and school climate. The results suggested that the quality of the school climate appears to be significantly related to student achievement rather than distinct factors as often thought of by many school personnel. Furthermore, this study found that not only are the school and classroom climate connected to student achievement but seem to be the "single most predictive factor in any school's capacity to promote student achievement" (Shindler et al., 2016).

Dogs are often credited with facilitating social relationships between people (Scandurra et al., 2005). The presence of TDs in the classroom may also improve the overall classroom

climate, but scant research has been done. One recent study (Correale et al., 2017) found that when dogs spend time in the classroom, they provide enjoyment and create opportunities for hands-on learning experiences. Their presence also improved psychological well-being, enhanced empathy, and socio-emotional development. Students were also better able to express their emotions. This study, done with elementary school children (n= 21 consisting of 12 boys and nine girls), took place at a public elementary school in Rome, Italy.

Students participated in five biweekly 1.5-hour sessions with two therapy dogs, one handler, one teacher, and a psychologist who observed. The teacher actively engaged children in group or individual activities while the dog handler helped children observe, interact properly with the dogs, and understand and interpret their behavior. The teachers were always present and observant but not actively involved with the dogs. They did, however, answer any question or request made by the students.

Overall results of this study by Correale et al. (2017) found that therapy dog interventions increased participants' ability to appropriately express their emotions and behaviors due to understanding the dog's behavior and non-verbal communication. Increased scores on the Strengths and Difficulties Questionnaire (SDQ) Total Difficulties scale scores from pre-test to post-test suggested the teacher's awareness of students' difficulties increased due to the dog-assisted program. Informal interviews with the teacher and psychologist regarding their observations expressed similar themes – increased empathy, better emotional expression, and socioemotional development (Correale et al., 2017). Other studies have also investigated the impacts of incorporating AAI into school curriculums for their beneficial effects.

The beneficial effects of AAI include increasing children's ability to connect with others. In other words, their attachment patterns. A study by Beetz et al. (2012) investigated if students

(n=47) ages 7-11 with insecure/avoidant/disorganized attachment benefitted more from the social support of a friendly human or a dog while performing a stressful task. This type of attachment is seen in 90% of students with special education needs and approximately 40% of students in the general population. These types of attachment patterns are associated with a decreased ability to regulate stress through social support (Beetz et al., 2012). The experiment brought about stressful social conditions via the Trier Social Stress Test for Children (TSST-C). Salivary cortisol stress levels were measured five times before, during, and following the TSST-C and through subjective measures.

Of the three groups, friendly human (n=10), friendly therapy dog (n=24), and control group (n=13) with a stuffed dog, the overall stress reaction was significantly lower in the therapy dog condition compared to the two other conditions. There was a negative correlation between the amount of contact between the student and the therapy dog, indicating that having more contact with the dog resulted in less stress. Also, stress levels of males with insecure-avoidant or disorganized attachment patterns benefitted more from the therapy dog's presence when under social stress. These findings support the inclusion of AAI in both general and special education settings because decreased stress creates an environment that fosters learning and improved performance (Beetz et al., 2012). Similar results have been in other studies that AAI decreases stress and increases well-being.

Adding to the mounting research, a qualitative study by Zents et al. (2017) assessed student and faculty perceptions about having a therapy dog in school. This study was conducted with four rural school districts in Western New York State. Students (n=35) were in the 6<sup>th</sup> through 8<sup>th</sup> and 11<sup>th</sup> through 12<sup>th</sup> grades. The study also examined the perceived efficacy of a therapy dog in promoting students' well-being. Almost half the students reported a close

relationship with the therapy dog and described unconditional love and nonjudgement from the dog.

The most common response reported was that the TD helps them calm down, followed by feeling less anxious. The teachers, school psychologists, and counselors reported that the TD provided benefits for individual and group counseling settings for a myriad of issues, including but not limited to anxiety, assertiveness, adjustment issues, empathy, unconditional love, and de-escalating crises. The faculty also noted that the TD's role depended on their students' individual needs. These results are consistent with the results of previous research by Nimer and Lundahl (2007) and E. Levinson et al. (2017) in that therapy dogs are effective in increasing mental well-being and decreasing anxiety, fear, and depression. They also improve behavior and contribute to an overall positive classroom climate.

In summary, research has found that having therapy dogs in various situations is beneficial. In schools, the use of therapy dogs has been demonstrated to lead to improved relationships between students and between students and teachers (Zents, 2017): fewer negative comments between students, more use of praise in student conversation, more eye contact), better and more appropriate tone of voice and tone with others, fewer tantrums and less learned helplessness (Jalongo et al., 2004); positive affect social behavior and motivation (Correale et al., 2017); and reduced aggression episodes and behavioral problems (Daly & Suggs, 2010); reduced stress and improved performance (Beetz, 2013). In short, the research shows that trained therapy dogs provide unique opportunities that benefit children's educational and social development. Much of this research, however, is qualitative and anecdotal. This study seeks to add quantitative data to support the evidence that RTD programs offer benefits other than increasing reading ability. Namely, participation in RTD leads to differences in participants' self-esteem, the

performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate.

### ***Students with Reading Challenges***

Although not considered a hard-to-reach population, many children have difficulty learning to read. Statistics support that nearly 10% of all students have substantial difficulties learning to read, representing two to four children in an average classroom. (Boyes et al., 2018; Gans et al., 2003). These students experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Students with reading difficulties consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. These internalizing and externalizing behaviors negatively impact social relationships in the classroom and all areas of life (Boyes et al., 2018; Lindeblad et al., 2019).

Difficulty reading influences children's self-concept and psychological health. The objectives of a study by Lindeblad et al. (2019) were to examine if self-concept and psychological health in reading-impaired children and adolescents (n=132) differ from age-equivalent norm groups and to investigate the effect on self-concepts and psychological health in reading-impaired pupils who used assistive technology (e.g., applications on tablets) to assist with reading and compensate for reading deficits. A significant interaction was found between reading ability and self-esteem. It was also discovered that self-esteem and reading ability interact to predict externalizing symptoms. Internalizing and externalizing behaviors commonly manifest as low self-esteem or self-concept, as well as anxiety and depression. Again, externalizing behaviors cause difficulties in social relationships for those who struggle with

reading (Lindeblad et al., 2019).

Research supports the notion that students with reading difficulties consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. A study on the relationship between reading ability and child mental health by Boyes et al. (2018) added to this body of evidence. Children between the ages of seven and 12 (n=117) completed standardized reading assessments and self-report measures of mental health, self-esteem, and non-verbal intelligence (IQ). Researchers found that reading ability and internalizing behaviors were negatively correlated (Boyes et al., 2018). This relationship was consistent regardless of self-esteem. This study demonstrated that self-esteem might moderate the relationship between reading ability and children's mental health. Specifically, poor reading was only associated with externalizing symptoms and real difficulties at low levels of self-esteem. Poor reading ability was significantly associated with internalizing symptoms, but self-esteem did not moderate this relationship. Interventions improving self-esteem may reduce the risk of mental health problems in children with reading difficulties, particularly if these supplement ongoing evidence-based interventions addressing reading difficulties (Boyes et al., 2018).

Acting out in frustration and feelings of anxiety and/or depression are examples of the internalizing and externalizing behaviors that occur due to difficulties with reading. When learning to read is challenging for children, frustration and anxiety often result. A McGeown et al. (2015) study sought to increase understanding of the relationship between young children's reading attitudes, reading confidence, enjoyment of learning to read, and reading attainment. School children (n=203) were administered questionnaires that examined their attitudes to reading, reading confidence (using Progress in International Reading Literacy Study items), and enjoyment of learning to read individually.



Children also completed an assessment of word reading. The results emphasized that the relationship between children's reading skills and the affective aspects of learning to read develops from a young age. Therefore, methods of reading instruction need to address children's developing cognitive skills and consider that emotions (e.g., frustration and anxiety) impact the development of reading skills (McGeown et al., 2015). Difficulties with reading are not limited to childhood but continue to impact individuals into adulthood.

Evidence has shown that difficulty in learning to read can lead to what is commonly referred to as the poverty trap. Early education is not always effective at detecting difficulties children may be experiencing, and lack of reading at home, either co-reading or alone, harms overall reading ability (Elias et al., 2002). This study in England surveyed two cohorts. The participants in the first cohort (n=11367- 5587 men, 5780 women) were born in 1958 and 33 years of age in 1991 at the time of the study, while the second cohort (n= 10227: 5446 men, 5771 women) was surveyed at age 29 in 1970. The results were consistent in both cohorts concerning reading ability. If the lack of reading skills is not addressed early, it can escalate, leading to a lack of opportunity in adulthood. The long-term effects of poor literacy can contribute to the poverty trap, seriously limiting future academic and career achievement (Elias et al., 2002).

Difficulty learning to read has been found to have high incidences of comorbidity with emotional and disruptive disorders. In 1999, the United Kingdom's Office of National Statistics surveyed children's mental health to explore the comorbidity of reading difficulties and psychiatric disorders. Six million four hundred twenty-two thousand two hundred two children between the ages 5 and 15 were sampled in England, Scotland, and Wales. This large-scale cross-sectional survey found a strong association between conduct disorder (CD) and literacy difficulties. Among other findings was a connection between CD and the inattentive type of

attention deficit hyperactivity disorder (ADHD).

Contrary to other studies, this one did not find a connection between reading difficulties and depression. However, externalizing behaviors were strongly connected with literacy difficulties. Also, the results pointed toward a direct association between literacy difficulties and anxiety symptoms (Carroll et al., 2005).

One of the first studies to connect children's reading and stress was done by Friedmann et al. (1983). Friedmann et al. (1983) investigated the connection between children's reading out loud and their stress levels while a friendly pet dog was present. Children in this study (n=36) ranged from nine to 16 years old. They were asked to spend time relaxing in a chair and reading aloud. Half of the children did this activity with an unfamiliar but friendly pet dog. The other half of the children did not have a dog present (Friedmann et al., 1983).

The researchers hypothesized that the dog's presence might make the researcher seem friendlier and the environment less intimidating to the child (Friedmann et al., 1983). Additionally, for some of the children, the dog was present for the entire 30-minute session. For others, the dog was introduced halfway through the session. The findings suggested that the dogs helped to lower stress; this was evidenced by the participants' reduced heart rate and blood pressure, particularly during the stressful task of reading out loud. The authors also found that participants in sessions where the dog was present the entire time had stress levels lower than those in the sessions where the dog was introduced halfway through.

The environment in the classroom impacts all children, whether or not they have difficulty reading. When nearly 10% of all students in an average classroom have substantial difficulties learning to read (Boyes et al., 2018; Gans et al., 2003), which results in anxiety and depression expressed through internalizing and externalizing behaviors, the classroom climate is

negatively impacted for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Since 1983, the finding by Friedman et al. (1983) that reading to dogs reduced stress, allowing children to relax to focus on developing their reading skills has been expanded upon (Beetz et al., 2012; Boyes et al., 2018; Jalongo et al., 2004; McGeown et al., 2015). Today, certified therapy dogs and handlers rather than pets are routinely used.

### ***Read to Dogs Programs***

In 1999, Intermountain Therapy Animals founded Reading Education Assistance Dogs (READ), or RTD, in Salt Lake City. These programs have steadily increased in popularity and acceptance since their beginning. The RTD programs are completely incorporated into school curriculums with educational and psychosocial goals (Intermountain Therapy Animals, 2021). Depending on the frequency and duration of interactions, students' reading comprehension and fluency improve at least two and up to five grade levels due to reading aloud to a calm companion dog for 10 to 20 minutes weekly or monthly (Jalongo et al., 2004). Qualitative and anecdotal evidence supports that students' self-esteem and self-concept improve, leading to more positive interactions with fellow students (Jalongo et al., 2004).

When learning to read is difficult, or the difficulties persist, children may even avoid reading altogether. Children often hesitate to practice reading out of fear of failure or embarrassment (Stringer & Mollineaux, 2003). Without this much-needed practice, their skills will not improve (Stanovich, 1986).

Noble and Holt (2018) investigated the extent to which engagement and motivation to read improve in children because of participating in the READ programs. This qualitative study investigated the impacts of reading aloud to a dog over four weeks and consisted of observations and interviews with participants and cooperating teachers. Results found that participating in the

READ program increased motivation, engagement, and self-efficacy, leading to greater attainment. Participants (n=6) were four and five-year-old elementary school students who expressed that reading to the dog made them feel happy and it was fun. Previous research has shown that READ programs consistently build motivation, confidence, and focus where other interventions have failed. Studies also indicate that a lack of confidence in reading can lead to avoidance of reading, even for pleasure.

One school's response to 4th-grade reading proficiency at 64%, meaning that the student read significantly below grade level and the statistics slightly higher in older students, a school implemented an Animal-Assisted Reading program (RTD). Quantitative research has supported the improvement of reading scores for children who participate in RTD programs (Kirnan et al., 2016, 2018). Research also supports increased social skills among students with ASDs (Becker et al., 2017) and prosocial behaviors among incarcerated teens (Seivert et al., 2018). As well as the previously mentioned qualitative study by Noble and Holt (2018) found that as a result of the RTD program, there was an increase in motivation, positive engagement, willingness to read, and confidence in reading skills in children. There was also increased behavior management and attachment to the dog.

A mixed-methods study by Kirnan et al. (2016) examined the effects of a therapy dog program on reading at different grade levels at a suburban NJ elementary school. Statistically significant reading score improvements were found at the end of the school year for children in kindergarten who participated in the RTD program compared to those who did not. Also, objective measures showed increases in reading motivation and enjoyment. When reading is enjoyable, children are more motivated to read, read longer, and try harder when the reading may be difficult.

Previous research has shown that positive student attitudes toward reading are associated with reading achievement, including persistence and perseverance, especially for elementary school students. In a follow-up study to the 2016 study, Kirnan et al. (2018) conducted a quasi-experimental study with all students, not just those with reading challenges, to determine the program's effect in the second year. Certified therapy dogs were introduced into every classroom (kindergarten through fifth). The study found that RTD programs have long-term cumulative benefits. All students' reading scores improved. The study also found that RTD programs increase students' motivation to read.

The increased persistence and perseverance children experience from participating in RTD results from decreased stress. Further support for the benefits of RTD programs was found in a study by Rousseau and Tardif-Williams (2019). This within-subjects design study investigated the effects of reading to a therapy dog on students' (n= 17; eight girls, nine boys, grades 1-3) motivation and persistence in a challenging reading task. Based on scores on two subtests (Test 1 –Letter-Word Identification and Test 13 – Word-Attack), the Woodcock-Johnson III reading skills test reading passages were individually and specifically selected to ensure that the reading assignment was challenging for each student. Each participant read twice to a therapy dog and handler team and an observer and once to a handler and an observer, but no therapy dog. The readings took students up to 12 minutes to complete, for a maximum of 24 minutes, and each reading had two sections of approximately six minutes. When the students completed the first reading section, they were given a choice to complete the second section. This occurred in both the RTD and control conditions.

Results found that reading to a therapy dog increased the students' perseverance, persistence, and motivation, as confirmed by a multivariate repeated-measures ANOVA with

two levels. Additionally, interviews with students indicated that they were significantly more interested and competent and spent more time reading in the therapy dog's presence versus when the dog was not present. Researchers posit that the differences in score may be because of decreased stress for the participants, one of the physiological benefits of AAI (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995).

These physiological benefits include decreases in stress. A study by K. Allen et al. (1991) also supports the decreases in stress that occur in the presence of dogs. This study involved 45 adult women (ages 27-55 years old) employed full-time and were also dog owners. The research was done in two experiments involving the participants performing two serial subtraction tasks designed to induce stress. The initial experiment took place in a laboratory on the campus of the State University of New York at Buffalo. The second experiment occurred at the participants' homes, either in the presence of their dog and the experimenter, a friend and the experimenter, or only the participant and the experimenter.

Physiological and performance data (accuracy of subtraction tasks) were recorded in laboratory and home conditions. Results found that participants experienced the greatest physiological stress when a friend was present and the least when their dog was present. The researchers posited an explanation for these results because the participants thought of people, including friends, as a judgmental presence, resulting in stress, while the dog was non-judgmental (K. Allen et al., 1991).

The non-judgmental qualities of dogs make them ideally suited to assist children who have difficulty reading. As McGeown et al. (2015) found, reading instruction has to address children's emotions (stress, frustration, and anxiety), and struggling readers and develop reading skills. It is this decreased stress (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl,

2007; Sable, 1995), anxiety, feelings of isolation, and improved mental outlook (Ernst, 2013), and increased production of oxytocin (resulting in elevated mood (E. Levinson et al., 2017) that occurs in a dog's presence that creates conditions for RTD to be successful. Studies have validated the effectiveness of RTD and have found improvements in reading accuracy after eight-week (Kline et al., 2019) and 10-week (le Roux et al., 2014) programs, respectively. Reading fluency has also improved, with studies finding improvements of up to 20–30% and 24 words per minute (Black, 2009; Smith, 2009).

Since the inception of RTD programs, quantitative and qualitative research has shown that participation increases reading ability. Empirical evidence has shown increases in persistence, perseverance (Rousseau & Tardif-Williams, 2019), motivation, engagement, and increased self-efficacy, leading to greater attainment (Noble & Holt, 2018). Gains have also been evidenced in accuracy, fluency, and comprehension (Black, 2009; Kline et al., 2019; le Roux et al., 2014; Smith, 2009). Jalongo et al. (2004) found that the reading comprehension and fluency of students who participate in RTD increase from second to fifth-grade levels depending on the regularity and length of the interactions.

The RTD programs are generally longer and more structured than AAI. In RTD, children read aloud to a therapy dog with a handler present (S. Hall et al., 2016). AAI are less formally organized, and the activities vary from petting, playing, performing tricks, or simply hugging the dog (S. Barker et al., 2016). RTD is a form of AAI but with the specific goal of increasing reading skills in participants. AAI decreases blood pressure and stress while encouraging relaxation (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). This fosters a safe and non-judgmental environment in which students practice reading, increasing motivation to read and confidence in their abilities (Guthrie & Cox, 2001; Hidi &

Harackiewicz, 2000).

This study was one of the first quantitative studies to examine differences in students' self-esteem, performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate due to participation in RTD programs. In addition, this study evaluated whether RTD improves the overall classroom climate. Based on the research already performed, individuals with serious mental illnesses (Ambrosi et al., 2019; Creagan et al., 2015; Sikstrom et al., 2020), incarcerated youth (Seivert et al., 2018; Sprinkle, 2008), and individuals with ASD (S. Barker & Wolen, 2008; Carlisle, 2015; Stevenson et al., 2015). It is anticipated that the data will show that it does. As a result of these changes in self-esteem and prosocial behaviors, the overall classroom climate also improved.

### **The Research Gap**

Kropp and Shupp (2017) reviewed 30 books, articles, and sources published between 2001 and 2017 on therapy dogs in classrooms. Eighty-three percent of the literature (25 articles) was published between 2007 and 2017. This review's findings of limitations included a need for more empirical studies with larger sample sizes, control versus experimental groups, and more long-term studies to strengthen this body of work. Additionally, a review of literature on children reading to dogs by S. Hall et al. (2016) examined 48 articles with similar result recommendations.

According to S. Hall et al. (2016), a more rigorous investigation is needed on the topic with greater numbers of participants, control groups, longitudinal studies, and standardized measures. Also, evidence has been found that RTD has beneficial impacts on the learning environment, but this evidence is of poor quality (S. Hall et al., 2016). A 2020 qualitative study by Henderson et al. found increases in prosocial behaviors and decreased internalizing and



externalizing behaviors suggested pre and post-test quantitative program data.

Thus far, research on the effectiveness of AAIs and RTD programs with children has focused on hard-to-reach populations and their effectiveness in increasing reading abilities (Ambrosi et al., 2019; Creagan et al., 2015; Sikstrom et al., 2020). The hard-to-reach populations include students with autism spectrum disorders (S. Barker & Wolen, 2008; Carlisle, 2015; Stevenson et al., 2015; Yap et al., 2017) and those in the juvenile justice system (Seivert et al., 2018; Sprinkle, 2008). Previous research has not examined the impacts of RTD and AAI in a general education classroom with students with reading difficulties. Moreover, the literature consistently points to the need for larger sample sizes and studies of longer duration to eliminate the novelty effect as the cause (Rousseau & Tardif-Williams, 2019). An absence in the research exists regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback (Linder et al., 2018).

Based on these studies by S. Hall et al. (2016), Linder et al. (2018), Kropp and Shupp (2017), and Henderson et al. (2020), a gap in the literature exists in the increased self-esteem, prosocial behaviors, and an improvement in the overall classroom climate due to students with reading challenges participating in RTD. This study will use quantitative measures to assess the changes in students' self-esteem, the performance of prosocial behaviors, and perceptions of the overall classroom climate before and after participating in the RTD programs. It is anticipated that this proposed study will provide quantitative data to bolster the existing qualitative and anecdotal evidence. Research has found that when children struggle with reading, it impacts their academic abilities and stress levels, resulting in decreased self-esteem and higher levels of frustration and anxiety (Lindeblad et al., 2019). This, in turn, affects their relationships with

other students, the performance of prosocial behaviors between students, and the overall classroom climate (Boyes et al., 2018; Gans et al., 2003; Lindenblad et al., 2019). Interactions with therapy dogs and participation in RTD programs have decreased stress (Griscti & Camilleri, 2020; Haggerty & Mueller, 2017; Orellana, 2019) and increased reading ability (Kirnan et al., 2016, 2018).

To fill recommendations from the existing literature, the study addressed the variables of students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. S. Hall et al. (2016) asserted that RTD has beneficial impacts on the learning environment, but this evidence is of poor quality. Linder et al. (2018) identified a lack of research regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback. Kropp and Shupp's (2017) recommendations, based on a review of 30 articles and books, found a need for more empirical studies with larger sample sizes, control versus experimental groups, and more long-term studies to strengthen this body of work. S. Hall et al. (2016) examined 48 articles with similar results to those found by Kropp and Shupp (2017), including a need for research over a longer duration, control groups, and quantitative data versus qualitative data. Most relevant to this proposed study was the evidence found in support of positive effects on the learning environment was of poor quality (S. Hall et al., 2016), and the Henderson et al. (2020) qualitative study that found "a positive learning environment was established," (Conclusion Section) facilitated social interactions and decreased internalizing and externalizing behaviors but needed pre and posttest quantitative data.

### **Summary**

Chapter Two presented a literature review that gave a brief history of AAI, the theoretical

framework for this study, and a wide array of studies related to the impacts of therapy dogs on several populations. From patients in hospitals, rehabilitation centers, and educational settings, the literature supports that therapy dogs provide physiological and psychological benefits (Beck & Katcher, 2003; Friesen, 2010; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Research on the benefits of AAI with hard-to-reach populations such as individuals with mental illnesses, incarcerated youth, and individuals with ASD was also presented. Empirical evidence shows that AAI increases engagement, motivation, and social interaction among those with serious mental illnesses (Ambrosi et al., 2019; Sikstrom et al., 2020). With youth in the juvenile justice system, AAI has proven to increase empathy (Sprinkle, 2008) and decrease anxiety and depression, which increases prosocial behaviors (Seivert et al., 2018). For children with ASD, interactions with therapy dogs create a social lubricant (Carlisle, 2015) that improves social skills, empathy, and more social interactions (Becker et al., 2017).

The literature review established the gap in the research via suggestions made by Kropp and Shupp (2017), S. Hall et al. (2016), Rousseau and Tardif-Williams (2019), Linder et al. (2018), and Henderson et al. (2020). These researchers saw the need for more empirical studies with larger sample sizes, control, and experimental groups, and studies of longer duration (S. Hall et al., 2016; Kropp & Shupp, 2017; Rousseau & Tardif-Williams, 2019). S. Hall et al. (2016) also added the need for standardized measures, and of great significance to this study, the evidence that RTD has beneficial impacts on the learning environment is of poor quality. Linder et al. (2018) added that a deficiency in the research exists regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative feedback. Henderson et al. (2020) qualitative study found that RTD contributed to a positive learning environment, facilitated social interactions, and decreased

internalizing and externalizing behaviors but needed pre and post-test quantitative data.

Subsequently, the theoretical foundations section connected the theories and concepts in which the study is grounded. AAIs are considered adjuncts to therapy and are implemented in settings, so they are not tied exclusively to any theory but are effective across many theoretical frameworks (Chandler et al., 2010). Regardless, support for this study was garnered from the biophilia hypothesis (Wilson, 1984), Bowlby's attachment theory, Roger's client-centered theory, and Elkind's concepts of the imaginary audience and personable fable from his theory of adolescent egocentrism. AAI provides the core components of Rogers's unconditional positive regard, empathy, and congruence in settings that create nonjudgmental environments that foster positive social, emotional, and educational outcomes (Jenkins et al., 2014; Raskin & Rogers, 2005; Lubbe & Scholtz, 2013). Humans are inherently predisposed to share emotional connections with friendly animals, which has a calming effect on people, particularly children (Wilson, 1984).

Young adolescents are relatively more self-conscious or concerned with what others think about them than children or older adolescents (Elkind & Bowen, 1979). Children who experience difficulty reading either out loud or to themselves experience increased frustration and anxiety, which research has shown leads to internalizing or externalizing behaviors as well as reluctance to read (Jalongo et al., 2004; Kirnan et al., 2016) and hesitancy to practice (Stringer & Mollineaux, 2003). Research also supports that therapy dogs provide a non-threatening yet socially supportive and interactive audience for children when practicing their oral reading skills (Friesen, 2010).

The literature review examined the physiological and psychological benefits of AAI and AAT. Various populations and settings have provided empirical evidence that implementing AAI

with positive results. In hospitals, rehabilitation facilities, and nursing homes when therapy dogs are regular visitors in hospitals, physical rehabilitation centers, and nursing home facilities for their physiological benefits to patients, which include decreasing anxiety, moderating stress responses, lowering blood pressure, decreasing heart rate, reducing cardiovascular disease risk, and cognitive benefits (Cole et al., 2007; Handlin et al., 2018; Orlandi, 2007). Results also suggest that AAI or AAT with populations at these facilities increases social interaction and reduces depression (Brickel, 1986; Crowley-Robinson et al., 1996; Stasi et al., 2004).

The literature review detailed several specific populations with whom the research on AAI has shown promising results in prosocial behaviors and improved environment. These hard-to-reach populations are individuals with serious mental illnesses, youth in the juvenile justice system, and individuals with ASD. Research on implementing AAI with individuals with serious mental illnesses revealed that these individuals are less depressed, more motivated, engaged, have increased moods, show more social interaction, and are more committed to therapy (Ambrosi et al., 2019; Creagan et al., 2015; Sikstrom et al., 2020). Studies with youth in the juvenile justice system found that working with and training shelter dogs could interrupt the escalating cycle of aggression by teaching prosocial skills and empathy (Sprinkle, 2008), and participation in AAI decreased both internalizing and externalizing behaviors and increased empathy in incarcerated youth, lending support to the link between increased prosocial behavior and decreased levels of stress, depression, and anxiety (Seivert et al., 2018); these results are because of the activation of the oxytocin system, a hormone linked to positive social interaction and reduction of stress.

In educational settings, AAI provide the same physiological and psychological benefits to students ranging from elementary school to college. Reductions in stress, heart rate, blood

pressure, decreased anxiety, depression, and elevated mood are noted (S. Barker et al., 2016; Haggerty & Mueller, 2017). Support for the biophilia hypothesis, which asserts that the presence of friendly animals has a calming effect on humans, particularly children (Wilson, 1984), is also found. The presence of dogs in classrooms also improved psychological well-being, enhanced empathy, and socio-emotional development. Students were also better able to express their emotions (Correale et al., 2017). AAI has been shown to improve special and general education classroom environments (Beetz, 2012, 2013). Ninety percent of students with special education needs and 40% of general education students (ages 7-11) have insecure/avoidant /disorganized attachment patterns and benefit more from the social support of a dog while performing a stressful task (Beetz, 2012).

Students who struggle with reading are less motivated to read and have lower academic achievement (Noble & Holt, 2018). These difficulties have negative impacts on students' self-esteem. Students with reading challenges experience more frustration and anxiety, resulting in internalizing and externalizing behaviors that impact their relationships with their classmates (Lindeblad et al., 2019). RTD programs have been shown to improve the reading comprehension, fluency, and overall reading abilities of those who participate (Zents et al., 2017). Participating in AAI and RTD programs has also been proven to decrease stress (Griscti & Camilleri, 2020; Haggerty & Mueller, 2017; Orellana, 2019) and increase attachment (S. Barker et al., 2016; Beetz, 2012; Hall, 2018). Based on the literature gap and previous studies' recommendations, this study will extend the current research to investigate the impacts of RTD on participants' self-esteem, prosocial behaviors, and the overall classroom climate. This study hypothesizes that it also improves their self-esteem, which will improve their relationships in the classroom as evidenced by the prosocial behaviors performed and contribute to an improved

overall classroom climate.

## Chapter Three: Methods

### Overview

This quasi-experimental two-group study using a pre and post-test design study was designed to investigate the differences in students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate as a result of participation in Read to Dogs (RTD) programs. Participants were recruited through a certified Pet Therapy Program in East Central New Jersey. Students from elementary and middle schools who participated in the RTD programs completed instruments anonymously at the beginning and conclusion of the study period for the researcher to gain knowledge about their self-esteem (The Rosenberg Self-Esteem Scale; Appendix E), the performance of prosocial behaviors (The Strengths and Difficulties Questionnaire; Appendix E), and participating teachers' perceptions of the overall classroom climate Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G; Appendix E). Therapy dog and handler teams completed a short informational questionnaire (Appendix F). This research study aimed to collect quantitative data that in response to recommendations for future studies by S. Hall et al. (2016), Linder et al. (2018), Rousseau and Tardif-Williams (2019), Connell et al. (2019), Henderson et al. (2020) and to increase knowledge of the benefits of RTD programs in schools.

This chapter provides the reader with an overview of the proposed study. Chapter three details the study design, the research questions, and the hypotheses. To allow for replication, the criteria for the possible participants, the setting where the study will take place, the instrumentation used, and a detailed explanation of the procedures will be discussed. Also contained within this chapter is a complete plan for data analysis, and the chapter concludes with



a chapter summary.

### **Design**

A quasi-experimental comparative study using a pre and post-test design was chosen for this study. This type of study was chosen for several reasons. First, random assignment was not possible because 1) Participants were selected based on the need to improve their reading skills as identified by their teachers and/or school administrators, 2). It is unethical to deny participation in the Read to Dogs (RTD) program to a student who needs it, and 3). A quasi-experimental study allows for the study of a causal relationship while avoiding ethical issues (Rajendran et al., 2019), Fraenkel and Wallen. (2019) also noted that quasi-experimental research is used to establish cause-and-effect relationships that researchers may manipulate. In this experiment, students and teachers who participated in RTD completed assessments at the beginning and conclusion of the study to ascertain if there was a relationship between participation in RTD and the overall measures of self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Second, a quasi-experiment was appropriate because this study took place in schools rather than a laboratory and aimed to test the results of long-lasting treatment (Cook, 2015).

Research in schools has seen an increase in the use of the quasi-experimental methodology. This increase in the use of quasi-experimental research is a result of what Gopalan et al. (2020) called a "credibility revolution" (p. 1) and a search for causal inference. The use of quasi-experimental studies in the field of education allows educators to determine which new teaching techniques work in the field. A quasi-experimental study (n=232) by Hodges et al. (2020) found that students who played a video game designed to help learn the human body system concepts outperformed those who participated in teacher-guided inquiry lessons on the

same concepts. However, a follow-up study (n=166) found no significant differences in learning outcomes between groups when the group participating in the teacher-guided inquiry activities also participated in the video game (Hodges et al., 2020)—the instructional time for the video game-only group stayed the same while the teacher-guided inquiry group's instructional time doubled. The learning outcomes were not significantly different, indicating that playing video games among elementary school students had a powerful impact on learning science concepts. In addition to group-based differences using video games in the classroom, quasi-experimental studies have examined summer reading skills retention.

During the summer months, children can lose the gains made in their reading skills throughout the school year. For example, a quasi-experimental study by Borman et al. (2021) compared the results of two reading programs designed to combat summer reading losses. One was a traditional summer reading list, while the other, Kids Read Now (KRN), was an interactive program in which the participating children and teachers chose books together, held "family reading nights" at school, and prizes were earned for completing the reading. Children in three large Michigan school districts (K-4) self-selected into either the traditional or the KRN program. Students who participated in the KRN program showed statistically significant impacts in reading achievement compared to those who participated in the traditional summer reading program. Differences in reading achievement were amplified when the students and parents took full advantage of the KRN program's offerings.

A quasi-experimental pre- and post-test study design allowed for causal inferences to be made. Read to Dogs (RTD) programs have proven to increase students' comprehension and fluency (Jalongo et al., 2004; Kirnan et al., 2016, 2018). However, effects on students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall

classroom climate have been documented only qualitatively and anecdotally (S. Hall et al., 2016; Jalongo et al., 2004). In this proposed study, participation in RTD was based on the need to improve reading skills. Participants completed the Rosenberg Self-Esteem Scale (RSES), which measured students' self-esteem (Rosenberg, 1965), the Strengths and Difficulties Questionnaire (SDQ) to evaluate the performance of prosocial behaviors (School Youth in Mind, 2020), and the participating teachers completed the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G; second – sixth grades) or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G; sixth grade – 12<sup>th</sup> grades). Instruments were completed anonymously. At the conclusion of the study period, post-test questionnaires were completed.

The other quantitative designs were considered and dismissed because they were not the best choice for this proposed research study. The true experimental design was not appropriate because a distinguishing feature of a true experimental design is the random assignment of participants (Dawes, 2010). Random assignment of participants was not possible for this experiment as participation in the Read to Dogs (RTD) program is based on the need to improve reading skills. The Ex-post facto design is a quasi-experimental study that examines how an independent variable, present before the study, affects a dependent variable (Kowalczyk, 2013). Also, the ex post facto design was dismissed because the independent variable, RTD, was not present before the experiment. The pre-experiment is usually a one-time intervention to help anticipate any problems experiments may encounter with making causal inferences (Jiménez-Buedo, & Russo, 2021). The experimental design was eliminated as RTD programs are established in participating schools, and sessions will be ongoing. Thus, the quasi-experimental design was chosen because it allowed for causal inferences to be made regarding differences in

self-esteem, the performance of prosocial, and participating teachers' perceptions of the overall classroom climate as a result of participation in RTD programs.

In this study, participants were recruited through schools that participate in Read to Dogs (RTD) programs. Participation in RTD is based on students' need to improve their reading abilities. Before beginning the study, parental consent and student assent were secured. Students and parents were made aware of the purpose of the study and that their participation was voluntary. Additionally, all therapy dog handlers and teachers also signed informed consent forms.

### **Research Questions**

Previous research established that Read to Dogs (RTD) programs improve students reading accuracy, fluency, and comprehension (Connell et al., 2019; E. Levinson et al., 2017). The empirically proven psychological and physiological benefits of interactions with therapy dogs range from decreased stress, heart rate, and blood pressure to increased production of oxytocin and mood (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Research has also shown that students with reading challenges have higher incidences of low esteem and internalizing and externalizing behaviors (Jalongo et al., 2004; Kirnan et al., 2016). This influences academic success and feelings of belonging in the classroom for all students. The research questions for this study were rooted in its purpose: to investigate the differences in participants' self-esteem, the performance of prosocial behaviors, and perceptions of the overall classroom climate as a result of participation in RTD programs.

The Research Questions were as follows:

RQ1: Do elementary and middle school students differ in self-esteem scores following participation in Read to Dogs (RTD) programs?

RQ2: Do elementary and middle school students differ in prosocial behavior scores following participation in Read to Dogs (RTD) programs?

RQ3: Do elementary and middle school teachers' classroom climate scores differ following participation in Read to Dogs (RTD) programs?

Research question 1 sought to determine if elementary and middle school students differed in self-esteem scores following participation in Read to Dogs (RTD) programs. Students who struggle with reading experience low self-esteem, self-concept, depression, and anxiety more than those who do not have difficulty reading (Boyes et al., 2018; Lindeblad et al., 2019). A qualitative study by Noble and Holt (2108) found that participating in RTD improves student self-efficacy, motivation to read, and engagement in reading. Qualitative evidence was found by Jalongo et al. (2004) that students' self-esteem improved as a result of RTD participation. Self-efficacy is the belief or confidence in one's ability to perform specific tasks or reach specific goals (Bandura, 1977), while self-esteem is an individual's overall self-worth and self-value (Ackerman, 2022). The increase in reading ability that occurs as a result of RTD is well established. Research by Jalongo et al. (2004) confirmed that participation in RTD improves students' comprehension and fluency (Jalongo et al., 2004) and the physiological benefits of decreased stress and production of oxytocin, and improved mental outlook (Ernst, 2013).

Research into the use of therapy dogs with hard-to-reach populations has shown that it effectively decreases anxiety, depression, and internalizing and externalizing behaviors (Ambrosi et al., 2019; Creagan et al., 2015; Becker et al., 2017; Seivert et al., 2018). A study of students with Autism Spectrum Disorders (ASD) in a social skills group with a therapy dog found that the group showed decreases in externalizing and internalizing behaviors. The changes were significant compared to those in the traditional social skills group (Becker et al., 2017).

Hypothesis 1 of this study is derived from three findings of Animal Assisted Interactions (AAI) and Read to Dogs (RTD) programs. These findings include: 1). Decreases in depression, anxiety, internalizing, and externalizing behaviors found in hard-to-reach populations; 2). Improved physiological benefits include improved mood, decreased stress, and increased oxytocin production; and 3)—evidence of improved self-efficacy and self-esteem as a result of RTD participation. The combination of all these benefits of RTD leads to the hypothesis that participation in RTD leads to increased self-esteem.

Research question 2 strove to determine to what extent elementary and middle school students differ in the performance of prosocial behaviors following participation in Read to Dogs (RTD) programs. The research thus far has found that students with difficulty reading experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Students with reading difficulties also consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. These internalizing and externalizing behaviors negatively impact social relationships in the classroom and all areas of life (Boyes et al., 2018; Lindeblad et al., 2019). Within hard-to-reach populations of children with Autism Spectrum Disorders (ASD) and those in the juvenile justice system, Animal Assisted Interactions (AAI) support the link between increased prosocial behavior and decreased levels of stress, depression, and anxiety as a result of the production of oxytocin (Seivert et al., 2018; Sprinkle, 2008). Specifically, with children with ASD, the research found that AAI increased theory of mind, improved social skills, and decreased internalizing and externalizing behaviors (Becker et al., 2017).

Similarly, studies with college students have found that Animal Assisted Interventions

(AAI) led to better mental and physical well-being (S. Barker et al., 2016) and elevated mood (Griscti & Camilleri, 2020). A study by Fiocco and Hunse (2017) found that these improvements were in the present and future. This study hypothesized that as students participate in RTD, they will perform more prosocial behaviors because they are less stressed, experience reduced amounts of depression and anxiety (internalizing behaviors), and exhibit fewer externalizing behaviors.

Lastly, research question 3 asked to what extent, if any, elementary and middle school teachers differ in their perceptions of the overall classroom climate following participation in Read to Dogs (RTD). Did the decreased stress and improved self-esteem lead to decreased internalizing and externalizing behaviors, more prosocial behaviors, and a better overall classroom climate? Research with hard-to-reach populations found support for the hypothesis that RTD improves the overall classroom climate. A Sikstrom et al. (2020) qualitative study with individuals hospitalized with serious mental illness indicated that the presence of a therapy dog increased the motivation to participate, helped to build rapport with participants, and facilitated connections.

Similarly, studies by Ambrosi et al. (2019) and Creagan et al. (2015) with institutionalized senior citizens suggested that Animal Assisted Interactions (AAI) elicited positive emotional responses and validated that interactions with therapy dogs shift individuals' thoughts away from depressive symptoms to more peaceful states of mind which led to elevated mood and more social interactions. Also, in a study by Becker et al. (2017), a therapy dog was introduced to a social skills group for children with Autism Spectrum Disorders (ASD). Results showed decreased feelings of isolation depressive symptoms, increased theory of mind, and improved social skills. The hypothesis that participating in (Read to Dogs (RTD) programs leads to an

overall improved classroom climate is the cumulative effect of the increased self-esteem and performance of prosocial behaviors. As students' self-esteem increases, they will perform more prosocial behaviors that, in turn, lead to an overall improved classroom climate as perceived by the participating teachers.

### **Hypotheses**

Each research question has a corresponding null and alternative hypothesis. The hypotheses are aligned with the research questions, the problem statement, and the purpose of the study. The hypotheses are:

H1o: There will not be a statistically significant difference in self-esteem scores in elementary and middle school students following participation in the RTD program.

H1a. There will be a statistically significant difference in the self-esteem scores of elementary and middle school students following participation in the RTD program.

H2o: There will not be a statistically significant difference in prosocial behavior scores of elementary and middle school students following participation in the RTD program.

H2a. There will be a statistically significant difference in prosocial behavior scores of elementary and middle school students after participation in the RTD program.

H3o: There will not be a statistically significant difference in the overall classroom climate scores among elementary and middle school teachers following participation in the RTD program.

H3a: There will be a statistically significant difference in the overall classroom climate scores among elementary and middle school teachers following participation in the RTD program.



### **Participants and Setting**

The participants for this proposed quasi-experimental study using a pre-and post-test design were drawn from elementary and middle schools in the east-central region of New Jersey that have established Read to Dogs (RTD) programs. To achieve the desired sample size, the researcher requested and received permission from the Executive Director of the Society for the Prevention of Cruelty to Animals (SPCA) in East Central New Jersey, which has a certified Pet Therapy Program, to contact and enlist schools that participate in the Read to Dogs (RTD) programs to participate in the research study (Appendix B). Permission was also granted to enlist the participation of the Therapy Dog and handler teams in the research.

Once permission to contact and enlist schools that participate in Read to Dogs (RTD) programs was granted by the Executive Director of the Society for Prevention of Cruelty to Animals (SPCA) in East Central New Jersey, the SPCA's Director of the RTD program provided a list of participating schools, libraries, and contact names. The RTD program had still not fully recovered from the COVID shutdown. There were fourteen RTD programs, of which five were either one-time visits or take place at libraries. These five programs were excluded because this study sought to examine changes in self-esteem, the performance of pro-social behaviors, and teachers' perceptions of the overall classroom climate that occur over time because of continued participation in RTD. Library visits were also excluded because there was no consistency of participants. Of the nine remaining programs, five schools expressed interest in participating (Appendix B).

All agreements to participate and site authorizations were acquired before the beginning of the study (see Appendix B). To protect the confidentiality of all participants, all instruments were completed anonymously. Names of students were not included on any instrumentation, and

names of participating schools were identified. The therapy dogs, handler teams, teachers, and students were not compensated for their participation and were free to decline participation in the study or discontinue participation at any time. The data of any participants who decided to withdraw from the study for any reason was not utilized in the analysis.

The sample size was derived by utilizing G\*Power software version 3.19.17. The following options were selected to calculate the ideal sample size: MANOVA, a one-tailed test (one direction), a medium effect ( $\rho$ ) size with a level ( $\alpha$ ) of 0.05, and a G\*Power ( $\beta$ ) value of .80. The output resulted in an ideal sample size of 66. However, an additional twenty percent, or 13 participants, will be recruited to allow for attrition, yielding a total sample of 79 (Appendix E).

The instruments to be completed by the students and participating teachers were stapled together in packets before distribution to students and participating teachers. The names of participating schools were masked with alpha-numeric codes (e.g., S1, S2, S3, etc.). If more than one class in a school participates, the classes were similarly differentiated by alphanumeric codes as well (e.g., S1C1, S1C2, S1C3, etc.) to protect the confidentiality of the students; all instrument packets were completed anonymously using paper and pencil. After data collection is completed and the school appropriately matches the pre and post-tests, the paper copies identifying the schools will be destroyed.

Once the data was collected, any changes in self-esteem, the performance of prosocial behaviors, and the participating teachers' scores of the overall classroom climate were compared by the school. It was expected that there would be statistically significant changes in self-esteem, prosocial behaviors, and the teachers' scores of the overall classroom climate from pre-test to post-test. Prior qualitative and anecdotal research with hard-to-reach populations has shown increases in the performance of prosocial behaviors (Seivert et al., 2018) and improved

environment (Zents, 2017), while qualitative research with participants in Read to Dogs (RTD) programs have shown increases in self-esteem (Jalongo, 2004). Therefore, it is reasonable to anticipate that quantitative results will show similar results.

### **Instrumentation**

Three instruments and one demographic questionnaire were completed by participating students before the beginning of the experiment, and the same two instruments were re-administered at the conclusion. The instruments to be completed are a short demographic questionnaire, the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The participating teachers completed either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G, Shindler, 2021) or Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G, Shindler, 2021), whichever was appropriate for the grade level. The participating teachers and therapy dog handlers will also complete short informational questionnaires only at the beginning of the experiment. The informational questionnaires will be completed only once at the inception of the study. Neither the handler nor the teacher questionnaire will be given twice. All student, teacher, and handler instrumentation and questionnaires will be completed anonymously.

### **Demographic Questionnaire**

At the outset of the study, student participants completed demographic questionnaires (see Appendix F). These demographic questions allowed the researcher to gain background information on the participants. The questions also provide context for the collected survey data, allowing the researcher to describe the participants and better analyze the data (M. Allen, 2017). The basic participant information that will be collected is grade, age, and identified gender.

## **Teacher and Therapy Dog Handler Questionnaires**

Teachers of classes participating in Read to Dogs (RTD) programs completed a short questionnaire, as did the therapy dog handlers. These short questionnaires garnered general information about the teachers, therapy dog handlers, and therapy dogs. The teachers completed one questionnaire for each class that participated in RTD. For example, a teacher of Language Arts with one class of students in each of the first and second grades that participated in RTD completed two questionnaires. Generally, therapy dog teams visit the same schools regularly. For example, a therapy dog team that visits the same school once a month for RTD during the school year would complete one questionnaire. Therapy dog handlers will complete one questionnaire for each class visited regularly (see Appendix F). The therapy dog teams' information was collected to describe the dogs, handlers, and their experience. Younger dogs may not be as patient or as calm as more experienced ones, which can skew results. If one class's results were significantly different, this could have been a possible reason.

## **Rosenberg Self-esteem Scale (RSES)**

The Rosenberg Self-esteem Scale (RSES) was developed in the 1960s by noted Social Psychologist Morris Rosenberg (Rosenberg, 1965); the RSES is one of social science research's most commonly used measures (Sinclair et al., 2010). Today, this tool is in the public domain, and no permission is needed for administration. The RSES has consistently demonstrated good predictive validity since its development (Sinclair et al., 2010). Internal consistency and test-retest reliability results are typically in the range of .82 to .88. According to Scandurra et al., (2005), the Cronbach coefficient is high, ranging from .77 to .88, which supports the internal coherence of the scale. Test-retest reliability over two weeks reveals correlations of .85 and .88, indicating excellent stability. The RSES demonstrates a Guttman scale coefficient of

reproducibility of .92, indicating excellent internal consistency (Sinclair et al., 2010; Appendix E). The positive psychological benefits of RTD include decreases in stress, depression, and anxiety, as well as improved mental outlook because of oxytocin production, which is well established (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995; Ernst, 2013). The Rosenberg Self-Esteem Scale (RSES) was chosen to measure participants' self-esteem. Evidence has shown that student self-efficacy in reading ability increases due to participation in Read to Dogs (RTD) programs (Jalongo et al., 2004).

The RSES is a 10-item scale that measures global self-worth by measuring positive and negative feelings about the self and is believed to be unidimensional (Rosenberg, 2020). Self-efficacy is skill or goal-specific, while self-esteem is an individual's global self-worth. Research has also shown that students with difficulty reading experience greater frustration, anxiety, and depression, often resulting in internalizing and externalizing behaviors that impact the entire classroom (Boyes et al., 2018; Lindenblad et al., 2019). Quantitative research regarding RTD programs in schools, a place where children experience increased stress encounter more challenging social situations, and adolescents dread negative feedback (Linder et al., 2018) is lacking. It is hypothesized that as students' reading abilities increase, self-esteem will also increase as a result of decreases in anxiety, stress, and internalizing and externalizing behaviors.

All items are answered using a 4-point Likert scale ranging from strongly agree to strongly disagree, which yields interval data and produces composite scores that range from 0 - 30, with 30 indicating the highest possible self-esteem score (Rosenberg, 2020 ). The RSES was administered before participation in the RTD program and upon conclusion of the study period. Examples of items on the RSES include, "On the whole, I am satisfied with myself," "At times, I think I am no good at all," and "I feel that I have a number of good qualities" (Appendix E).

## **Strengths and Difficulties Questionnaire (SDQ)**

The Strengths and Difficulties Questionnaire (SDQ) was administered at the beginning and again at the study's conclusion. Dr. Robert Goodman developed the SDQ in 1997, which has since then been translated into more than 80 languages and has become one of the most widely used behavioral assessment tools. The SDQ is a 25-item behavioral screening questionnaire for use with 3-18-year-olds. (Goodman, 1997). With younger students, teachers may complete the questionnaire on their behalf; however, for this study, a self-report version will be used as all participants should be able to complete the instrument independently. The 25 items measure symptoms on five scales. 1). Emotional (5 items); 2). Conduct (5 items); 3). Hyperactivity/inattention (5 items); 4). Peer relationship problems (5 items); 5). Prosocial behaviors (5 items). Examples of SDQ items include "I try to be nice to other people," "I care about their feelings," "I am restless, I cannot stay still for long," and "I get a lot of headaches, stomachaches, or sickness." Responses are on a 3-point Likert scale (Not True, Somewhat True, or Certainly True). This instrument is free to use (School Youth in Mind, 2020).

The Strengths and Difficulties Questionnaire (SDQ) yields ordinal data and has been found to have good reliability and validity in measuring adjustment and psychopathology in children and adolescents. In 1999, the Office for National Statistics surveyed the mental health of 10,438 children aged 5–15 years of age. Of the sample, ninety-six percent of the eligible 11–15-year-olds completed the survey. The five-factor structure (emotional, conduct, hyperactivity-inattention, peer relationships, prosocial) was confirmed to have good reliability and validity, making this instrument a valued brief instrument for measuring psychopathology and adjustment of children and adolescents (Goodman et al., 2004). The mean Cronbach was .73, indicating satisfactory internal consistency, as well as a 4-6 month mean for test-retest reliability of 0.62,

indicating satisfactory reliability. The SDQ scores were reported as above the 90th percentile, indicating an increased probability of diagnosing psychiatric disorders (Goodman et al., 2004).

Various other studies have shown positive results in tests of reliability validity for the Strengths and Difficulties Questionnaire (SDQ). For example, test-retest reliability in a sample of Chinese adolescents was found to be moderate test-retest reliability in a study of 1135 Chinese adolescents (Liang et al., 2019). Likewise, a study with Swedish adolescents (Lundh et al., 2008) aged 14-15 years old found that the psychometric properties were similar to those found in versions in other languages. The Swedish version of the SDQ-s has been shown to have good test-retest reliability (Smedje et al., 1999). A retest was administered 4 to 6 months after the first test with 11–15-year-olds, resulting in test-retest coefficients ( $r = 0.51$  to  $0.62$ ). Administrations separated by shorter intervals of time (2 weeks) reported test-retest correlations of  $0.63$  to  $0.86$  for 11 to 17-year-old children (Lundh et al., 2008). The evidence pointed to good convergent and discriminant validity and acceptable test-retest validity. In the study, girls reported more prosocial behaviors and emotional problems, while boys reported more acting out and issues with peers (Lundh et al., 2008).

The Strengths and Difficulties Questionnaire (SDQ) was chosen specifically for the five constructs of emotion, conduct, hyperactivity-inattention, peer relationships, and prosocial behaviors. The 25-item questionnaire yields six composite scores; there is a subscore for each of the five constructs, and a total composite difficulties score yielding interval data (Goodman, 1997). Several qualitative studies have asserted that Read to Dogs (RTD) programs lead to better moods and more positive student interactions (Boyes et al., 2018; Gans et al., 2003; Lindenblad, 2019). The SDQ will provide quantitative data to support this established qualitative data (Appendix E).

## **Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G)**

Providing a wide range of resources to educators who wish to improve their schools and promote excellence, the Alliance for the Study of School Climate's (ASSC) mission is to promote meaningful school growth (Shindler, 2021). Since its inception in 2002, the ASSC, founded by California State University, Los Angeles faculty members, has developed a wide range of resources for educators to promote excellence and improve school and classroom climates (Shindler, 2021). All the resource materials available are intended to promote meaningful school growth, better teaching, and effective use of the ASSC surveys (Shindler, 2021). The ASSC has developed several instruments for testing overall school and classroom climate. A correlational study by Shindler (2021) found that high-quality climates, both school-wide and in the classroom, are necessary for students to achieve high levels. The Elementary Classroom Climate Assessment Instrument-General (CCAI-E-G) is designed to be completed by teachers, administrators, and staff working with students in second through sixth grades. In contrast, the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G) is designed for teachers, administrators, and staff working with students in sixth through twelfth grades.

These assessments are intended to provide information on the school and classroom climate (Shindler, 2021). The Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G) are from the Alliance for the Study of School Climate's (ASSC) family of assessments that have shown to have exceptionally high levels of reliability. With an accepted minimum standard for a reliable instrument of .70, Cronbach's Alpha is 0.97, much better than



standard scores realized on individual sub-scales of the SCAI battery of instruments (Shindler, 2021).

When compared to similar instruments, the reliability levels of the CCAI-E-G and CCAI-S-G are as high or higher. The CCAI-E-G and CCAI-S-G yield interval data while consistently outperforming other instruments in reliability because of their true-to-school-life content, analytic trait structure, conceptual integrity, content validity, and concreteness of the item descriptions (Shindler, 2021). A Shindler et al. (2016) study (n= 230) across five states found classroom climate and student achievement were highly correlated (.09) rather than distinct considerations, as educators often think. The quality of the climate is the single most predictive factor in student achievement that schools can control (Shindler et al., 2016). Other research has also shown a relationship between a sense of belonging with acceptance and self-esteem (Osterman, 2000; Shann, 1999).

Since this study seeks to assess differences in the classroom climate due to participation in Read to Dogs (RTD) programs, evaluating the classroom climate was essential. The Elementary Classroom Climate Assessment Instrument - General (second through sixth grades; CCAI-E-G) or the Classroom Climate Quality Analytic Assessment Instrument (sixth through twelfth grades; CCAI-S-G), will be administered to participating teachers at the inception and conclusion of the research period. This instrument yields composite scores with interval data (Appendix E).

### **Procedures**

This procedures section aimed to provide enough detail for other researchers to replicate this research. Contained within this section are the specifics of how the data will be collected. The process of obtaining approvals, including Institutional Review Board (IRB) approval, site

authorizations, and permissions for the use of instruments. Recruitment of and gaining the consent of the participants is explained, as well as what instruments will be used to gather the data and which activities the participants will engage in.

### **Approvals**

In preparation for gaining committee or Institutional Review Board (IRB), approval and before collecting any data, approvals for the use of instrumentation and sites were needed. Gaining written permission was needed from the developers of the instrumentation that was used (Appendix E) and site authorizations from the Executive Director of the Association for the Society of Prevention of Cruelty to Animals in East Central New Jersey and schools where the study took place (Appendix B). The Rosenberg Self-Esteem Scale (RSES) is in the public domain, and no permission was needed for administration (University of Maryland Department of Sociology, 2022) and the Strengths and Difficulties Questionnaire (SDQ) was also free from the SDQinfo.org website (Youth in Mind, 2022). Written permission was obtained via email from John Shindler, the developer of the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G). See Appendix C for all instrumentation permissions.

After site authorization was obtained from the Executive Director of an Association for the Society of Prevention of Cruelty to Animals in East Central New Jersey (Appendix B), an email was sent to therapy dog handlers asking for teams to volunteer to participate in the study. An email was also sent to teachers at the schools that requested Read to Dogs (RTD) programs for the fall of the 2023 school year, seeking teachers to volunteer to partake in the study. Based on positive responses from teachers and handlers, the researcher contacted interested teachers and therapy dog handlers to confirm participation in the study that will begin in the fall of the

2023 school year.

Additionally, based on the positive responses from teachers, contact was made with administrators of those schools seeking site permission to perform the study and to find out the requirements for student participation. Permission can be varied from full school board approval to no requirement at all because the study was to be anonymous; no names will be requested on any of the participant instrumentation. Anonymity differs from confidentiality. In an anonymous study, the researcher will not know the identity of the student who completed the instrumentation because no personal information will be collected. In a confidential study, identifying information is collected, but the researcher must maintain the confidentiality of each student's identity (M. Allen, 2017).

The researcher gained approval from Liberty University's Institutional Review Board (IRB) before collecting any data. Approval was accomplished by first completing a PowerPoint presentation and dissertation proposal defense to the researcher's committee. The requirements of the IRB checklist were completed, and then the application was turned into the Cayuse Research Suite via the Liberty University Website.

All aspects of this study considered the recommendations of the Belmont Report. This report by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1978, via HHS.gov, 2022) set forth three principles for ethical research: respect for persons, beneficence, and justice. By adhering to the Belmont principles, it is understood that research with human subjects does not harm and maximizes possible benefits while minimizing any possible harm to participants.

The Belmont report outlined three principles for research with human subjects: respect for persons, beneficence, and justice. Respect for persons states that it was the researcher's

responsibility to attain informed consent from the participants. Participation in the Read to Dogs (RTD) program was voluntary, as was participation in this study; students could have participated in the RTD program but declined to take part in the study. Each student filled out an assent form and their parent or legal guardian also signed an informed consent form, as did all dog handlers and teachers involved with this study. The informed consent explained the purpose of the study and made clear that participation is voluntary.

Second, beneficence ensures that participants are never exposed to unnecessary risks. As part of the certification process, therapy dogs (TD) are tested in a variety of settings and situations where dogs may exhibit aggression. Any dog that demonstrates aggression does not pass the certification process. A handler is responsible for watching for any signs that the TD is becoming stressed and will act appropriately to eliminate any risks to individuals.

Lastly, the principle of justice addresses equitable distribution in the selection of participants as well as risks and benefits (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978 via HHS.gov., 2022). The participants in this study were asked to participate based on their need to improve their reading skills as identified by teachers and/or school administrators and participation in RTD. No eligible child who meets the criteria has approved parental and child consent, and has expressed an interest in the study will be excluded.

### **Informed Consent**

Before the commencement of the study, a packet of information on Read to Dogs (RTD) programs and the details of the study was made available to students, parents or guardians, and teachers whose classes participated in RTD and therapy dog handlers. The informational packets also included the informed consent and child assent forms (see Appendix D) in paper format to

be signed and returned to the researcher. Once all forms were signed and returned, data collection began.

The informed consent forms provided information, comprehension, and voluntariness (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978 via HHS.gov., 2022). The study's purpose was described in detail, and participants' obligations, potential risks, and expectations related to the study and completion of the questionnaires were also described on the consent forms (Heppner et al., 2020). How the collected data was to be used, the purpose of the data, the analysis process, ethical considerations, and implications of participation were also detailed in the informed consent forms.

### **Data Collection Procedures**

Before distributing the instrumentation to participating teachers and students partaking in the Read to Dogs (RTD) study, the pre-test instruments were assembled into packets clearly marked by grade, school, and teacher or student. Participating teachers and students completed the packets before the commencement of the RTD programs. The pre-test survey packet for the students consisted of 1). A short demographic questionnaire (3 questions), 2). The RSES (10 questions), 3). The SDQ (25 questions) and the two post-test survey instruments were also distributed in packets and completed following the last RTD visit of the study period. The packets will be included: 1). The RSES and 2) the SDQ. The participating teachers will complete the appropriate grade level version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) or the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G) for secondary school students (Appendix E).

The Read to Dogs (RTD) visits were conducted per guidelines from the Society for

Prevention of Cruelty to Animals (SPCA) in East Central New Jersey. To properly document the procedure for an RTD visit, the researcher asked the RTD Coordinator for any available written guidelines only to find out there was nothing in writing. She learned by asking questions and watching and passed the information on in the same manner. Intermountain Therapy Animals, which started RTD programs does not have any detailed information on the specific procedures of an RTD visit available for free. Therapy Dogs International also did not have any material on the specific manner in which RTD visits are conducted.

Before beginning an RTD program through the SPCA, site visits are conducted at all schools wishing to participate. These visits determine the specific needs of each school. Specific needs of the school include -frequency of visits (e.g., weekly, monthly), number of classes that will participate, number of students, and how many therapy dog and handler teams are needed. These visits also ensure sufficient space to conduct RTD visits. A classroom corner with ample room for the reader, therapy dog, and handler is necessary. A rug or yoga mat and comfortable pillows make a cozy space where the student can sit or even lie down while reading aloud to the dog. The visits can take place in a classroom, school library, or gym. The handler may sit in a chair or on the floor, whichever is more comfortable. However, the handler has to be near the TD while allowing enough space for the student and dog to bond. Participants read to the dog for approximately 8-10 minutes per visit, depending on the duration of the class period and the number of students participating in RTD. If the number of students is great enough and there is enough space available, two therapy dog handler teams can be used during one class so that all students needing the benefits of RTD have the opportunity to read.

For example, in a typical Read to Dogs (RTD) visit, the therapy dog and handler team(s) arrive at the school and check in according to school policy. A student or students meet the

therapy dog and handler team(s) and are escorted to the classroom or library. Students have the opportunity to pet the therapy dog(s) and ask any questions they may have. The therapy dog and handler team(s) get settled and prepare for RTD. The teacher decides the order in which students read and times the RTD session. Some teachers pull popsicle sticks; others allow students to volunteer while other teachers decide the order in which students read. If more than one therapy dog and handler team is present, the teacher may allow students to choose which dog they read to.

The books that students will read to the dog are chosen in advance, allowing for the most reading time and making the transitions between students more efficient. When it is their turn to read, students sit next to the dog. Interactions with the handler are minimal and typically involve only a polite greeting and introduction. Then, the student begins to read. During this time, the student might show the pages to the TD or pet the TD while reading aloud. If a student asks for help with the pronunciation of a word, the handler is welcome to assist. However, because students with reading challenges are self-conscious (Kirnan et al., 2016), the TD handler should be as inconspicuous or unobtrusive as possible only intervening with assistance if asked. Once all students participating in RTD have read, all students have another opportunity to pet or play with the TD until the end of the class period when the TD and handler are escorted back to the office.

The target population for this study was elementary and middle school children students who participated in Read to Dogs (RTD) programs in East Central New Jersey. The participants for RTD were selected by teachers or reading specialists based on the need to improve their reading skills. Data collected from participants examined the relationships between the identified variables of self-esteem, the number of prosocial behaviors performed, and the teachers'

perceptions of the overall classroom climate. G\*Power software was used to determine the minimum number for the sample where power is .80 and alpha ( $\alpha$ ) level = .05 with an 80% confidence level. This calculation produced a minimum sample number of 66 (Appendix E). Twenty percent, or 13 participants, was added to this number to allow for attrition, resulting in a final minimum sample number of 79. The statistical power of 0.80 implies that the study will correctly reject the null hypothesis 80% of the time and report a Type II error (false negative) 20% of the time (Wiles, 2017).

Following Federal Regulation 45 CFR, also known as the “Common Rule,” the study information and all data will be securely stored on a password-protected computer or in a locked file cabinet in the researcher's home for three years (U. S. Department of Health and Human Services, 2018). Upon completion of the 3-year retention period, the information will be deleted; paper copies of instrumentation and questionnaires will be shredded, and erasure software will be used to delete data. Additionally, during the 3-year retention period, the researcher will continue to back up all saved data, including all SPSS files, on an external USB drive, also kept in a locked file cabinet only accessible to the researcher.

### **Data Analysis**

This quasi-experimental, comparative pre and post-test study measured the differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate following participation in Read to Dogs (RTD) programs. The demographic questionnaire was used to determine the grade levels and identified genders of the participants. The researcher administered the pre-tests, and this raw data was checked for missing data and put into the Statistical Package for the Social Sciences (SPSS; Cuttler, 2022) by the researcher. This software package is widely used in social science research to complete



statistical analyses (Wiles, 2017). After the study period, the post-test instruments were completed. The raw data was then again uploaded into SPSS and checked for missing data by the researcher.

The data was used to evaluate the differences in pre and post-test scores on the Rosenberg Self-Esteem Scale, the Strengths and Difficulties Questionnaire, and the appropriate version of the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G), or the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G). Following data collection, the data was cleaned and prepared for analysis. A two-way MANOVA was chosen because the study had more than two independent variables (Wiles, 2017). The output derived from a one-way MANOVA allowed the researcher to determine whether it was the independent variable – participation in Read Dogs (RTD) that affected the dependent variables of self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate between the RTD group and the control group.

The two-way MANOVA will also allow the researcher to examine differences between grade levels and identify genders and between groups. The alpha level will be 0.80. This alpha level implies that the study will correctly reject the null hypothesis 80% of the time and report a Type II error (false negative) 20% of the time (Wiles, 2017). The information will be used to evaluate the pre and post-test differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate following their participation in the RTD program.

Before analyzing the data, specific assumptions needed to be met to ascertain if any relationships exist among the variables; a two-way MANOVA was used to examine how one or more factor variables affected multiple response variables; the two-way MANOVA combines

two or more dependent variables to form a 'new' dependent variable that maximizes the differences between the independent variable groups (Laerd Statistics, 2022). To conduct a MANOVA analysis, the data must meet the assumptions of 1). Multivariate normality, 2). Independence, 3). Equal variance, 4). No multivariate outliers (Kraska, 2010). Testing the assumptions will ensure that the data meets the criteria for a MANOVA.

### **Assumption 1: Multivariate Normality**

A multivariate analysis of variance (MANOVA) assumes that the response variables are normally distributed within each group of the factor variable. If there are at least 20 observations for each combination factor, then it can be assumed that the multivariate normality assumption is met (Kraska, 2010). If 20 observations are not met, a scatterplot can be used to visually check the residuals and visualize the assumptions met (Bobbitt, 2021). It is anticipated that the proposed study will obtain greater than 20 observations, thus meeting this criterion. If this assumption is not met, the non-parametric test Multivariate Kruskal-Wallis (MKW) Test will be performed. The MKW is a rank-based multivariate test that is often used when multivariate normality is violated (Cronk, 2017).

### **Assumption 2: Independence**

The second assumption of independence requires that the population be randomly and independently sampled. Probability sampling might include simple random sampling, stratified random sampling, cluster random sampling, or systematic random sampling (Kraska, 2010). The participants in this proposed comparative pre and post-test quasi-experimental study will be selected from a population of students who demonstrate the need to improve their reading skills as recommended by teachers and school administrators.

**Assumption 3: Equal Variance**

The third assumption of equal variance requires that the population covariance matrices of each group are equal. In other words, the dependent variables exhibit equal levels of variance across the range of predictor variables. The most commonly used method of checking this assumption is the Box's M test using a .001 significance level to determine if the population covariance matrices are equal; the assumption is met if the p-value for Box's M test is greater than .001 (Kraska, 2010). Fortunately, the MANOVA is robust against departures from this assumption. Even if the p-value for this test is less than .001, the differences between covariance matrices need to be extreme for non-equal covariance matrices to be the reason for inaccurate results (Bobbitt, 2021).

**Assumption 4: No Multivariate Outliers**

The fourth and final assumption of no multivariate outliers requires that there are no extreme outliers that could significantly influence the results present in the data. The common way to check this assumption is to calculate the distance between two points in multivariate space, or the Mahalanobis distance. The value is more likely to be an outlier the larger the Mahalanobis distance is (Azrain, 2022). An observation of less than .001 for any corresponding p-value for a Mahalanobis distance for any observation is typically declared to be an extreme outlier (Kraska, 2010). Extreme outliers will be removed or transformed.

**Data Preparation and Cleaning**

To ensure the anonymity of the participants, all surveys were completed in class at the beginning and conclusion of the study period without requiring names. After collecting participant data, the paper copies of all the surveys were checked for missing, incomplete, incorrect, or improperly formatted records (Wiles, 2017). Any data packets that contained

missing, incomplete, incorrect, or improper data were excluded from the analysis.

Instrumentation was scored by hand by the researcher and uploaded to SPSS. Once uploaded, a two-way MANOVA test will be calculated; a two-way MANOVA was chosen because the study has more than two dependent variables.

### **Descriptive Statistics**

Descriptive statistics are the simplest method of analyzing data (Wiles, 2017). The data will be reported without generalizing the data set. In addition, descriptive statistics only describe the population without drawing conclusions that apply to the population. Drawing conclusions and making inferences about the population is in the realm of inferential statistics (Globalstats Academic, 2021), which will be discussed later in the chapter.

In this study, the sample was drawn from elementary and middle schools in the east-central region of New Jersey that had established Read to Dogs (RTD) programs.

The correct sample size was derived by utilizing G\*Power software version 3.19.17. The following options were selected to calculate the ideal sample size: MANOVA, a one-tailed test (one direction), a medium effect size ( $\rho$ ) with an alpha level ( $\alpha$ ) of 0.05, and a power value of .80. The output resulted in a sample size of 66. However, an additional twenty percent, or 13 participants, will be recruited to allow for attrition, yielding a total sample of 79 (Appendix E).

### **Inferential Statistics**

Inferential statistics allow predictions about the differences between groups and relationships between variables and to test the hypotheses. Inferential statistics allow researchers to make connections between the data collected in a study and what would be expected in the real-world population (Jansen & Warren, 2020). This study aimed to investigate the overall differences in students' self-esteem, the performance of prosocial behaviors, and the teachers'

perceptions of the overall classroom climate before and following participation in Read to Dogs (RTD) programs. As such, three hypotheses were developed with these independent variables in mind. The independent variable in the first research question was self-esteem. The research question sought to determine differences in the overall self-esteem of students who participated in Read to Dogs (RTD) prior to and following participation in the program. The corresponding hypothesis for the first research question sought to determine if there was a statistically significant difference between pre-test and post-test scores on the Rosenberg Self-Esteem Scale (RSES) for those students who participated in Read to Dogs (RTD) programs.

The pre and post-test scores on the MANOVA from the RSES will be compared to evaluate the differences in the participants' self-esteem scores before and after participation in Read to Dogs (RTD) programs. The difference in the self-esteem scores of participants in RTD will be compared before and after participation in RTD. It is postulated that overall pre-test scores will be statistically different from the overall post-test scores. While there are no quantitative studies that resulted in increases in self-esteem, there is qualitative and anecdotal evidence exists to support increases in self-esteem and self-concept as a result of participation in RTD programs (Jalongo et al., 2004). This study hypothesized that the overall post-test scores on the Rosenberg Self-Esteem Scale (RSES) would be higher than the overall pre-test scores.

The independent variable in the second research question was prosocial behaviors. The second research question sought to answer if the prosocial scores of students who participated in Read to Dogs (RTD) programs differed following participation in RTD programs. The results of the Strengths and Differences Questionnaire (SDQ) measured the differences in prosocial behaviors. The corresponding hypothesis for the second research question sought to find if there was a statistically significant difference in the prosocial behavior scores of elementary and

middle school students after participation in RTD. Research supports increased social skills among students with Autism Spectrum Disorders (Becker et al., 2017) and prosocial behaviors among incarcerated teens (Seivert et al., 2018) as a result of interactions with therapy dogs. This study extended this research to those with reading difficulties. The results from the MANOVA will be utilized to determine differences. It was expected that there would be statistically significant differences between overall pre and post-test scores on the SDQ. It was also hypothesized that there would be statistically significant differences in the SDQ between the (RTD) by grade.

The third independent variable in this proposed study was the overall classroom climate. The final research question asked how much the teachers' perception of the classroom climate scores differed following participation in Read to Dogs (RTD) programs. The corresponding hypothesis for the third research question asked if there was a statistically significant difference in teachers' perceptions of the overall classroom climate scores following participation in Read to Dogs (RTD) programs. For those in elementary school (grades second through sixth), the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Classroom Climate Quality Analytic Assessment Instrument (grades six through twelve; CCAI-S-G) measured the changes teachers' perceptions of the overall classroom climate scores, as with the two preceding hypotheses, the results from the MANOVA were utilized to determine if there were statistically significant differences between the teachers' perceptions of the overall classroom climate scores for those who participated in Read to Dogs (RTD) programs. Qualitative evidence exists to support the notion that therapy-dog interactions create a positive learning environment in college settings (Griscti & Camilleri, 2020). Quantitative and qualitative research has shown that Animal Assisted Interactions (AAI) have a variety of psychological and

physiological benefits ranging from decreased stress (Nimer & Lundahl, 2007), anxiety and depression (Ernst, 2013), internalizing and externalizing behaviors (Seivert et al., 2018). In hard-to-reach populations, interactions with therapy dogs have resulted in increased mental well-being (Ernst, 2013), oxytocin production, more social interactions (Ambrosi et al., 2019; Creagan et al., 2015), and the development of empathy (Sprinkle, 2008).

Based on the results of previous qualitative and quantitative research, it was postulated that participating in Read to Dogs (RTD) programs would result in statistically significant differences in the pre and post-test scores on the measures of the teachers' perceptions of the classroom climate. The improvement in the classroom climate resulted in decreases in stress (Nimer & Lundahl, 2007), anxiety, depression (Ernst, 2013), and internalizing and externalizing behaviors (Seivert et al., 2018). The improved classroom climate was also the result of increases in mental well-being, oxytocin production, more positive social interactions (Ambrosi et al., 2019; Creagan et al., 2015), and the development of empathy in hard-to-reach populations (Sprinkle, 2008). It was postulated that these changes would result in an improved classroom climate, as shown in statistically significant differences between pre and post-test scores on the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G) It is also posited that there will be statistically significant differences in the CCAI-E-G and CCAI-S-G between pre and post-tests.

### **Summary**

This quasi-experimental comparative study investigated the differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate following participation in Read to Dogs (RTD) programs. The population of

interest in this study was students who had difficulty reading. The rationale was that students with difficulty reading experience frustration, anxiety, and depression, resulting in internalizing and externalizing behaviors that affect all students in the classroom socially and academically (Boyes et al., 2018; Gans et al., 2003). Because it was unethical to withhold a program (RTD) from a student who would benefit from it, students were selected based on the need to improve reading skills (Rajendran et al., 2019) or are members of a class that participates in RTD and through a Society for the Prevention of Cruelty to Animals' Pet Therapy Program. The therapy dog and handler teams are volunteers with the organization.

The number of therapy dog and handler teams may vary by class, but the number of participants needed was 66. G\*Power software was used to determine the ideal number of participants when the effect size ( $\rho$ ) is medium (0.3), power is 80, and alpha level ( $\alpha$ ) = .05 with an 80% confidence level. This produced a minimum sample number of 66 (Appendix E). When twenty percent is added to this number to allow for attrition, the final sample required was 79.

The instrumentation used in this pre-post-test quasi-experimental study examined differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate scores before and after participation in Read to Dogs (RTD) programs. The surveys and questionnaires completed included a demographic questionnaire (one for students, one for teachers, and one for therapy dog handlers), the Rosenberg Self-Esteem Scale (RSES), the Strengths and Difficulties Scale (SDQ), and the appropriate version of the Elementary Classroom Climate Assessment Instrument - General (grades second through sixth; CCAI-E-G) or the Secondary Classroom Climate Assessment Instrument - General (grades sixth through twelve; CCAI-S-G). The questionnaire and instruments were assembled in packets for anonymous completion before the beginning of the



RTD programs and at the completion of the study period.

Informational questionnaires were completed by participating teachers and therapy dog handlers. The participating teachers completed a questionnaire that asked general questions about the teachers' experience with Read to Dogs (RTD) programs (e.g., length of participation in RTD, frequency of visits, and amount of time students read). Therapy Dog handlers completed a similar questionnaire with added questions about their therapy dog (e.g., length of time volunteering with the RTD program and breed and age of therapy dog(s) (Appendix F).

The purpose of this study was to investigate if and to what extent participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate differed as a result of participation in Read to Dogs (RTD) programs. The researcher hoped that the results would quantitatively show increases in self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate of those students who participated in RTD programs. As a result of participation in RTD, the students experience less stress, anxiety, and depression (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Students' reading skills improve, leading to increased self-esteem (Jalongo et al., 2004). It was hypothesized that this would lead to the performance of more prosocial behaviors. Qualitative research has shown that students who participated in RTD experience elevated moods, less stress, oxytocin production, and other positive effects (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). These experiences, posited, would also lead to the performance of more prosocial behaviors. If students are performing more prosocial behaviors, it was hypothesized that there would be an improvement in the teachers' perceptions of the overall classroom climate. Improvements in the classroom climate lead to greater overall learning and achievement

(Shindler et al., 2004).

The findings will be discussed in detail in Chapter 4. The researcher anticipated that the results of the two-way MANOVA performed on the pre and post-tests of the Rosenberg Self-Esteem Scale (RSES) and the Strengths and Differences Questionnaire (SDQ) that were completed prior to and after the conclusion of the study period would reveal statistically significant results. It was also anticipated that scores on the appropriate version of the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G) completed by participating teachers at the onset and conclusion of the study period would reveal statistically significant scores.

## Chapter Four: Findings

### Overview

The chapter begins with a review of the purpose of this study. The findings, locations, classes, and participants are detailed. The chapter also includes descriptions of the therapy dog teams, along with details of the frequency and duration of the Read to Dogs (RTD) visits. Next, the statistical measures used to interpret the data collected will be described. A discussion of the results follows this. Each hypothesis and its corresponding results will be analyzed and discussed. The chapter concludes with a summary.

The purpose of this study was to investigate if and to what extent participants' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate differed as a result of participation in Read to Dogs (RTD) programs. The researcher sought results that would mirror those from qualitative studies and quantitatively show increases in the self-esteem and prosocial behaviors of students who participate in RTD programs, as well as teachers' perceptions of the classroom climate. The research questions that guided this study were:

**RQ1:** Do elementary and middle school students differ in self-esteem scores following participation in Read to Dogs (RTD) programs?

**RQ2:** Do elementary and middle school students differ in prosocial behavior scores following participation in Read to Dogs (RTD) programs?

**RQ3:** Do elementary and middle school teachers' classroom climate scores following participation in Read to Dogs (RTD) programs?

## **Changes to the Proposal**

Several changes were made to the original proposal. First, the analysis was changed from a MANOVA to a Wilcoxon signed rank test with a single dependent variable because the data was not normally distributed. Secondly, of the five schools that had originally agreed to participate, two removed themselves from the study, leaving three schools. Third, the overall sample size was decreased as a result of these two schools removing themselves from the study. Total student participation was 39 students and three teacher participants. Lastly, the results of the Strengths and Difficulties Questionnaire indicated significant findings on scales other than the Prosocial sub-scale. The significant findings of the sub-scales for the overall stress and difficulty getting along with others sub-scales are discussed below, as stress and getting along with other students also impact the overall classroom climate.

## **Analysis Changes**

In the proposal, it was outlined that a Multivariate Analysis of Variance (MANOVA) would be used to analyze the data, and there were unsuccessful attempts to run the repeated measures MANOVA. The researcher investigated multiple sources. After consulting with a statistician, it was decided that a paired t-test or nonparametric Wilcoxon signed rank test with a single dependent variable was more suitable for comparing the means of the two conditions (pre- and post-tests; Tabachnick & Fidell, 2013). A MANOVA is used to analyze the differences between group means in a situation where the same subjects are used for each treatment or condition. It is very useful when there are multiple dependent variables. However, a repeated measures MANOVA typically requires three or more measurement points for each subject. A MANOVA requires variability within each subject across these multiple points to determine how the treatments or conditions affect the dependent variable (Stevens, 2012).

In this experiment, pre and post-test measures were used to assess variables before and after RTD programs. There are only two time points (pre-and post). The repeated measure of MANOVA is not appropriate because there is a lack of the necessary multiple measurement points to measure within-subject variability over time. Instead, a paired *t*-test or nonparametric Wilcoxon signed rank test with a single dependent variable was more suitable for comparing the means of the pre-and post-conditions. The Wilcoxon signed rank test is appropriate because the test of normality results shows that data are not normally distributed (Stevens, 2012; Tabachnick & Fidell, 2013).

### **Changes to School Participation and the Sample Size**

Originally, five schools agreed to participate in this research study. Necessary approvals were received from the schools in the spring of 2023. However, two schools dropped out before the actual study period began. Both of these schools had previously established Read to Dogs (RTD) programs. Contact was made with all five schools between July and August of 2023 to take the necessary steps to begin the study in the fall of 2023. Three schools confirmed participation in the study beginning in September. One school did not respond to numerous emails leading to the conclusion that this school was declining participation in the study. At the second school, the participating teacher informed the researcher that she had decided to retire, and her replacement was not continuing the RTD program. The lack of participation in these two schools decreased participation by approximately 35-40 students. Thus, the final sample was short of the  $G^*$ power sample size of 79.

### **Expanded Use of Instrument**

The Strengths and Difficulties Questionnaire (SDQ) is comprised of 25 items on five sub-scales that measure emotional and behavioral difficulties. The sub-scales are emotional

symptoms, conduct problems, hyperactivity/inattention, difficulty getting along with others, and prosocial behaviors. Scales one through four are combined to generate an overall stress scale score (Goodman, 1997). Originally, the researcher was interested in the changes in the pre and post-test scores on the Prosocial behaviors scale of the SDQ as that scale aligned with the research question addressing to what extent participants differed in scores on prosocial behaviors after participation in the Read to Dogs (RTD) program. Upon reviewing the analysis of the data from the SDQ, it was evident that there were statistically significant decreases from pre-test to post-test scores on the Overall Stress Scale, the Difficulty Getting Along with Others Scale, while the Prosocial Behaviors scale revealed statistically significant increases from pre-test to post-test. All three scales are discussed in the findings and conclusions as well rather than just the Prosocial Scale.

### **Descriptive Statistics**

The data presented in this chapter was collected between September of 2023 and January of 2024 from 4 classes at three different schools in East Central, New Jersey. The total number of participants was 42, including 39 students and three teachers. The ages of the participants ranged from 7-13, ages corresponding to second through eighth grades.

All data was collected anonymously so all comparisons were done using the means of the pre-test and post-test scores on the Rosenberg Self-Esteem Scale (RSES) and the Strengths and Difficulties Scale (SDQ). Means were calculated for pre and post-test scores for all student participants ( $n = 39$ ) and each participating class: S1C1 ( $n = 8$ ), S1C2 ( $n = 2$ ), S2C1 ( $n = 9$ ), and S3C1 ( $n = 21$ ). Additionally, pre and post-test scores on the Elementary Classroom Climate Assessment Instrument-General (CCAI-E-G) were completed by teachers working with students in second through sixth grades. In contrast, the Classroom Climate Quality Analytic

Assessment Instrument (CCAI-S-G) was completed by teachers working with students in sixth through twelfth grades. The teacher who participated in two classes (S1C1 and S1C2) completed the instrument a total of four times, once for each class for pre and post-tests.

### **School One Class One (S1C1)**

School One, Class One (S1C1) (Table 1), an English as a second language class (ESL), consisted of eight second-grade students ages seven and eight. There were five boys (63%) and three girls (37%). The teacher of this class has 30 years of teaching experience and has participated in RTD programs for five years (Table 5). The visits were conducted once a month, each visit lasting approximately 45 minutes, with each student reading to the Therapy Dog (TD) for approximately six minutes. Students were allotted additional minutes if other participating students were absent. Therapy Dogs and their handler team have participated in RTD programs since 2018, with this being the second year with this teacher. The TD is a ten-year-old Weimaraner lab mix named Candy (Table 6). Visits were conducted monthly in September, October, November, December, and January for a total of five visits.

**Table 1***Participant Data- School One, Class One (S1C1)*

School	Grade	Gender	Age	Class
S1C1	2	Male	7	ESL
S1C1	2	Male	7	ESL
S1C1	2	Male	7	ESL
S1C1	2	Male	7	ESL
S1C1	2	Male	8	ESL
S1C1	2	Female	7	ESL
S1C1	2	Female	7	ESL
S1C1	2	Female	7	ESL
Total/Average	8	5 Males 3 Females	7 years 1 month	English as a Second Language

*Note.* Participant data for S1C1 by grade, gender, age and type of language class.

***School One Class Two (S1C2)***

School One Class Two (S1C2; Table 2) was also an English as a Second Language (ESL) class conducted by the same teacher (Table 5) as S1C1, who has participated in RTD for five years. This third-grade class consisted of two students, one boy (50%) and one girl (50%), who were both nine years old. The students read to Candy for approximately 15 minutes each. Candy is a ten-year-old Weimaraner lab mix who has been involved in RTD for six years; this is the same TD team (Table 6) as for S1C1. Visits were conducted monthly in September, October, November, December, and January for a total of five visits.

**Table 2***Participant Data- School One, Class Two (S1C2)*

School	Grade	Gender	Age	Class
S1C2	3	Male	9	ESL
S1C2	3	Female	9	ESL
Total/Average	2	1 Male 1 Female	9 years old	English as a Second Language



*Note.* Participant data for S1C2 by grade, gender, age and type of language class.

### ***School Two Class One (S2C1)***

School Two Class One (S2C1; n=9) was a middle school Special Education reading class consisting of students in sixth (3), seventh (4), and eighth grades (2); seven boys (78%) and two girls (22%) (Table 3). The teacher (Table 5) of this class has 25 years of teaching experience, but this was the first time the teacher and students participated in a Read to Dogs (RTD) program. These visits occurred once monthly in September, October, November, December, and January for a total of 5 visits. These total visits lasted about 90 minutes. Students read to TD Daisy, an 8-year-old yellow lab, for approximately eight minutes. Daisy and her handler have been a certified team for six years (Table 6).

**Table 3**

#### *Participant Data- School Two, Class One (S2C1)*

School	Grade	Gender	Age	Class
S2C1	6	Male	11	SE Reading
S2C1	6	Male	11	SE Reading
S2C1	7	Male	12	SE Reading
S2C1	7	Male	12	SE Reading
S2C1	7	Male	12	SE Reading
S2C1	7	Male	12	SE Reading
S2C1	8	Male	14	SE Reading
S2C1	7	Female	12	SE Reading
	7	Female	13	SE Reading
Total/Average	9	7 Males 2 Females	12 years 1 month	Special Education Reading

*Note.* Participant data for S2C1 by grade, gender, age and type of language class.

### ***School Three Class One (S3C1)***

School Three Class One (S3C1) was a second-grade general education class (n= 21) at a K-8<sup>th</sup> grade school. The teacher has participated in Read to Dogs (RTD) programs for three years and has 15 years of teaching experience in total. This class consisted of fourteen seven-year-olds

and seven eight-year-olds. There were 14 boys (67%) and seven girls (33%); Table 4). Two therapy dog (TD) teams visited this class. Taffy, a two-year-old Labradoodle, and her handler have been certified for approximately a year, and Misty, a six-year-old yellow lab, along with her handler, have been certified for four years (Table 6). These students each read to one of the TDs for approximately 4 minutes. In total, these visits lasted about an hour. The five visits began in September and continued monthly through January for a total of 5 visits.

**Table 4***Participant Data- School Three, Class One (S3C1)*

School	Grade	Gender	Age	Class
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	7	GE
S3C1	2	Male	8	GE
S3C1	2	Male	8	GE
S3C1	2	Male	8	GE
S3C1	2	Male	8	GE
S3C1	2	Male	8	GE
S3C1	2	Male	8	GE
S3C1	2	Female	7	GE
S3C1	2	Female	7	GE
S3C1	2	Female	7	GE
S3C1	2	Female	7	GE
S3C1	2	Female	7	GE
S3C1	2	Female	8	GE
S3C1	2	Female	8	GE
Total/Average	21	14 Males 7 Females	7 years 4 months	General Education

*Note.* Participant data for S3C1 by grade, gender, age and type of language class.

**Table 5***Teacher Data*

School	Grade	Gender	Years Teaching	Read to Dogs Experience	Class
S1C1	2	Female	30	5 years	ESL
S1C2	2	Female	30	5 years	ESL
S2C1	6,7,8	Female	25	First-year	Special Education
S3C1	2	Female	15	2 years	General Education

*Note.* Participant data for teachers by grade, gender, years of experience teaching, and type of language class.

**Table 6***Therapy Dog Team Data*

School	Team Experience	Dog Name	Gender	Dog Breed	Dog Age years	Time Reading (minutes)
S1C1	6 years	Candy	Female	Weimaraner-Lab Mix	10	6
S1C2	6 years	Candy	Female	Weimaraner-Lab Mix	10	15
S2C1	6 years	Daisy	Female	Yellow Lab	8	8
S3C1	1 year	Taffy	Female	Labradoodle	2	4
S3C1	4 years	Misty	Female	Yellow Lab	6	4

*Note.* Therapy Dog Team data by school, team experience, dog's name gender, gender, age and time reading. Dogs' names have been changed to protect the anonymity of the study.

**Self-Esteem**

Table 7 shows the mean and standard deviations for all study variables. Calculations were done first by School (School 1 Class 1 (S1C1), School 1 Class 2 (S1C2), School 2 Class 1 (S2C1), and School 3 Class 1 (S3C1)) and then for the full sample. The same format is used for all of the study's variables. Before RTD programs, School 1 Class 1 (S1C1;  $n = 8$ ) had the lowest self-esteem ( $M = 28.14$ ,  $SD = 2.27$ ), while School 1 Class 2 (S1C2;  $n = 2$ ) had the highest ( $M = 31.00$ ,  $SD = 1.41$ ). After completing the RTD program, S1C1 still had the lowest self-esteem ( $M = 31.83$ ,  $SD = 4.96$ ), and S1C2 maintained the highest ( $M = 30.50$ ,  $SD = 2.12$ ).

**Table 7***Means and Standard Deviations for Self-esteem*

Measure	School 1 Class 1		School 1 Class 2		School 2 Class 1		School 3 Class 1		Full sample	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-esteem before RTD programs	28.14	2.27	31.00	1.41	26.33	3.35	17.43	2.01	22.10	5.71
Self-esteem after RTD programs	31.83	4.96	30.50	2.12	31.22	3.31	22.44	2.18	26.77	5.40

Note. Pre and post-test means and standard deviations for Self-esteem by school, class, and overall.

**Prosocial Behaviors**

Before RTD programs, School 1 Class 1 (S1C1, n=8) increased from a mean and standard deviation of ( $M = 7.13$ ,  $SD = 1.36$ ) to a mean and standard deviation of ( $M = 8.75$ ,  $SD = 1.67$ ), respectively. School 1 Class 2 (S1C2; n = 2) had the highest reported performance of prosocial behaviors ( $M = 9.00$ ,  $SD = 1.41$ ). School 3 Class 1 (S3C1; n = 9) had the lowest reported performance of prosocial behaviors ( $M = 4.67$ ,  $SD = 1.35$ ). After completing the RTD program, S1C2 had the highest mean of reported prosocial behaviors ( $M = 9.50$ ,  $SD = 0.71$ ), while S3C1 showed an increase in prosocial behaviors ( $M = 7.29$ ,  $SD = 1.79$ ).

**Table 8***Means and Standard Deviations for Prosocial Behaviors: SDQ*

	School 1 Class 1		School 1 Class 2		School 2 Class 1		School 3 Class 1		Full sample	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Prosocial behaviors before RTD 3	7.1	1.36	9.00	1.41	6.22	1.56	4.67	1.35	5.73	1.85
Prosocial behaviors after RTD 5	8.7	1.67	9.50	.71	8.56	1.24	7.29	1.79	7.98	1.75

Note. Means and Standard deviations for prosocial behaviors by school, class and overall sample.

**Difficulty Getting Along with Others Sub-scale**

School 2 Class 1 (S2C1; n = 2) had the highest difficulty getting along with other students ( $M = 4.11$ ,  $SD = 1.76$ ) before the RTD program. School 1 Class 2 (S1C2) had the lowest

difficulty getting along with other students ( $M = 3.00$ ,  $SD = 0.00$ ) before the RTD programs.

After the RTD programs, School 3 Class 1 (S3C1;  $n = 9$ ) showed the highest difficulty getting along with others ( $M = 2.50$ ,  $SD = 0.71$ ), and S1C2 had the lowest ( $M = 0.50$ ,  $SD = 1.07$ ).

**Table 9**

*Means and Standard Deviations for Difficulty Getting Along with Other Sub-scale: SDQ*

	School 1 Class 1		School 1 Class 2		School 2 Class 1		School 3 Class 1		Full sample	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Difficulty getting along with other students (SDQ) before RTD programs	3.75	2.05	3.00	.00	4.11	1.76	3.48	1.44	3.65	1.59
Difficulty getting along with other students (SDQ) after RTD programs	.50	1.07	2.50	.71	3.22	2.11	.95	1.40	1.45	1.80

*Note.* Pre and post-test means and standard deviations for the Difficulty Getting Along with Others Subscale of the SDQ by school, class, and full sample.

**Overall Stress Sub-scale**

School 1 Class 1 (S1C1;  $n = 8$ ) had the highest stress level before RTD programs ( $M = 13.75$ ,  $SD = 8.71$ ). School 3 Class 1 (S3C1;  $n = 9$ ) had the lowest overall stress level ( $M = 11.62$ ,  $SD = 5.18$ ) prior to the RTD programs. After the RTD programs, School 1 Class 1 (S1C1) showed the greatest reduction in stress ( $M = 5.63$ ,  $SD = 5.93$ ). School 1 Class 2 (S1C2;  $n = 2$ ) had the highest stress level ( $M = 16.00$ ,  $SD = 1.41$ ).

**Table 10**

*Means and Standard Deviations for Overall Stress Sub-scale: SDQ*

Stress	School 1 Class 1		School 1 Class 2		School 2 Class 1		School 3 Class 1		Full sample	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Stress (SDQ) before RTD programs	13.75	8.71	16.50	2.12	14.33	2.45	11.62	5.18	12.90	5.56
Stress (SDQ)	5.63	5.93	16.00	1.41	13.44	5.20	6.24	4.50	8.23	5.9

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*Note.* Pre and post-test means and standard deviations for the Overall Stress Subscale of the SDQ by school, class, and full sample.

### **Teacher Perceptions**

Before RTD programs, School 1 Class 1 (S1C1) had the highest teacher's perceptions about the quality of student interactions ( $M = 3.50$ ), and School 2 Class 1 (S2C1) had the lowest ( $M = 2.22$ ). Before RTD programs, S1C2 had the highest teacher's perceptions about the quality of student interactions ( $M = 4.33$ ), and School 2 Class 1 (S2C1) had the lowest ( $M = 3.63$ ). Before RTD programs, S2C1 had the highest teacher's perceptions attitude about classroom climate ( $M = 4.11$ ), and School 1 Class 2 (S1C2) had the lowest ( $M = 3.00$ ). After the RTD programs, School 3 Class 1 (S3C1) had the highest ( $M = 5.00$ ), and S2C1 had the lowest teacher's perceptions of the classroom climate ( $M = 4.55$ ; Table 1).

**Table 11**

*Means and Standard Deviations for Classroom Climate Variables: Quality of Student Interactions and Attitude and Culture*

Quality of Student Interactions Attitude and Culture	School 1 Class 1		School 1 Class 2		School 2 Class 1		School 3 Class 1		Full sample	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Teachers' perceptions about the quality of Student Interactions (CCAIS) before RTD programs	3.5	-	2.8	-	2.22	-	3.75	-	3.63	.63
Teachers' perceptions about the quality of student Interactions (CCAIS) after RTD programs	4.00	.	4.33	.	3.20	-	4.00	-	3.63	.63
Teacher's perceptions attitude about classroom climate (CCAIS) before RTD programs	4.33	.	3.00	.	4.11	-	4.00	-	4.11	.16
Teachers' Perceptions attitude about classroom climate (CCAIS) after RTD Programs	4.89	.	4.55	.	4.67	-	5.00	-	4.78	.20

*Note.* N= 4. Means and standard deviation scores of teachers' perceptions of student interactions and attitude of classroom climate before and after Read to Dogs programs.

### ***Inferential Statistics***

Prior to any analysis of the data being performed, it was cleaned and checked. A manual check of all instrumentation was done for anomalies. Finding no anomalies in the data, the instrumentation was scored. The demographic questionnaires for students, teachers, and Therapy Dog handlers, the Rosenberg Self-Esteem Scale, and the Elementary Classroom Climate Assessment Instrument-General (CCAI-E-G) Classroom Climate Quality Analytic Assessment



Instrument (CCAI-S-G) were scored by hand. Each participant's answers on the Strengths and Difficulties Questionnaires (SDQ) were individually, manually entered into the official SDQ scoring site to allow for computer scoring and report generation. Following the scoring, the data was checked for outliers.

### ***Test of Normality Results***

The Shapiro-Wilk test (Table 8) was utilized to check the pre and post-test data for the study's variables. The following variables followed a normal distribution on pre and post-test instrumentation: The Difficulty Getting along with Others and Overall Stress Scales of the Strengths and Difficulties Questionnaire (SDQ). Normal distribution was also evidenced on the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G; grades first through sixth) and the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G; grades sixth – 12) before RTD programs. Normal distribution was noted on pre and post-test scores of Teacher's perceptions about the quality of Student Interactions and Attitude scales on the CCAI –E-G and CCAI-S-G post RTD programs. Also, the pre-test data on the Rosenberg Self Esteem Scale (RSES) measuring self-esteem followed a normal distribution for pre-test results but not for post-test. The SDQ prosocial scale also resulted in normal distribution on the pre-test scores but not the post-test. The normality of data means that the data is symmetric about the mean, resulting in a bell-shaped curve (Statistics Solutions, 2024).

For the analysis, the Shapiro-Wilk test was employed to determine if the results followed a normal distribution. Since not all variables resulted in the normal distribution, the Wilcoxon Signed Rank test was employed. The Wilcoxon signed rank test is the non-parametric, robust alternative to the dependent samples t-test when the data do not meet the latter's assumptions. Researchers can effectively analyze changes in ordinal data or non-normally distributed metric

data from repeated measures by using the Wilcoxon signed rank test (Statistics Solutions, 2024).

Four assumptions guide the Wilcoxon Signed Rank test, including the following:

1. Dependent samples that are paired or related. This study on the differences in students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate was a pre and post-test study in which the same participants completed instrumentation prior to and at the conclusion of participation in the Read to Dogs (RTD) program.
2. Independence within pairs means that the result of one pair does not influence the other. Each pair contributed uniquely to the data.
3. The dependent variables in this study can be measured in a continuous or ordinal fashion. Self-esteem, the performance of prosocial behaviors and the teachers' perceptions of the overall classroom climate can be present at different levels or amounts meeting the continuous or ordinal independent variable assumption.
4. This study's instrumentation yielded ordinal data that satisfied the ordinal or ranked levels of measurement assumption. The amount of variables can be present on a continuum (Statistics Solutions, 2024).

**Table 12**

*Test of Normality Results*

Variable	Statistic	df	<i>p</i>
Self-esteem before RTD programs	.92	35	.018
Self-esteem after RTD programs	.96	35	.206
Difficulty getting along with other students (SDQ) before RTD programs	.94	40	.033
Difficulty getting along with other students (SDQ) before RTD programs	.79	40	< .001
Stress (SDQ) before RTD programs	.96	40	.119
Stress (SDQ) after RTD programs	.94	40	.030
Prosocial behaviors (SDQ) before RTD programs	.95	40	.069
Prosocial behaviors (SDQ) before RTD programs	.88	40	.001
Teacher's perceptions about the quality of student Interactions (CCAI –E-G and CCAI-S-G ) before RTD programs	.95	4	.688
Teacher's perceptions about the quality of student Interactions (CCAI –E-G and CCAI-S-G ) after RTD programs	.91	4	.468
Teacher's perceptions attitude about classroom climate (CCAI –E-G and CCAI-S-G ) before RTD programs	.83	4	.161
Teacher's perceptions attitude about classroom climate (CCAI –E-G and CCAI-S-G ) after RTD programs	.95	4	.737

*Note.* Normal distribution existed for Self-esteem (RSES), Stress, and Prosocial Behaviors scales on the SDQ before RTD programs, quality of Student Interactions, and Attitude Scales on the CCAI-E-G and CCAI-S-G before RTD

programs. Normal distribution was noted on pre and post-test scores of Teachers' perceptions about the quality of Student Interactions and Attitude scales on the CCAI –E-G and CCAI-S-G post-RTD programs. Post-test variables of Self-esteem (RSES), Stress, and Prosocial scales on the SDQ were not normally distributed.

## **Results**

The data collected prior to the inception of the Read to Dogs (RTD) programs indicate that normal distribution existed for Self-esteem (RSES), Stress and Prosocial Behaviors scales on the SDQ before RTD programs, Teacher's perceptions about quality of Student Interactions and Attitude Scales on the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G; grades first through sixth), or the Classroom Climate Quality Analytic Assessment Instrument (CCAI-S-G; grades sixth – 12) before RTD programs. Normal distribution was noted on pre and post-test scores of Teacher's perceptions about the quality of Student Interactions and Attitude scales on the CCAI –E-G and CCAI-S-G post-RTD programs ( $p > .08$ ). For post-test variables of Self-esteem (RSES), Stress and Prosocial scales on the SDQ, the data was not normally distributed ( $p < .08$ ; Table 12). Since data for all variables are not normally distributed and there is a smaller sample size than anticipated, a nonparametric test, the Wilcoxon Signed Rank test, was used to compare data before and after RTD programs. The Wilcoxon signed rank test is the non-parametric, robust alternative to the dependent samples t-test when the data do not meet the latter's assumptions. Researchers can effectively analyze changes in ordinal data or non-normally distributed metric data from repeated measures by using the Wilcoxon signed rank test (Statistics Solutions, 2024).

### ***Research Question One***

The first research question addressed in elementary and middle school students differed in self-esteem scores following participation in Read to Dogs (RTD) programs. The Wilcoxon signed rank test was conducted to determine whether RTD participants' scores on the Rosenberg

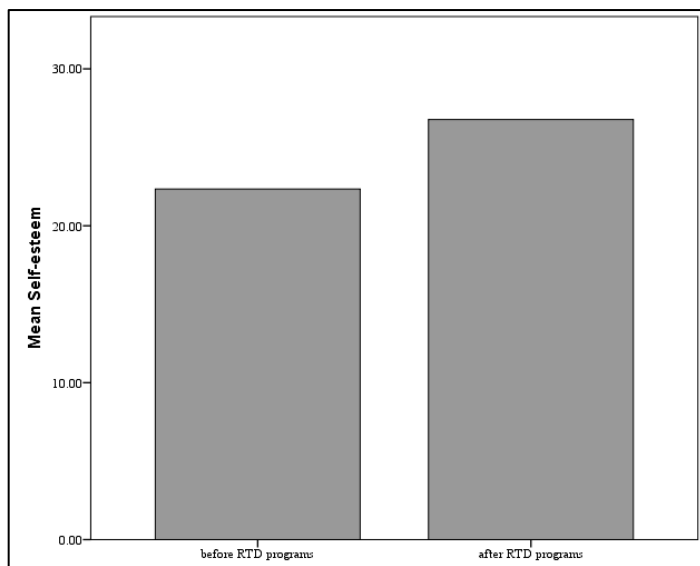
Self-Esteem Scale (RSES) increased from pre-test to post-test. The results were significant,  $Z = -4.69$ ,  $p < .001$ . The median self-esteem is lower before RTD programs ( $Me = 20.00$ ;  $M = 22.10$ ;  $SD = 5.71$ ) as compared to the median self-esteem score after RTD programs ( $Me = 26.00$ ;  $M = 26.77$ ;  $SD = 5.40$ ; Table 9; Figure 5). These results support the study's hypothesis that students participating in RTD would result in statistically significant increases in self-esteem from pre-test to post-test; thus, the null hypothesis for research question one was rejected.

**Table 13**

*Wilcoxon Signed Rank Test for Self-esteem*

Measure	before RTD programs			after RTD programs			Z	p
	M	SD	Me	M	SD	Me		
Self-esteem	22.10	5.71	20.00	26.77	5.40	26.00	-4.69	< .001

*Note.*  $N = 35$ . Wilcoxon Signed Rank pre and post-test means and standard deviations for self-esteem.

**Figure 5***Mean Self-esteem Before and After RTD Programs*

*Note.* The graph shows mean self-esteem before and after RTD programs. The x-axis shows the period (before or after RTD programs), while the y-axis shows mean self-esteem.

***Research Question Two***

The second research question examined if elementary and middle school students differed in prosocial behavior scores following participation in Read to Dogs (RTD) programs. The Wilcoxon signed rank test was conducted to determine whether the scores on the Prosocial Behaviors scale of the Strengths and Difficulties Questionnaire (SDQ) increased from pre-test to post-test. Also, the results of pre and post-test scores on Difficulty Getting along with other students and the Overall Stress scales on the SDQ were examined. The results were significant for prosocial behaviors,  $Z = -4.75$ ,  $p < .001$ . The median prosocial behaviors were lower before RTD programs (Me = 5.00; M = 5.73; SD = 1.85) as compared to median prosocial behaviors after RTD programs (Me = 7.00; M = 7.98; SD = 1.75; Table 10; Figure 2). These results indicate that students performed more prosocial behaviors after participation in RTD programs.

On the subscale for Difficulty Getting along with other students, the results were

significant for  $Z = -4.61, p < .001$ . The median difficulty getting along with other students was higher before RTD programs ( $Me = 4.00; M = 3.65; SD = 1.59$ ) as compared to the median difficulty getting along with other students after RTD programs ( $Me = 1.00; M = 1.45; SD = 1.79$ ; Table 10 Figure 6). The statistically significant decrease in difficulty getting along with others scale scores between pre and post-test scores revealed that after participation in the RTD program, students experienced less difficulty getting along with other students or improved relationships with classmates.

The results were also significant for the Overall Stress sub-scale on the Strengths and Difficulties Questionnaire (SDQ)  $Z = -3.49, p < .001$ . The median Overall Stress scale score was higher before RTD programs ( $Me = 13.50; M = 12.90; SD = 5.56$ ) as compared to the median stress after RTD programs ( $Me = 7.00; M = 8.23; SD = 5.93$ ; Table 10; Figure 3). These significant results support the idea that participation in RTD decreases stress.

**Table 14**

*Wilcoxon Signed Rank Test for Prosocial Behaviors & Difficulty Getting Along with Others (SDQ) Subscales*

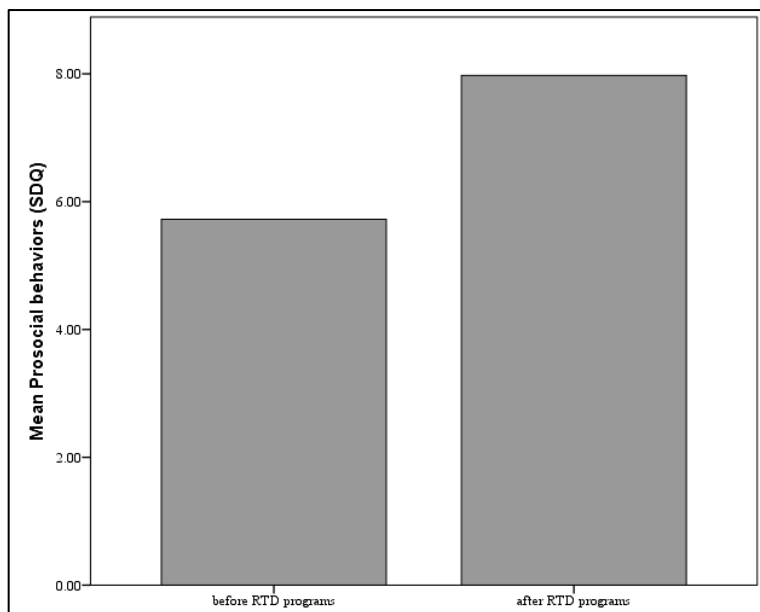
Measure	before RTD programs			after RTD programs			Z	p
	M	SD	Me	M	SD	Me		
Difficulty getting along with other students (SDQ)	3.65	1.59	4.00	1.45	1.79	1.00	-4.61	< .001
Stress (SDQ)	12.90	5.56	13.50	8.23	5.93	7.00	-3.49	< .001
Prosocial behaviors (SDQ)	5.73	1.85	5.00	8.23	1.75	7.00	-4.75	< .001

*Note.*  $N = 40$ . Wilcoxon Signed Rank means for standard deviations for SDQ Difficulty Getting

Along with Other and Prosocial Behaviors subscales.

**Figure 6**

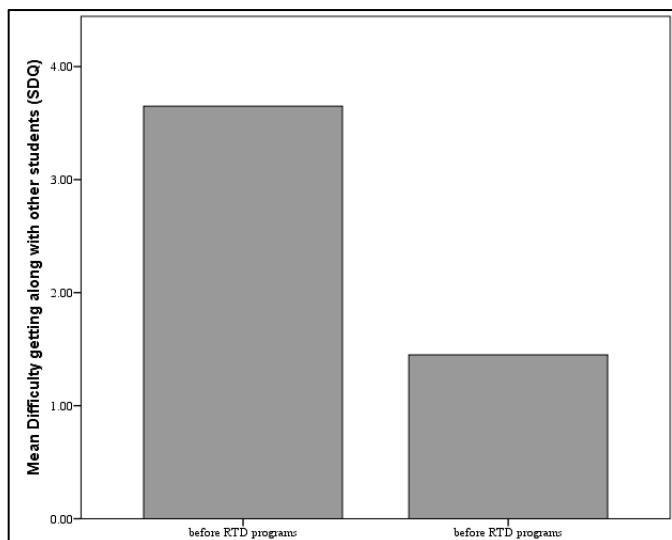
*Mean Prosocial Behaviors Before and After RTD Programs*



*Note.* The graph shows mean prosocial behaviors before and after RTD programs. The x-axis shows the period (before or after RTD programs), while the y-axis shows mean prosocial behaviors.

**Figure 7**

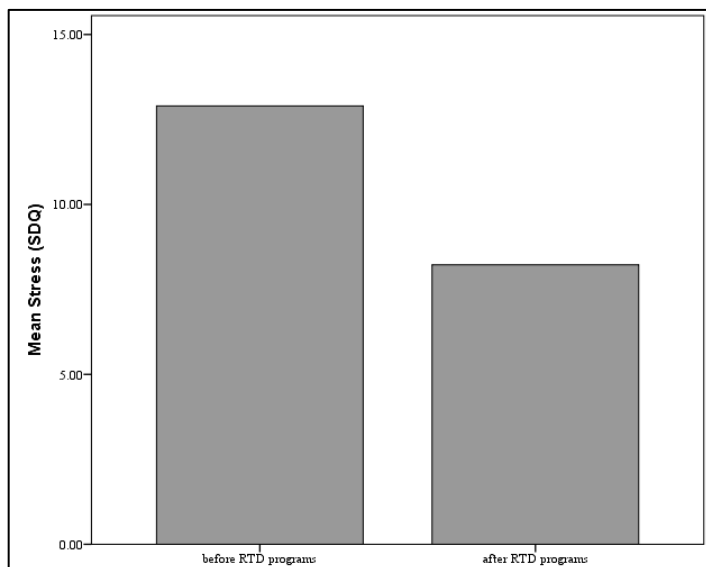
*Mean Difficulty Getting Along with Other Students Before & After RTD Programs*



*Note.* The graph shows mean difficulty getting along with other students before and after RTD programs. The x-axis shows the period (before or after RTD programs), while the y-axis shows mean difficulty getting along with other students.

**Figure 8**

*Mean Stress Before and After RTD Programs*



*Note.* The graph shows mean stress before and after RTD programs. The x-axis shows the period



(before or after RTD programs), while the y-axis shows mean stress.

### ***Research Question Three***

The third research question sought to determine if elementary and middle school teachers' perceptions of classroom climate scores differed following participation in Read to Dogs (RTD) programs. The results for research question three were significant,  $Z = -1.83$ ,  $p = .068 < .08$ . The median teacher's perceptions about the quality of student interactions are lower before RTD programs ( $Me = 3.15$ ;  $M = 3.07$ ;  $SD = .69$ ) as compared to the median after RTD programs ( $Me = 3.60$ ;  $M = 3.63$ ;  $SD = .63$ ; Table 11, Figure 9). The Wilcoxon signed rank test was conducted to determine whether the scores on two scales of the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) (second – sixth grades) or the [Secondary Classroom Climate Assessment Instrument - General \(CCAI-S-G\)](#) (sixth grade – 12<sup>th</sup> grades) resulted in significant changes from pre-test to post-test. The scales of interest were the teachers' perceptions of the quality of student interactions and attitudes about the classroom climate.

The Wilcoxon signed rank test was conducted to determine if significant differences exist in pre and post-test scores on the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) (second – sixth grades) or the [Secondary Classroom Climate Assessment Instrument - General \(CCAI-S-G\)](#) (sixth grade – 12<sup>th</sup> grades) following participation in the RTD programs. The results are significant,  $Z = -1.83$ ,  $p = .068 < .08$ . The median teacher's perceptions of students' attitudes about classroom climate are lower before RTD programs ( $Me = 4.06$ ;  $M = 4.11$   $SD = .16$ ) as compared to the median after RTD programs ( $Me = 4.78$ ;  $M = 4.78$ ;  $SD = .02$ ; Table 11, Figure 9). These results support the study's hypothesis for research question three: that teachers' perceptions of the overall classroom climate

would improve significantly from pre-test to post-test as measured by scores on the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) (second – sixth grades) or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G; sixth grade – 12<sup>th</sup> grades) Put more plainly, after participation in the RTD program, the teachers' perceptions about the quality of student interactions and students' attitudes improved significantly from pre-test to post-test.

The improvement in the classroom climate may also be the result of decreases in stress (Nimer & Lundahl, 2007), anxiety, depression (Ernst, 2013), and internalizing and externalizing behaviors (Seivert et al., 2018). The improved classroom climate may also be an effect of increases in mental well-being, oxytocin production, more positive social interactions (Ambrosi et al., 2019; Creagan et al., 2015), and the development of empathy, as shown in previous research with hard-to-reach populations (Sprinkle, 2008). These decreases in stress and difficulty getting along with others result in an improved classroom climate, as shown in the statistically significant differences between pre and post-test scores on the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) (second – sixth grades) or the Secondary Classroom Climate Assessment Instrument - General (CCAI-S-G) (sixth grade – 12<sup>th</sup> grades).

**Table 15**

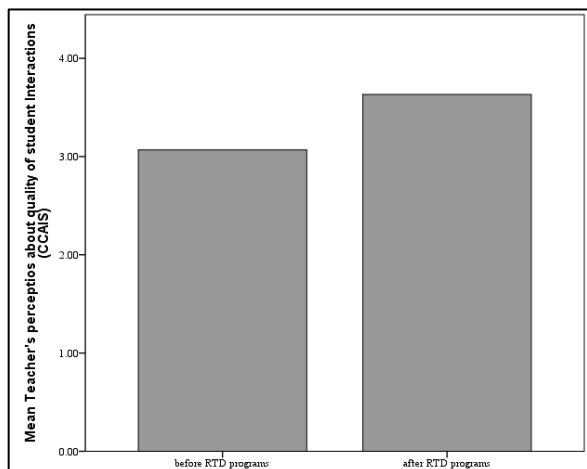
*Wilcoxon Signed Rank Test for Teacher's Perceptions about Attitude & Quality of Student Interactions*

Measure	before RTD programs			after RTD programs			Z	p
	M	SD	Me	M	SD	Me		
Teacher's perceptions about the quality of student Interactions (CCAIS)	3.07	.69	3.15	3.63	.63	3.60	-1.83	.068
Teacher's Perceptions attitude about classroom climate (CCAIS)	4.11	.16	4.06	4.78	.20	4.78	-1.83	.068

*Note.* N = 4 Results of Wilcoxon Signed Rank test for teachers' perceptions of the Quality of student interactions and perceptions of attitude about the classroom climate on the appropriate version of the CCAIS

**Figure 9**

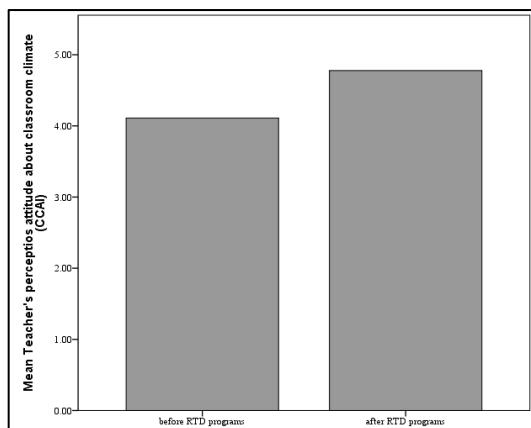
*Mean Teacher's Perceptions about Quality of Student Interactions Before and After RTD Programs*



*Note.* The graph shows mean teachers' perceptions about the quality of student Interactions (CCAIS) before and after RTD programs. The x-axis shows the period (before or after RTD programs), while the y-axis shows the mean Teacher's perceptions about the quality of student Interactions (CCAIS).

**Figure 10**

*Mean Teachers' Perceptions of Attitude about Classroom Climate Before and After RTD Programs*



*Note.* The graph shows mean teachers' perceptions and attitudes about classroom climate before and after RTD programs. The x-axis shows the period (before or after RTD programs), while the y-axis shows the mean teacher's perceptions of and attitude toward classroom climate.

Based on the Wilcoxon signed rank test, the null hypothesis for research question 1 was rejected ( $p < .001$ ), indicating a statistically significant difference in self-esteem scores in elementary and middle school students following participation in the RTD program.

Furthermore, the null hypothesis for research question 2 was rejected ( $p < .001$ ), indicating a statistically significant difference in prosocial behavior scores of elementary and middle school students following participation in the RTD program. The null hypothesis for research question 3 was also rejected ( $p < .08$ ), indicating a statistically significant difference in the overall classroom climate scores among elementary and middle school teachers following participation in the RTD program.

### Summary

Read to Dogs (RTD) programs increase reading abilities. The efficacy of this program has been proven quantitatively (Jalongo et al., 2004; Kirman et al., 2016, 2018). What was not

known was if and to what extent scores on instruments measuring participants' self-esteem, the performance of prosocial behaviors, and perceptions of the overall classroom climate would differ as a result of participating in the RTD program.

When children struggle with reading, the impacts go beyond their educational attainment (Boyes et al., 2018). These struggles may include, but are not limited to, low motivation to practice reading, an overall dislike of school, and an increased dropout rate (Boyes et al., 2018). Low self-esteem and withdrawal from classroom activities are also common in those who find learning to read challenging (Ecklund & Lamon, 2008). This lack of confidence, accompanied by diminished motivation to practice reading, makes this population of students very difficult to engage. These students experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Additionally, students with reading difficulties consistently have higher incidences of low self-esteem (Ecklund & Lamon, 2008) and self-concept (Boyes et al., 2018; Lindeblad et al., 2019), as well as depression and anxiety (Boyes et al., 2018). These internalizing and externalizing behaviors cause difficulties in social relationships, not only in the classroom but all social relationships (Boyes et al., 2018; Lindeblad et al., 2019).

The results of this study provide quantitative support that participation in Read to Dogs (RTD) programs leads to increases in self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate. This evidence has been shown by statistically significant increases in participants' pre and post-test scores on the Rosenberg Self-Esteem Scale. Results on the pre and post-test Strengths and Difficulties Questionnaire (SDQ) scores resulted in statistically significant increases in the number of prosocial behaviors

performed. In addition, results revealed significant decreases from pre-test to post-test on the overall stress and difficulty getting along with other students scales. Pre- and post-test scores on the Classroom Climate Assessment Inventory (CCAIS) revealed significant increases in teachers' perceptions of the classroom climate, which are reflected in student attitudes and the quality of student interactions.

Based on the results of the data collected from the four classes of students (n=39) and three teachers at three different schools, all three of the null hypotheses are rejected. First, there were statistically significant differences in the self-esteem scores in elementary and middle school students following participation in the Read to Dogs (RTD) program. From the pre-test to the post-test, the mean score on the Rosenberg Self-Esteem Scale rose from 22.10 to 26.77 for all participants (n=39).

The second hypothesis that there would be a statistically significant increase in the performance of prosocial behaviors was also supported. The results of the Prosocial Scale of the Strengths and Difficulties Questionnaire (SDQ) revealed statistically significant increases in the performance of prosocial behaviors. The overall mean increased from 5.73 on the pre-test to 7.98 on the post-test. Interestingly, the Overall Stress (Stress) and Difficulty Getting along with Others (Difficulty) scales on the SDQ also resulted in significant differences. The overall mean Stress scale decreased from 12.90 (pre-test) to 8.23 (post-test), while students (n=39) reported significant decreases in Difficulty getting along with each other ((3.65 pre-test to 1.45 post-test). These increases in the Prosocial Scale scores and decreases in Stress and Difficulty scores suggest an inverse relationship.

Lastly, support for the third hypothesis that there would be statistically significant increases in the teachers' (n=3) perception of the overall classroom climate. These changes were

measured by the Elementary Classroom Climate Assessment Instrument - General (CCAIS) or the Classroom Climate Quality Analytic Assessment Instrument (CCAIS). Teachers' responses from the pre-test to the post-test indicated significant improvement in the quality of student interactions (3.07 pre-test to 3.63 post-test), and attitudes about the classroom climate (4.11 pre-test to 4.78 post-test).

## Chapter Five: Conclusions

### Overview

The purpose of this chapter is to discuss the findings of this research on the differences in students' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate following participation in Read to Dogs (RTD) programs. The chapter begins with a review of the research questions and then a discussion of the findings. The discussion section will connect the current study findings with the theoretical framework and the previous research. Following the findings are the empirical, theoretical, and practical implications of these findings. Next, the delimitations, limitations, and future research recommendations of the study are considered, and the chapter will close with a summary.

### Discussion

The purpose of this quantitative quasi-experimental pre-post-test study was to determine if and to what extent scores on instruments measuring students' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate differed after participating in Read to Dogs (RTD) programs in elementary and middle schools in East Central New Jersey. Participating students were drawn from elementary and middle schools in the east-central region of New Jersey that had established RTD programs. Three research questions were posed.

1. Do elementary and middle school students differ in self-esteem scores following participation in the RTD program?
2. Do elementary and middle school students differ in prosocial behavior scores following participation in Read to Dogs (RTD) programs?
3. Do elementary and middle school teachers' classroom climate scores differ



following participation in Read to Dogs (RTD) programs?

The results of all three research questions proved to be statistically significant. The rationale for the first research question was based on previous qualitative research that participation in RTD programs increased self-esteem as well as Rogers' Core Concepts. David Elkind's concepts of personal fable and imaginary audience are especially evident in all students who experience difficulty reading either aloud or to themselves. The result for these readers is increased frustration and anxiety, which research has shown leads to internalizing or externalizing behaviors and, sometimes, a reluctance to read at all (Kirnan et al., 2016). Previous research by Jalongo et al. (2004) and Kirnan et al. (2016, 2018) has quantitatively established that Read to Dogs (RTD) programs increase participants' reading abilities. However, research into the concepts of increased self-esteem, prosocial behaviors, and the overall classroom climate is mostly qualitative. A 2020 qualitative study by Henderson et al. found increases in prosocial behaviors and decreased internalizing and externalizing behaviors. Most relevant to this proposed study was the evidence found in support of positive effects on the learning environment was of poor quality (S. Hall et al., 2016), and the Henderson et al. (2020) qualitative study that found "a positive learning environment was established." For this study, it was proposed that the improved reading abilities that occur as a result of participation in Read to Dogs (RTD) programs would improve participants' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate.

### **Research Question One**

The first research question sought to determine if elementary and middle school students who participated in Read to Dogs (RTD) differed in self-esteem scores following participation in the RTD program. Low self-esteem and withdrawal from classroom activities are common in

those who find learning to read challenging (Ecklund & Lamon, 2008), and research by Boyes et al. (2018); Lindeblad et al. (2019) found that students with reading difficulties consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. Research has found that Therapy Dogs (TD) offer clients in counseling and readers in RTD programs a quiet, attentive, non-judgmental audience (Friesen, 2009). The judgment-free atmosphere enhances the relationship between the therapy dog and the reader and allows the reader to let go of self-judgment, which increases self-esteem. Noble and Holt (2018) found that participation in RTD improved self-efficacy, specifically a belief in reading abilities, and qualitative and anecdotal evidence support that students' self-esteem and self-concept improved following participation in RTD.

The results of the Rosenberg Self-esteem Scale (RSES) provided quantitative support that participation in Read to Dogs (RTD) programs leads to increased self-esteem. In participants ( $n = 39$ ), mean self-esteem was significantly lower before RTD programs ( $M = 22.10$ ;  $SD = 5.71$ ) as compared to mean self-esteem after RTD programs ( $M = 26.77$ ;  $SD = 5.40$ ). The increase in the overall mean self-esteem from the pre-test to the post-test is statistically significant. Mean self-esteem for School 1 Class 1 (S1C1;  $n = 8$ ) prior to participation in RTD was 28.14, with an SD of 2.27. After participation in RTD, the mean self-esteem for S1C1 was 31.83 ( $SD = 4.96$ ). School 1 Class 2 (S1C2;  $n = 2$ ) resulted in mean self-esteem before participation in RTD was 31.00 with an SD of 1.41, while post-test mean self-esteem was 30.50 ( $SD = 2.12$ ). S1C2 was the only class whose mean self-esteem did not increase. However, the decrease was not statistically significant. School 2 (S2) ( $n = 9$ ) mean self-esteem prior to RTD was 26.33 ( $SD = 2.01$ ) with a post-test mean of 31.22 ( $SD = 2.18$ ). The mean self-esteem of School 3 (S3) ( $n = 21$ ) prior to the RTD program was 17.43 ( $SD = 2.01$ ), with a post-test mean self-esteem of 22.44 ( $SD = 2.18$ ).

Read to Dogs (RTD) programs aid in decreasing struggling readers' hesitancy to practice literacy skills that arise from a fear of embarrassment or failure (Stringer & Mollineaux, 2003). Because the therapy dog (TD) does not correct pronunciation, hurry the reader, or ask questions, the relationships between readers and the TDs allow the readers to be less self-conscious while practicing their reading skills. According to Friesen (2010), a growing body of research supports RTD programs because the presence of therapy dogs creates an accepting, supportive, and interactive environment for struggling readers where they can practice their oral reading skills. Two concepts from David Elkind's Adolescent Egocentrism theory -the Imaginary Audience and the Personal Fable add support for why children who have difficulty reading are relatively more self-conscious or concerned with what others think about them than children or older adolescents (Elkind, 1967, p. 1031). The Personal Fable asserts that adolescents believe that their circumstances are unique and that no one can understand or empathize with what they are experiencing (Elkind, 1967, p. 1031). These concepts of personal fable and imaginary audience are especially evident in those who experience difficulty reading either aloud or to themselves. The result of participation in RTD programs for these readers is decreased frustration and anxiety, which research has shown leads to fewer internalizing or externalizing behaviors and less reluctance to read at all (Jalongo et al., 2004; Kirnan et al., 2016). This study extended the research by adding quantitative support to the anecdotal and qualitative evidence that participation in RTD improved self-esteem.

### **Research Question Two**

Research question two sought to determine if elementary and middle school students differ in prosocial behavior scores following participation in Read to Dogs (RTD) programs. The Prosocial Behavior scale on the Strengths and Difficulties Scale (SDQ) was used to measure

changes in prosocial behaviors. Upon analysis of the other scales of the SDQ, significant results were evident in the Overall Stress Scale (Stress) as well as the Difficulty Getting along with Others Scale (Difficulty). An inverse relationship was discovered. Scores on the Prosocial Scale increased significantly, while scores on the Overall Stress and Difficulty Scale decreased significantly. The results of the Prosocial Skills scale will be discussed in the next paragraph, while the Overall Stress and Difficulty scales will be discussed in the following paragraphs.

The results on the Prosocial Scale of the SDQ resulted in statistically significant increases in scores from the pre-test mean (5.73, SD 1.85) to the post-test mean (7.98, SD 1.75). On the post-test as compared to the pre-test, students rated themselves as being more considerate of others' feelings, shared more readily with others, kinder to younger children, and often volunteered to help others. These results are in line with previous research on Animal Assisted Interventions (AAI) with hard-to-reach populations, which has supported increases in prosocial behaviors (Sprinkle, 2008), empathy, social skills, and theory of mind (Becker et al., 2017). AAI was also found to decrease internalizing and externalizing behaviors, resulting in lower levels of anxiety and depression (Seivert, 2018; Becker et al., 2017). For example, research on individuals with serious mental illness found that AAI increased motivation to participate in group therapy, built rapport, aided in building connections between participants (Sikstrom et al., 2020), and decreased anxiety and depression. Similarly, empirical evidence garnered from research on individuals with Autism Spectrum Disorders supports the idea that AAI increases the theory of mind and improves social skills (Becker et al., 2017).

The Biophilia Hypothesis (Wilson, 1984) proposed that humans are instinctively attracted to dogs and other domesticated animals. Humans are known to attach to animals and express emotions in their presence Podberseck et al., (2005) found that most (over 70%) children and

adults talked to and expressed emotions to animals. This attachment and emotional expression make therapy dogs (TD) an especially powerful tool in counseling. In school settings, children with special educational needs (up to 90%) and those in general education (up to 40%) exhibit insecure or disorganized attachment patterns, leading to increased stress. Student performance and learning are inhibited by stress. The Biophilia Hypothesis and Bowlby's Attachment theory postulate that secure attachments early in life create a secure base to explore the world, while insecure attachments can cause distress. Therapy dogs can provide this same sense of secure attachment (Lass-Hennemann et al., 2022).

### ***The Overall Stress Scale***

Upon analysis of the results Overall Stress Scale (Stress) on the Strengths and Difficulties Questionnaire (SDQ), it was noted that there were statistically significant decreases in the mean pre and post-test scores on this scale. Although beyond the original scope of this study, the researcher chooses to include these results on the Overall Stress scale based on findings that participation in Animal Assisted Interventions (AAI) and Read to Dogs (RTD) programs have been proven to decrease stress (Griscti & Camilleri, 2020; Haggerty & Mueller, 2017; Orellana, 2019) and increase attachment (S. Barker et al., 2016; Beetz et al., 2012; D.Hall, 2018) in a variety of settings from hospitals, rehabilitation centers, and educational settings. The literature supports that therapy dogs provide physiological and psychological benefits ranging from decreased stress to elevated mood (Beck & Katcher, 2003; Friesen, 2010; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). S. Hall et al. (2016) noted that the evidence that RTD has beneficial impacts on the learning environment is of poor quality. Linder et al. (2018) added that a deficiency in the research exists regarding RTD programs in schools, where increased stress exists for children, more challenging social situations occur, and adolescents dread negative

feedback. A Henderson et al. (2020) qualitative study found that RTD contributed to a positive learning environment, facilitated social interactions, and decreased internalizing and externalizing behaviors but needed pre and post-test quantitative data.

The statistically significant results on the Overall Stress (Stress) scale of the Strengths and Difficulties Scale (SDQ) support that Read to Dogs (RTD) programs decreased stress for participating students ( $n = 39$ ) with statistically significant quantitative pre and post-test data. The mean Stress scale for score S1C1 ( $n = 8$ ) on the pre-test was 13.75 ( $SD = 8.71$ ), while the post-test mean was 5.63 ( $SD = 5.93$ ). Mean Scores for S1C2 ( $n=2$ ) were 16.50 ( $SD = 2.12$ ) pre-test and 16.00 ( $SD = 1.41$ ). S2C1 ( $n = 9$ ) mean scores on the Stress scale were pre-test 14.33 ( $SD = 2.45$ ) with a post-test mean score of 13.44 ( $SD = 5.20$ ). The pre-test mean on the Stress scale for S3C1 ( $n = 21$ ) was 11.62 ( $SD = 5.18$ ), and the post-test mean score on the Stress scale of 6.24 ( $SD = 4.5$ ). The Overall Means on the Stress scale for all participants ( $n = 39$ ) were 12.90 ( $SD = 5.56$ ) pre-test and a post-test mean of 8.23 ( $SD = 5.93$ ). These results lend support to previous findings that the non-judgmental qualities of dogs make them ideally suited to assist children who have difficulty reading. As McGeown et al. (2015) found, reading instruction has to address children's emotions (stress, frustration, and anxiety), struggling readers and develop reading skills. It is this decreased stress (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995), anxiety, feelings of isolation, and improved mental outlook (Ernst, 2013), and increased production of oxytocin resulting in elevated mood (E. Levinson et al., 2017) that occurs in a dog's presence that creates conditions for RTD to be successful. The results of the Overall Stress Scale provide quantitative proof that stress levels are significantly decreased for participants in RTD programs.

Qualitative evidence suggests that RTD programs have beneficial impacts on the learning

environment, but this evidence is of poor quality (S. Hall et al., 2016). The results of this study provide quantitative data supporting the increased prosocial skills and improved classroom climate. The statistically significant increases in prosocial behaviors in this study extend the findings that Animal Assisted Interventions (AAI) provide benefits from hard-to-reach populations to educational settings. Specifically, AAI increases engagement, motivation, and social interaction among those with serious mental illnesses (Ambrosi et al., 2019; Sikstrom et al., 2020), increases empathy (Sprinkle, 2008), decreases anxiety and depression, which increases prosocial behaviors among youth in the juvenile justice system (Seivert et al., 2018), and, for children with ASD, interactions with therapy dogs create a social lubricant (Carlisle, 2015) that improves social skills, empathy, and more social interactions (Becker et al., 2017). The quantitative data from this study affirmed qualitative data in a study by Henderson et al. (2020) that found Read to Dogs (RTD) programs contributed to a positive learning environment, facilitated social interactions, and decreased internalizing and externalizing behaviors but needed pre-and post-test quantitative data.

The Biophilia Hypothesis (Wilson, 1984) and Bowlby's Attachment theory also provide support for why Read to Dogs (RTD) programs are beneficial. The secure attachments between students and the TD have proven to reduce stress. Less stress reduces internalizing and externalizing behaviors and allows students to relax and focus on learning to read (Beetz et al., 2012), which increases self-esteem and the performance of prosocial behaviors.

The statistically significant decrease in the Overall Stress Scale extends the results of research in hospitals (Handlin et al., 2018), Emergency Departments (Kline et al., 2019), rehabilitation facilities, and therapy settings (Friesen, 2010) where Animal Assisted Interventions (AAI) have proven to provide psychological and physical benefits that reduce stress. The

physiological benefits include decreased heart rate, blood pressure, fatigue, risk of cardiovascular disease, and increased cognition (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). Psychological benefits include decreased anxiety, depression, confusion, and increased production of oxytocin, resulting in an elevated mood (E. Levinson et al., 2017; Sable, 1995).

### ***The Difficulty Getting Along with Others Scale***

The results on the Difficulty Getting Along with Others Scale (Difficulty) of the Strengths and Difficulties Questionnaire (SDQ) are in line with results found with hard-to-reach populations. Correale et al. (2017) reported that students were also better able to express their emotions. Animal Assisted Intervention (AAI) has been shown to improve special and general education classroom environments (Beetz et al., 2012, Beetz, 2013). Ninety percent of students with special education needs and 40% of general education students (ages 7-11) have insecure/avoidant /disorganized attachment patterns and benefit more from the social support of a dog while performing a stressful task (Beetz et al., 2012). There were statistically significant decreases in participating students' (n=39) difficulty in getting along with other students from the pre-test (M = 3.65, SD = 1.59) to the post-test (M= 1.45, SD = 1.80). S1C1 (n=8) reported a mean pretest Difficulty Scale score of 3.75 (SD = 2.05), while the mean post-test Difficulty Scale score was .50 (SD = 1.07). S1C2 (n= 2) Difficulty Scale scores were (M=3.0, SD 0) pre-test and (M = 2.50, SD .71) respectively. S2C1 (n = 9) resulted in a pre-test mean of 4.11 (SD = 1.76) and a post-test mean of 3.22 (SD = 2.1). Lastly, the pre-test (M= 3.48, SD .95) and post-test scores (M=.95, SD = 1.40) for S3C1 (n = 21) were also statistically significant. Seivert et al. (2018) reported increased prosocial behaviors, while Becker et al. (2017) found more social interactions. The presence of dogs in classrooms also improved psychological well-being,



enhanced empathy, and socio-emotional development. The results lend further support to qualitative research by S. Barker et al. (2016), Beetz et al., (2012), Beetz (2012) , and D. Hall (2018), that Animal Assisted Interventions (AAI) increase attachment as students have less difficulty getting along with each other.

Further research with hard-to-reach populations with mental illnesses, incarcerated youth, and individuals with Autism Spectrum Disorder (ASD) found that AAI increases engagement, motivation, and social interaction among those with serious mental illnesses (Ambrosi et al., 2019; Sikstrom et al., 2020) and empathy among youth in the juvenile justice system (Sprinkle, 2008). Seivert et al. (2018) found decreased anxiety and depression, which increases prosocial behaviors (Seivert et al. 2018). For children with ASD, interactions with therapy dogs create a social lubricant (Carlisle, 2015) that improves social skills, empathy, and more social interactions (Becker et al., 2017). The results of this study provide statistically significant support for improved relationships among students in the classroom.

### **Research Question Three**

Research Question Three sought to determine if elementary and middle school teachers differ in classroom climate scores following participation in Read to Dogs (RTD) programs. To measure changes in the participating teachers' (n= 3) perceptions of the classroom climate the appropriate version of either the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) designed to be completed by teachers, administrators, and staff working with students in second through sixth grades or the Secondary Classroom Climate Assessment Instrument – General (CCAI-S-G) designed for teachers, administrators, and staff working with students in sixth through twelfth grades were completed prior to and at the conclusion of the Read to Dogs study period. Specifically, the teachers completed the Quality of Student

Interactions and Attitude and Culture Scales. Analysis of the results discovered statistical changes in pre and post-test scores on these scales.

From pre-test to post-test, scores for all classes on the teachers' perceptions of the Quality of Student Interactions improved significantly for all classes. For School 1 Class 1, the Quality of Student Interactions scale score improved from 3.5 on the pre-test to 4.0 on the post-test. School 1 Class 2 had the biggest increase from pre-test (2.8) to post-test 4.33. The score for School 2 Class 1 was 2.22, and the post-test score was 3.20. School 3 Class 1 scores were 3.75 (pre-test) and 4.0 (post-test). The mean scores ( $n=4$ ) on the teachers' perceptions of the Quality of Students were 3.07 on the pre-test and 3.63 on the post-test. This scale assesses the teachers' perceptions of students' sense of belonging, worthiness, acceptance of cultural differences, and promoting positive interactions (Shindler et al., 2016).

The results of the teachers' perceptions on the Attitude and Culture Scale were also statistically significant, with the overall mean ( $n=4$ ) improving from 4.11 ( $SD = .16$ ) on the pre-test to 4.67 ( $SD = .20$ ) on the post-test. For School 1 Class 1 on the teacher's perception on the Attitude and Culture Scale, the score improved from (4.33) pre-test to 4.89 (post-test). School 1 Class 2's score on the Attitude and Culture Scale improved the most from pre-test to post-test, from 3.0 to 4.55, respectively. From pre-test to post-test, School 2 Class 1 also showed increases from pre-test (4.11) to post-test (4.67). Lastly, School 3 Class 1 improved from 4.0 (pre-test) to 5.0 (post-test) on the teacher's perceptions of the Attitude and Culture Scale. This scale measured teachers' perceptions of their expectations of students, the amount of pride students feel in belonging to this class, common goals, comfort level when talking to the teacher, and how much students feel like a valued part of the group.

The statistically significant results on the Student Interactions and Attitude and Culture

Scales of the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Secondary Classroom Climate Assessment Instrument – General (CCAI-S-G) support the hypothesis that participation in Read to Dogs (RTD) programs significantly improve the teachers' perceptions of the Overall Classroom climate. A correlational study by Shindler (2021) found that high-quality climates, both school-wide and in the classroom, are necessary for students to achieve high levels. Also, the quality of the classroom climate is the single most predictive factor in student achievement that schools can control (Shindler et al., 2016). Other research has also shown a relationship between a sense of belonging with acceptance and self-esteem (Osterman, 2000; Shann, 1999).

### **Implications**

This quasi-experimental pre and post-test quantitative study provides support for how Read to Dogs (RTD) programs can be used to support students with reading challenges. Specifically, this study explored the differences in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. The study's findings supported increases in participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. In addition, the results revealed decreases in participants' overall stress and difficulty getting along with other students while teachers' perceptions' of the quality of student interactions increased. The study's findings can advance practical and theoretical understandings that support schools and teachers in creating classroom climates where students can not only overcome reading challenges but increase their self-esteem, the performance of prosocial behaviors, and, at the same time, decrease difficulty getting along with others and overall stress.

## **Empirical Implications**

Empirical data demonstrating the program's benefits can be used to advocate for policy inclusion of RTD and AAI programs in educational settings, influencing school boards and educational authorities. Also, evidence from this study can be used to guide policymakers in allocating resources and funding to support AAI and RTD programs, ensuring that these effective interventions receive the necessary support. Research findings might suggest changes in policies or regulations to allow for therapy dogs to be present in more locations. For instance, a study on the differences in factory or office employees' self-esteem, performance of prosocial behaviors, and the overall work environment following therapy dog interactions. Secondly, more quantitative studies on the use of therapy dogs to assist children who experience frustration, depression, and anxiety and their accompanying internalizing behaviors can have direct implications for clinical practice. Thirdly, research in the field of education can inform teaching methods and curriculum development. For example, research on the use of therapy dogs in assisting those with anxieties around test taking, public speaking, and/or math. Lastly, quantitative research into the impacts of therapy dog interventions with groups could lead to the development of more programs where participants can experience the benefits of therapy dogs, possibly after-school or community programs that involve parents and caregivers, fostering a more holistic approach to child development. Educating parents on the principles and benefits of RTD and AAI programs might enhance their ability to support their children's social and emotional development at home.

## **Theoretical Implications**

The significant results supported the four theories chosen as the framework for this research. The Biophilia Hypothesis is the idea that because of the positive feelings associated

with being close to other living things, humans have an inherent drive to do so (Mills & Hall, 2014; Wilson, 1984). Also asserted is that the presence of friendly animals has a calming effect on humans, particularly children (Wilson, 1984). This increased calmness results in increased alertness and attention, ultimately enhancing concentration and persistence in challenging tasks (McNicholas & Collis, 2000). The results of this study revealed significantly decreased stress in participants as measured by pre and post-test results on the Strength and Difficulties Questionnaire's Overall Stress Scale.

### *Attachment Theory*

In addition to the Biophilia Hypothesis, Bowlby's Attachment theory provided support for why the Read to Dogs (RTD) programs would be beneficial to participants' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Bowlby's attachment theory is evidenced in the emotional connection formed between participants and therapy dogs (TDs) in RTD programs. Evidence suggests that companion animals, dogs, in particular, are thought to provide a non-threatening yet socially supportive and interactive audience for children when practicing their oral reading skills (Friesen, 2010). These secure attachments between students and the TD have proven to reduce stress. Less stress allows students to relax and focus on learning to read (Beetz et al., 2012). This study found that decreased stress allows students to learn and also increases self-esteem, which reduces internalizing and externalizing behaviors, allowing for more prosocial behaviors and an improved overall classroom climate. The statistically significant results on the Rosenberg Self-Esteem Scale provide further evidence that connections made with the TD have beneficial effects beyond improving reading abilities, increasing the number of prosocial behaviors performed, and improving teachers' perceptions of the overall classroom climate.

In addition, the statistically significant results on two scales of the Strengths and Difficulties Questionnaire (SDQ) and the Student Interactions and Attitude and Culture Scales of the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) and the Secondary Classroom Climate Assessment Instrument – General (CCAI-S-G) lend to support for the assertion that participation in Read to Dogs programs aid in creating attachments between students. On the SDQ, the results on the Prosocial and Difficulty Getting along with Others Scales revealed significant increases in the performance of prosocial behaviors and significant decreases in difficulty getting along with other students. Further support is found in the results of the Attitude and Culture and the Student Interactions scales of the Classroom Climate Inventories completed by the participating teachers. The statistically significant difference between pre and post-test scores on the Attitude and Culture scale establishes that teachers’ perceptions of their expectations of students, amount of pride students feel in belonging to this class, common goals, comfort level talking to the teacher, and how much students feel like a valued part of the group improved significantly. The Student Interactions scale assesses teachers’ perceptions of students’ sense of belonging, worthiness, acceptance of cultural differences, and promotion of positive interactions.

### ***Rogerian Client-centered Theory***

The long history of connections between humans and dogs naturally fosters a safe and warm therapeutic environment (Nimer & Lundahl, 2007). Dogs are inherently authentic (non-judgmental), congruent, genuine, caring, accepting, warm, and empathic (Chandler et al., 2010). Carl Rogers (1961) wrote, “The more I can keep a relationship free of judgment and evaluation, the more this will permit the other person to reach the point where he recognizes that the locus of evaluation, the center of responsibility, lies within himself” (p. 67). The quiet, attentive, and

nonjudgmental audience a therapy dog (TD) provides for readers Rogers's core components of unconditional positive regard, empathy, and congruence (Friesen, 2009; Jenkins et al., 2014). When students had difficulty reading, the genuine caring, empathy, and non-judgment offered by a TD made the challenging task of reading easier. This study's results showed statistically significant increases in self-esteem as measured by the Rosenberg Self-Esteem Scale (RSES), the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate.

### ***Elkind's Adolescent Egocentrism***

Two concepts within Elkind's Adolescent Egocentrism theory - the "Imaginary Audience" and the "Personal Fable" assert that young adolescents are moderately more self-conscious or concerned with how others perceive them than are children of other ages. (Elkind & Bowen, 1979, p. 38). Adolescents also believe that their circumstances are unique and that no one can understand or empathize with what they are experiencing (Elkind, 1967, p. 1031). These concerns about how they are perceived are heightened for those who experience difficulty reading either out loud or to themselves, which results in increased frustration, anxiety, and a reluctance to read (Jalongo et al., 2004; Kirnan et al., 2016). Because the therapy dog (TD) does not correct pronunciation, hurry the reader, or ask questions, the relationships between readers and the TDs allow the readers to be less self-conscious while practicing their reading skills (Friesen, 2010). Because all students in the class participated in the RTD, students do not feel so alone in their difficulty learning to read. The presence of therapy dogs created an accepting, supportive, and interactive environment for struggling readers where they could practice their oral reading skills.

To summarize, the significant results of this study supported the four theories chosen to

give this study structure. As the Biophilia Hypothesis asserts, the students wanted to be near and calmed down in the presence of the therapy dogs (Wilson, 1984). The decreased stress evidenced this. Bowlby's attachment theory is demonstrated in the emotional connections and secure attachments formed between participants and therapy dogs (TDs) during the RTD programs. Dogs' temperaments are inherently authentic (non-judgmental), congruent, genuine, caring, accepting, warm, and empathic (Chandler et al., 2010), demonstrating Rogers's Core components of Client-centered theory, further enhancing bonds between students and the TDs. Elkind's theory of Adolescent Egocentrism states that young adolescents are moderately more self-conscious than children of other ages (Elkind & Bowen, 1979). The TD does not correct pronunciation, hurry the reader, or ask questions. The relationships between readers and the TDs allow the readers to be less self-conscious while practicing their reading skills (Friesen, 2010). This study found that decreased stress allows students to learn and also increases self-esteem, which reduces internalizing and externalizing behaviors, allowing for more prosocial behaviors and an improved overall classroom climate. Results also indicated that participation in Read to Dogs (RTD) programs increased self-esteem and decreased stress, which led to decreased difficulty getting along with other students as measured by the Difficulty and Overall Stress Scales on the Strengths and Difficulties Questionnaire (SDQ). Results on the prosocial scale of the SDQ also revealed that students also performed more prosocial behaviors after participation in the RTD program.

### **Practical Implications**

The study's findings have practical implications, especially considering the recent increases in mental health struggles faced by adolescents. According to Stone (2023), 93% of school health workers say they have seen an increase in students with anxiety since 2019.



Although the increase is frequently thought to be a response to the pandemic shutdown, the number of adolescents experiencing anxiety and depression was increasing for a decade prior. Suicide rates for this group also increased during this time (Stone, 2023). Integrating Animal-Assisted Interventions and Read to Dogs programs supports teachers and counselors in creating environments in which students and clients can not only overcome challenges but also increase their self-esteem, the performance of prosocial behaviors, and, at the same time, decrease difficulty getting along with others and overall stress.

This study advanced the current thinking on Read to Dogs (RTD) programs from increasing reading abilities (Jalongo et al., 2004) and that Animal-Assisted Interventions (AAI) reduce feelings of isolation, decrease anxiety, improve mental outlook, and increase the quality of life Ernst (2013) by establishing a positive connection between improved self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate. It also revealed an inverse relationship between stress and difficulty getting along with other students. As stress decreased, students had less difficulty getting along with other students. After participating in the Read to Dogs (RTD) program, students felt better about themselves and were nicer to each other, and this made the classroom a better social and learning environment. Positive social relationships are an integral component of the classroom climate as well as student achievement and mental health (Shindler et al., 2016). This connection between classroom climate and student achievement is well-established in the literature (Freiberg et al., 1999; Hoy & Hannum, 1997; Kober, 2001; Loukas & Robinson, 2004; Shindler et al., 2004). A study by Shindler et al. (2016) found that classroom climate may very well be the single most important factor in predicting academic success. The results from this study add quantitative support to the already established research that improved self-esteem leads to less stress. In turn,

students have less difficulty getting along with each other and perform more prosocial behaviors, which improves the classroom climate socially and academically for all students. In short, they experience less anxiety, depression, stress, and better mental health.

The results of this study can also lead to program refinement. The content of the RTD programs can be refined and enhanced to focus on the elements that most effectively promote positive self-esteem and prosocial behaviors. Based on the study's insights improved implementation strategies, such as optimal duration and frequency of AAI and RTD programs.

### **Christian Worldview**

Romans 12:10 New Living Translation reads, "Love each other with genuine affection and take delight in honoring each other" (Dailyverses.net, 2024). The unconditional acceptance, non-judgment, empathy, and congruence offered by the therapy dogs (TD) during the Read to Dogs (RTD) program is similar to the acceptance from God. Students begin RTD programs struggling with reading, and many experience anxiety and depression as well (Lindenblad et al., 2019). Through the RTD program, students (n=39) who participated in this study experienced increases in self-esteem, less stress, and less difficulty getting along with others. They also performed more prosocial behaviors and, according to teachers' perceptions, felt listened to, respected, and part of a community, which improved the classroom climate. Through the RTD program and interactions with the TD, the students showed each other genuine affection and honored each other.

"How many are your works, LORD! In wisdom, you made them all; the earth is full of your creatures" (Psalm 104: 24, New International Version). The Lord made all creatures great and small for humans' benefit and enjoyment – cattle and chickens to sustain us nutritionally, leeches to promote circulation in patients who had limbs reattached, and dogs. The history of the

connection between humans and dogs can be traced back to the Paleolithic age – or more than 2.5 million years (Cohen & Diaz, 2013). Throughout history, humans have used dogs to perform a myriad of tasks, including hunting, carrying loads, pulling sleds, guarding, and companionship (Morey, 2010, p. 109). Because of this long history of connection, dogs have developed the ability to understand human social and communicative behavior (Cooper et al., 2003; Hare & Tomasello, 2005; Miklosi et al., 2004), or what Glenk et al. (2017) refer to as socio-communicative behaviors. The socio-communicative behaviors (Glenk, et al. 2017) create the conditions for Read to Dogs (RTD) programs to be successful.

### **Delimitations and Limitations**

The research had several limitations and delimitations. Limitations are defined as constraints to your study based on the research methodology and design. Limitations are constraints you cannot control in a study. Primarily, limitations deal with the constraints of the research method (Miles & Scott, 2017). Another definition of a limitation is that they are design flaws. A limitation is a factor that may or will affect the study but is not under the control of the researcher. Delimitations are defined as primarily concerned with the scope of the study (Miles, D., 2019). Delimitations describe the scope of the study by establishing parameters or the scope of the study. Delimitations also prevent the researcher from declaring that findings are generalizable to the entire population. Delimitations imply the population to which results can be generalized. Delimitation are concerned with constraints to a study, while limitations are concerned with inherent constraints to the methodology (Miles & Scott, 2017). The following are the limitations and delimitations of this study.

#### **Limitations**

The lack of a control group and the relatively small sample size may be related to the

timing of the study. The researcher initially planned to have a control group and begin the research period in the fall of 2022. COVID-19 still limited access of visitors to schools, so the decision was made to wait until the fall of 2023. The overall school participation in Read to Dogs (RTD) programs was still not at pre-COVID-19 levels, but the researcher decided to move forward with the study. Originally, five schools agreed to participate, but two schools withdrew before the study began, leaving three schools with four participating classes. The researcher attempted to enlist control groups at each location but was unsuccessful. As other research found, in research with dogs, no one wanted to be in the control group (Saunders et al., 2017). Without a control group, it is not possible to attribute the significant results solely to the intervention (Moser, 2020).

Although the number of student participants for this study ( $n=39$ ) was larger than in other studies, the number did not meet the recommended sample size of 79, as calculated by G\*Power software version 3.19.17. A Rousseau and Tardif-Williams (2019) study investigated the effects of reading to a therapy dog on students with an  $n = 17$  (eight girls, nine boys, grades 1-3). A 2020 mixed methods study by Griscti and Camilleri explored if the presence of a therapy dog would decrease stress and increase the attention span of college nursing students ( $n=24$ ). One recent Correale et al. (2017) found that when dogs spend time in the classroom. Their presence also improved psychological well-being, enhanced empathy, and socio-emotional development. Students were also better able to express their emotions. This study was done with elementary school children ( $n=21$  consisting of 12 boys and nine girls). A 2017 qualitative study by Zents et al. assessed student and faculty perceptions about having a therapy dog in school. This study was conducted with students ( $n=35$ ) in the sixth–8th and 11th–12th grades at four rural school districts in Western New York State. Possibly, if the researcher had waited another year, more

schools would have returned to RTD and participated in the study, increasing the number of participants.

Additionally, response fatigue potentially impacted the results of this research. Often overlooked, response fatigue is an important source of measurement and misclassification error that occurs when individuals respond to survey questions but do not provide honest or reliable responses in order to decrease the burden of answering questions (Egleston et al., 2011). The instrumentation respondents completed for this study consisted of 38 questions on the pre-test instrumentation completed in September 2023 and 35 questions on the post-test instrumentation completed in January 2024. It is possible that participants did not answer honestly or reliably because of fatigue due to the number of questions on the instrumentation.

Each of the teachers (n=3) who agreed to participate in the study expressed concerns about protecting the identity of the participating students. When given the choice between a confidential or anonymous study, they choose anonymous. Because of the methodology, teachers were assured the study would be anonymous, as the researcher would not have the student's names. The limitations as a consequence of the anonymous study are that anonymous studies do not allow for comparisons by gender, age, or individuals from pre and post-test. As a result, all comparisons were done using overall group means.

Two additional schools originally agreed to participate but dropped out during the summer prior to starting the research period in September 2023. This participation would have brought the number up to the suggested G\*Power sample size. Because the research had already been delayed due to the pandemic, the decision was made to move forward with the sample as it was. The smaller-than-recommended sample size cannot guarantee that the results accurately represent the entire population (Kang, 2021).

The instrumentation used in this study: Rosenberg Self-Esteem Scale (RSES), the Strengths and Difficulties Questionnaire (SDQ) completed by the student participants, and the Elementary Classroom Climate Assessment Instrument - General (CCAI-E-G) or the Secondary Classroom Climate Assessment Instrument – General (CCAI-S-G) completed by the participating teachers are self-report measures. The CCAI-E-G and CCAI-S-G are the teachers' perceptions of the classroom climate they create. Self-report measures are commonly used tools in research and have advantages and disadvantages (Salters-Pedneault, 2023).

One of the advantages of self-reporting is the ease of administration. It is fairly quick – instrumentation is completed by participants pre and post-intervention in comparison to long-term observations. Also, self-report measures are cost-effective. Self-report measures can be done anonymously protecting sensitive information and promoting truthful answers (Salters-Pedneault, 2023).

The collection of data through self-report measures does have its limitations (Salters-Pedneault, 2023). Participants may be consciously or unconsciously influenced by a desire to give correct answers or social desirability. Other challenges with self-report measures include possible participants' lack of introspective ability or lack of skill to properly interpret the wording and/or meaning of the questions. Lastly, rating scales may be restrictive or inexact. – a yes or no answer may not be sufficient, and scales with multiple rating options may not be specific enough (Salters-Pedneault, 2023).

For student participants, this study employed the Strengths and Difficulties Questionnaire (SDQ; Appendix E) and the Rosenberg Self-Esteem Scale (RSES, Appendix E). The SDQ asks questions like “considerate of other people’s feelings,” “shares readily with other children,” and “generally liked by other children (Goodman, 1997).” Participants’ answer choices are on a

three-point Likert scale ranging from “not true,” somewhat true,” and “certainly true.” Strongly agree, agree, disagree, and strongly disagree are the four-point Likert scale answer options to questions (e.g., “I take a positive attitude towards myself,” “I feel that I have a number of good qualities,” and “At times, I think I am no good at all., Rosenberg, 1965)” on the RSES.

In addition, threats to internal and means to strengthen the external validity of the study were considered. Internal validity is the degree to which a research study creates a trustworthy cause-and-effect relationship. Internal validity depends largely on the study's procedures and how carefully it is performed. Once internal validity is established, it is possible to eliminate alternative explanations (Cuncic, 2022). To protect the internal validity of this research study, a strict study protocol was developed to ensure that participating teachers and therapy dog handlers were consistent in following the same procedures while administering the instrumentation and during the Read to Dogs visits, respectively. Because it was not ethical to withhold the RTD intervention from students with reading challenges, all the participants took part in the intervention and completed pre and post-test instrumentation to measure the changes in dependent variables of self-esteem, the performance of prosocial behaviors and the teacher's perceptions of the overall classroom climate.

Additionally, methods of improving external validity were considered. When external validity is established, the findings can be generalized to similar individuals or populations and how well it can be expected to be effective in other settings. The smaller than suggested G\*Power sample size does limit the generalizability of the study results. Factors that improve external validity are: common threats to external validity are clear inclusion and exclusion criteria, field experiments, and replication (Cuncic, 2022). The inclusion criteria were clearly defined as students with reading challenges as designated by teachers and administrators and

took place in school settings as opposed to a research lab. Detailed information is provided allowing for the research to be easily replicated.

Lastly, although the results of this study were significant, the lack of a control group made it difficult to eliminate confounding variables. Confounding variables are two or more independent variables whose effects are difficult to parse (Taber, 2023). The RTD programs for the study began in late September or early October and continued into January. It is possible that the increases seen in students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate were attributable to factors other than the RTD intervention. Potential confounding variables include the students getting more comfortable and developing relationships with other students in the class and the qualities of and interactions with the teacher as the year progressed, in part or fully could be responsible for the increases in students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate.

### **Delimitations**

Delimitations to this study include the lack of a control group and the smaller participant sample than the G\* Power sample of 79 participants. The researcher did attempt to enlist control groups at each cooperating school but was declined by all. The decision was made to compare participants' pre and post-test scores on the instrumentation rather than try any longer to enlist additional classes at participating schools. As other research found, in research with dogs, no one wanted to be in the control group (Saunders et al., 2017).

Also, the decision to move forward with the experiment with less than the recommended sample size for several reasons. First, the research was delayed due to the COVID-19 pandemic. Schools were either remote or closed to visitors for nearly two years. The researcher had already



done most, if not all, of the research for the study. Finding and researching another topic was not possible due to the time investment.

### **Recommendations for Future Research**

Recommendations for further research include replication of this study with larger sample sizes, addressing the problem with a qualitative methodology, and possibly expanding the research to include subjects other than reading. Additionally, larger sample sizes would ensure that the sample is an accurate representation of the entire population (Kang, 2021). Studies of longer duration, perhaps the full school year or multiple academic years, would allow for investigation of the cumulative long-term effects of RTD on students' self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. Kirnan et al. (2018) conducted a quasi-experimental follow-up study with all students, not just those with reading challenges, to determine an RTD program's effect in a second year. Certified therapy dogs were introduced into every classroom (kindergarten through fifth). The follow-up study found that RTD programs have long-term cumulative benefits for students' reading scores and motivation.

In addition, future research could build on the findings of this study by conducting longitudinal studies. Longitudinal studies could assess the long-term effects of RTD. This would help understand whether the benefits of RTD are sustained over time.

Read to Dogs (RTD) programs generally occur in schools with one student reading to the therapy dog at a time. Occasionally, students take turns reading to the therapy dog while in pairs or groups. A study comparing the results of the different formats (group versus individual reading) could lead to better implementation of the program. For example, if the self-esteem scores increased significantly more for individual readers while prosocial and classroom climate

scores increased for group readers, a combination of both individual and group reading formats might be implemented.

Community centers and public libraries also host RTD programs. The programs are growing increasingly popular, and participation rates for Paws for Reading are expected to increase (Baine, 2019) significantly. Consistent participation in programs held in locations other than schools makes consistent participation more difficult to guarantee; a study of the effectiveness of these RTD programs in improving students' reading skills and self-esteem would be interesting. A comparison of the results of those that occur in community centers or public libraries to results of results in schools could be investigated.

A comparison study of traditional Socio-Emotional Learning (SEL) programs' beneficial effects versus those of participants in RTD programs is another area worthy of investigation. Popular SEL programs are Caring School Community, Character Strong, Move This World, and Open Circle (Woolf, 2024). Cipriano et al. (2024) found that participating students improved academically, functioned better in school, and had better social and emotional skills, attitudes, behaviors, and perceptions of school climate and safety. The improvements were consistent for all grade levels from kindergarten through high school. The programs were equally effective for males and females. The best outcomes occurred when the students' teachers implemented the programs. SEL programs differed in their program features, duration, and number of sessions. Follow-up studies at six months or longer did not reveal any residual effects (Cipriano et al., 2024). These results mirror the statistically significant effects of increased self-esteem, more prosocial behaviors, less stress and difficulty getting along with other students, and improvements in the classroom climate found in this study as a result of participation in RTD programs. The study could use the Rosenberg Self-Esteem Scale and the Strengths and Difficulties Questionnaire to compare the results of the changes.

The positive outcomes from the RTD programs could highlight the need for specialized training for teachers in facilitating SEL programs. Professional workshops could be designed to equip teachers with the skills to effectively equip teachers with the skills necessary to implement and sustain such programs effectively. Involving teachers in the development of RTD programs to support SEL initiatives would lead to greater teacher engagement.

Animal-assisted interventions (AAI) and Read to Dogs (RTD) programs can be used as mechanisms of change. Examining variables such as peer interactions, teacher support, and individual student characteristics would aid in identifying the specific mechanisms through which AAI and RTD programs affect self-esteem and prosocial behaviors. Also, studying the underlying psychological processes that are activated by AAI and RTD programs, such as changes in self-efficacy, self-esteem, social skills, or emotional regulation, would increase the understanding of why RTD and AAI are effective.

Extending the use of therapy dogs to assist students with mathematics anxiety is a potential area of further research. Mathematics anxiety or math anxiety is defined as feelings of nervousness and helplessness when asked to solve a math equation or problem (Wicks, 2021). Negative emotional responses occur that potentially hamper learning and lead to poor math skills (Wicks, 2021). Physiological and psychological symptoms such as increased heart rate, respiration, and nervousness are also symptoms experienced when feeling anxious about math (Ramirez et al., 2013). Math anxiety is acknowledged as a common challenge for students in K-12<sup>th</sup> grades and beyond. Mathematics anxiety has been found to have an adverse effect on confidence, motivation, and achievement (Wicks, 2021). Searches for “math anxiety + therapy dogs” on Google Scholar did not find any previous research.

The use of therapy dogs in managing public speaking anxiety (PSA) symptoms could

also be explored. PSA is considered social anxiety, which refers to the anxiety individuals of all ages may experience when preparing to speak or when speaking in front of others (Dwyer & Davidson, 2012; Sawyer, 2016). A qualitative study (Rousseau, 2024) with middle school students held focus groups and explored the experiences of those students with PSA. They developed a pilot program for implementing the use of therapy dogs to assist with PSA (Rousseau, 2024). The use of therapy dogs to assist in managing PSA could be beneficial for all ages, not just children who experience PSA.

One additional area of future research would expand the use of Animal Assisted Interventions (AAI) in physical rehabilitation facilities for patients recovering from strokes, which are the second most occurring medical condition in modern times. A stroke is hemorrhaging in the brain that, many times, leads to paralysis, loss of speech and motor-related abilities (Hendricks et al., 2002; Omura et al., 2018), depression, decreased quality of life (Valdes & Van der Loos, 2018). Previous research has shown that AAI has psychological and physiological benefits ranging from decreased stress to lower heart rate and blood pressure (Beck & Katcher, 2003; Jalongo et al., 2004; Nimer & Lundahl, 2007; Sable, 1995). The results of a study by Machová et al. (2019) found that changes in participants' blood pressure and heart rate were inconclusive, but on subjective levels felt better. The researchers did note aspects of AAI that were beneficial to patients. First, the presence of the therapy dog created a positive environment, and patients developed more proactive approaches to rehabilitation and better relationships with therapists. Between therapists, more reciprocity was reported. The incorporation of AAI was recommended, as was a future study (Machová et al., 2019).

### **Summary**

Statistics support that nearly 10% of all students have substantial difficulties learning to

read, representing two to four children in an average classroom. (Boyes et al., 2018; Gans et al., 2003). These students experience higher incidences of anxiety and depression that frequently result in internalizing and externalizing behaviors that significantly impact the classroom climate for all students socially and academically (Boyes et al., 2018; Gans et al., 2003). Students with reading difficulties consistently have higher incidences of low self-esteem, self-concept, depression, and anxiety. These internalizing and externalizing behaviors negatively impact social relationships in the classroom and all areas of life (Boyes et al., 2018; Lindeblad et al., 2019). This anonymous quasi-experimental comparative study was designed to investigate the differences in participants' (n=39) self-esteem, prosocial behaviors, and teachers' (n=3) perceptions of the overall classroom climate following participation in Read to Dogs (RTD) programs at elementary and middle schools in East Central New Jersey. The population of interest in this study was students who experienced reading difficulties. The rationale of the study, which was supported by the literature, was that students with difficulty reading experience frustration, anxiety, and depression, resulting in internalizing and externalizing behaviors that affect all students in the classroom socially and academically (Boyes et al., 2018; Gans et al., 2003).

Quantitative research has shown that RTD programs increase students' reading abilities from two to five grade levels depending on the frequency and duration of the programs (Jalongo et al., 2004). Qualitative and anecdotal evidence supports that following participation in RTD programs, students' self-esteem and self-concept improve, leading to more positive interactions with fellow students (Jalongo et al., 2004). The purpose of this study was to add quantitative evidence to add to the qualitative evidence already in existence.

This study posed three research questions. First, do elementary and middle school

students differ in self-esteem scores following participation in Read to Dogs (RTD) programs? Second, do elementary and middle school students differ in prosocial behavior scores following participation in Read to Dogs (RTD) programs? Third, do elementary and middle school teachers' classroom climate scores differ following participation in Read to Dogs (RTD) programs? The results of all three questions were statistically significant.

The results revealed quantitatively that Read to Dogs (RTD) programs increase students' self-esteem, their performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate. An inverse relationship was discovered: as students' self-esteem increased, they reported performing more social behaviors while experiencing less stress and difficulty getting along with other students. Each student's self-esteem and behaviors impact the overall classroom climate, a construct that impacts all individuals in the class as well as achievement (Shann, 1999; Shindler et al., 2004). A connection between classroom climate and achievement has already been established by Shindler et al. (2004, 2016). Recognizing the connections between self-esteem, the performance of more prosocial behaviors, less stress, the improved classroom climate, and achievement leads to better outcomes for all students.

Examining the connections between Read to Dogs (RTD) programs, students' self-esteem, the performance of prosocial behaviors, and teachers' perceptions of the overall classroom climate advances the theoretical concepts and theories that guided this study that were the Biophilia Hypothesis, John Bowlby's Attachment Theory, Carl Rogers' Client-Centered Theory, and David Elkind's Adolescent Egocentrism. The Biophilia Hypothesis is the idea that because of the positive feelings associated with being close to other living things, humans have an inherent drive to do so (Mills & Hall, 2014; Wilson, 1984). Also asserted is that the presence of friendly animals has a calming effect on humans, particularly children. This increased

calmness results in increased alertness and attention, ultimately enhancing concentration and persistence in the face of challenging tasks. Bowlby's attachment theory is evidenced in the emotional connection formed between participants and TDs in RTD programs. Evidence suggests that companion animals, dogs, in particular, are thought to provide a non-threatening yet socially supportive and interactive audience for children when practicing their oral reading skills (Friesen, 2010). These secure attachments between students and the TD have proven to reduce stress. Less stress allows students to relax and focus on learning to read (Beetz et al., 2012). This study found that decreased stress allows students to learn and also increases self-esteem, which reduces internalizing and internalizing behaviors, allowing for more prosocial behaviors and an improved overall classroom climate.

The quiet, attentive, and nonjudgmental audience a therapy dog (TD) provided for readers Rogers's core components of unconditional positive regard, empathy, and congruence (Friesen, 2009; Jenkins et al., 2014). When students had difficulty reading, the genuine caring, empathy, and non-judgment offered by a TD made the challenging task of reading easier. The study's results showed statistically significant increases in self-esteem as measured by the Rosenberg Self-Esteem Scale (RSES), the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate.

Two concepts within Elkind's Adolescent Egocentrism theory - the "Imaginary Audience" and the "Personal Fable" assert that young adolescents are moderately more self-conscious or concerned with how others perceive them. (Elkind & Bowen, 1979, p. 38). Adolescents also believe that their circumstances are unique and that no one can understand or empathize with what they are experiencing (Elkind, 1967, p. 1031). These concerns about how they are perceived are heightened for those who experience difficulty reading, which results in

increased frustration, anxiety, and a reluctance to read (Jalongo et al., 2004; Kirnan et al., 2016). The therapy dog (TD) does not correct pronunciation, hurry the reader, or ask questions; the relationships between readers and the TDs allow the readers to be less self-conscious while practicing their reading skills (Friesen, 2010). Because all students in the class participated in the RTD, students do not feel so alone in their difficulty learning to read.

Several delimitations and limitations affected how the study was conducted. A pre and post-test format was used because a control group was not available. The lack of a control group makes it more difficult to definitively know that it was the treatment (Read to Dogs program) that led to the significant results (Moser, 2020). Also, the smaller than optimal sample size ( $n=39$ ) versus the recommended G\*Power recommended 79 participants. Thus, it is not known if this sample accurately represents the entire population (Kang, 2021). Lastly, due to breach of confidentiality concerns expressed by parents through the participating teachers, a confidential study format was used rather than an anonymous format. The concerns over confidentiality limited the possibility for comparisons of grade, age, and gender.

There are several recommendations for future study. First, a larger sample size and using locations other than schools would ensure that the sample accurately represents the entire population (Kang, 2021). Second, a confidential rather than anonymous study would allow for comparisons of age, grade, and gender. Lastly, possibly expanding the research to include subjects other than reading. For example, extending the use of therapy dogs to assist students with mathematics anxiety or public speaking anxieties are potential areas of further research.



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# Appendix A.

## IRB Approval Letter

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**LIBERTY UNIVERSITY**  
INSTITUTIONAL REVIEW BOARD

July 10, 2023

Kimberley Brush  
Bridgette Hester

Re: IRB Approval - IRB-FY22-23-1464 Read to Dogs, Self-Esteem, Prosocial Behaviors, and Teachers' Perceptions of the Classroom Climate: A Quantitative Comparative Study

Dear Kimberley Brush, Bridgette Hester,

We are pleased to inform you that your study has been approved by the Liberty University Institutional Review Board (IRB). This approval is extended to you for one year from the following date: July 10, 2023. If you need to make changes to the methodology as it pertains to human subjects, you must submit a modification to the IRB. Modifications can be completed through your Cayuse IRB account.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects: 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

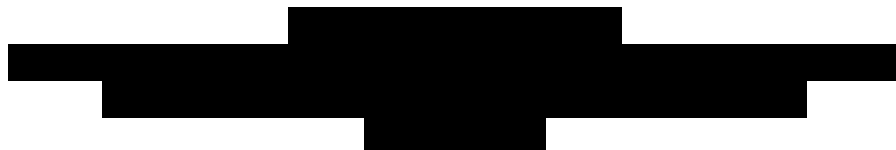
Sincerely,

**G. Michele Baker, PhD, CIP**  
Administrative Chair  
Research Ethics Office

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Appendix B.

Site Authorizations



November 9, 2021

Ref: Permission to recruit participants.

Dear Ms. Brush,

Please allow this letter to serve as granting you permission to recruit MCSPCA volunteers and staff for a study on the Impacts of Therapy Dogs.

Executive Director

December 5, 2022

Kimberley Brush  
Doctoral Candidate  
Liberty University  
[Kbrush1@liberty.edu](mailto:Kbrush1@liberty.edu) 732.233.3548

Dear Kimberley Brush,

After careful review of your research proposal entitled “The effects of Read to Dogs programs on students’ self-esteem, the performance of prosocial behaviors, and the overall classroom climate.” We have decided to grant you permission to contact parents/guardians of students who participate in the Read to Dogs program to solicit voluntary participation in your study at the Holmdel Village School.

Check the following boxes, as applicable:

- I grant permission for Kimberley Brush to contact the parents/guardians of students who participate in our Read to Dogs (RTD) program to solicit voluntary participation in her research study.
- I will not provide potential participant information to Kimberley, but agree to provide her study information to students who participate in our Read to Dogs program on her behalf.
- I am requesting a copy of the results upon study completion and/or publication.

Sincerely,





**ROY GORDON COOPER ELEMENTARY SCHOOL**

Kimberly Brush  
Doctoral Candidate  
Liberty University  
KBrush1@liberty.edu  
757.233.3548

Dear Kimberly Brush,

After a final review of your research proposal entitled "The efficacy of Read to Dogs programs on students' self-esteem, the performance of prosocial behaviors, and the overall classroom climate." We have decided to grant you permission to invite students who participate in the Read to Dogs program to participate in your study at the following school:

Check the following boxes, as applicable:

- I grant permission for Kimberly Brush to contact students who participate in our Read to Dogs (RTD) program to invite them to participate in her research study.
- I will not provide potential participant information to Kimberly, but agree to provide her study information to students who participate in our Read to Dogs program on her behalf.
- I am requesting a copy of the results upon study completion and/or publication.

Respectfully submitted,

[Redacted Signature]

[Redacted Name]

[Redacted Title]

[Redacted Address]

1 December 2022

Kimberley Brush  
Doctoral Candidate  
Liberty University  
[Kbrush1@liberty.edu](mailto:Kbrush1@liberty.edu)  
732.233.3548

Dear Kimberley Brush,

After careful review of your research proposal entitled “The effects of Read to Dogs programs on students’ self-esteem, the performance of prosocial behaviors, and the overall classroom climate.” We have decided to grant you permission to invite students who participate in the Read to Dogs program to participate in your study at the [REDACTED]

Check the following boxes, as applicable:

I grant permission for Kimberley Brush to contact students who participate in our Read to Dogs (RTD) program to invite them to participate in her research study.]

I will not provide potential participant information to Kimberley, but agree to provide her study information to students who participate in our Read to Dogs program on her behalf.

I am requesting a copy of the results upon study completion and/or publication.

Sincerely,

[REDACTED]

## Appendix C.

### Instrumentation Permission

#### Rosenberg Self\_Esteem Scale

The screenshot shows a web browser window displaying the University of Maryland Department of Sociology website. The page title is "Rosenberg Self Esteem Scale". The header includes the University of Maryland logo and the Department of Sociology name. A navigation menu is visible with options like "About Us", "Undergraduate", "Graduate", "Research", "Careers", "Equity & Inclusion", and "Our Faculty". The main content area contains the following text:

The Rosenberg Self-Esteem Scale is perhaps the most widely used self-esteem measure in social science research. Dr. Rosenberg was a Professor of Sociology at the University of Maryland from 1975 until his death in 1992. He received his Ph.D. from Columbia University in 1953, and held a variety of positions, including at Cornell University and the National Institute of Mental Health, prior to coming to Maryland. Dr. Rosenberg is the author or editor of numerous books and articles, and his work on the self-concept, particularly the dimension of self-esteem, is world-renowned.

The Rosenberg Self-Esteem Scale is now in the public domain, meaning you may use it without charge and without notifying the Sociology Department. This permission extends to making translations or adaptations as you see fit, consistent with traditional scholarly attribution practices. The department does not maintain any information on the scale beyond what is linked below, and cannot advise on its use.

[Self-Esteem: What is it?](#)  
[Rosenberg Scale FAQ](#)  
[Using the Self-Esteem Scale](#)

Last modified: 03/02/2022 - 11:29 am

At the bottom of the page, there is contact information for the Department of Sociology and links for "GIVE TO SOCIOLOGY", "SOCY CALENDAR", "UMD STAFF DIRECTORY", "ALUMNI", and "UMD WEB ACCESSIBILITY".

#### Strengths and Difficulties Permission

The screenshot shows a web browser window displaying the youth@mind website. The page title is "Strengths and Difficulties Questionnaire". The header includes the youth@mind logo. A navigation menu is visible with options like "What is it?", "Questionnaires etc: View & Download", "Scoring the SDQ", "Uses", "SDQ vs other Q's", "Articles", and "Norms". The main content area contains the following text:

The SDQ is part of the DAWBA family of mental health measures. [Read about DAWBA here](#). As of September 2016, you can [search 4000 SDQ related articles](#) from over 100 countries.

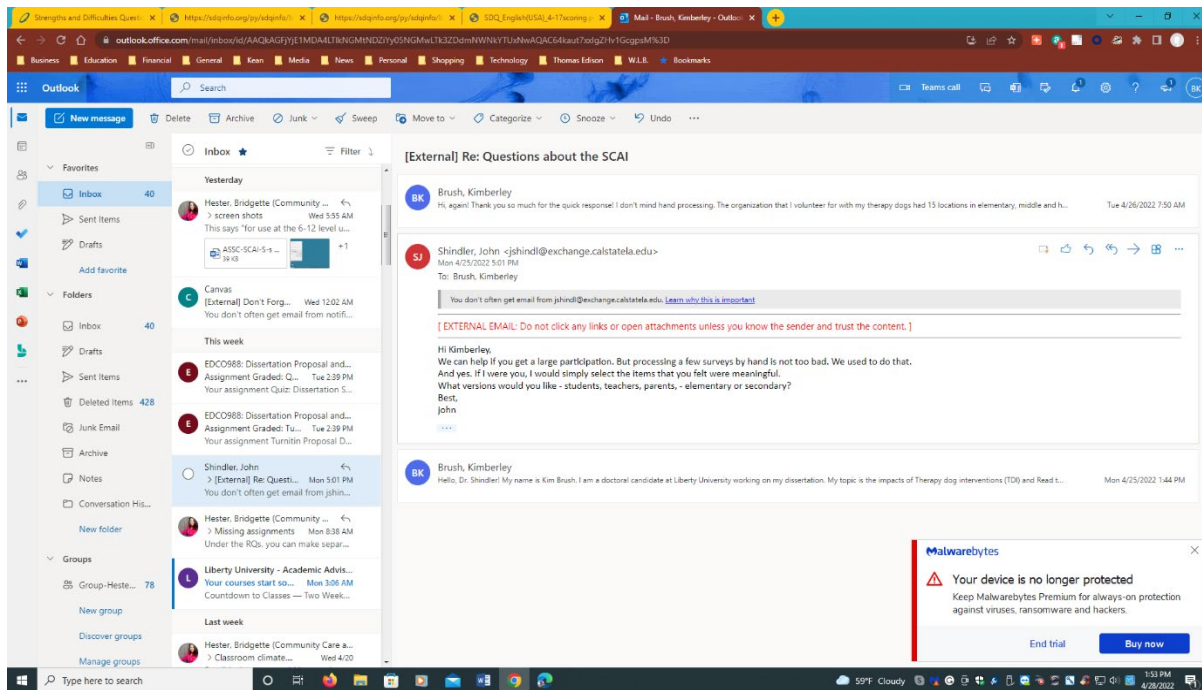
# SDQ

## Information for researchers and professionals about the Strengths & Difficulties Questionnaires

**COPYRIGHT NOTICE:**  
 Please note that Strengths and Difficulties Questionnaires, whether in English or in translation, are copyright documents that are not in the public domain. As such, they may not be modified in any way (e.g. changing the wording of questions, adding questions or administering only subsets of questions). This is to ensure that the SDQ is fully comparable across studies and settings. Similarly, to ensure high quality and consistency, unauthorized translations are not permitted. Paper versions may be downloaded and subsequently photocopied without charge by individuals or non-profit organizations provided they are not making any charge to families.

Users are not permitted to create or distribute electronic versions for any purpose without prior authorization from youth@mind. If you are interested in making translations or creating electronic versions you MUST first contact [support@youthmind.com](mailto:support@youthmind.com).

# Classroom Climate Instrumentation Permission



## Appendix D.

## Informed Consent, Child Assent Form, &amp; Parental Consent Forms

**Informed Consent**

Kim Brush  
 Doctoral Candidate  
 KBrush1@Liberty.edu

Bridgette Hester, Ph.D.  
[BHester14@Liberty.edu](mailto:BHester14@Liberty.edu)  
 Faculty Advisor

Liberty University Institutional Review Board  
 1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515  
[irb@liberty.edu](mailto:irb@liberty.edu)

**Title of Project:** Read to Dogs, Self-Esteem, Prosocial Behaviors, and Teachers' Perceptions of the Classroom Climate: A Quantitative Comparative Study

**Principal Investigator:**

Kimberley Brush  
 Liberty University  
 Community Care and Counseling- Traumatology  
 School of Behavioral Sciences

You are invited to be in a research study exploring if and to what extent students' Self-Esteem, the performance of Prosocial Behaviors, and the Teacher's Perceptions of the Overall Classroom Climate differ as a result of participation in RTD

You are being asked to be in this study because your child participates in a Read to Dogs (RTD) program.

We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by:

Kimberley Brush  
 Doctoral Candidate  
 Community Care and Counseling, Traumatology  
 School of Behavioral Sciences

**Background Information**

The purpose of this study is to investigate if participation in Read to Dogs programs has benefits



beyond improving reading ability. More specifically, if and to what extent do students differ in self-esteem, prosocial behaviors, and perceptions of the overall classroom climate after participation in Read to Dogs programs.

**Procedures:**

If you agree to be in this study, you would be asked to do the following things:

If you take part in the study, you will be asked to complete 4 short questionnaires at the beginning of the study and 3 at the completion. This should take approximately 10-15 minutes.

Participate in the Read to Dogs program as

**Risks and Benefits of being in the Study**

Risks associated with this study are no more than would be encountered in everyday life.

**Benefits**

The benefits of participation are the thanks of a very grateful doctoral student.

**Confidentiality:**

This study will be anonymous. No names will be required on any questionnaires and schools will not be identified.

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

**Voluntary Nature of the Study:**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University, any participating school, or the researcher. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**Contacts and Questions:**

The researcher conducting this study is Kim Brush. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [REDACTED]

[REDACTED] You may also contact my Faculty Advisor, Dr. Brigitte Hester at [REDACTED]

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Human Subject Office, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*You will be given a copy of this information to keep for your records.*

**Statement of Consent:**

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of parent or guardian: \_\_\_\_\_ Date: \_\_\_\_\_  
(If minors are involved)

Signature of Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

Read to Dogs, Self-Esteem, Prosocial Behaviors, and Teachers' Perceptions of the Classroom Climate: A Quantitative Comparative Study

Kimberley Brush  
 Liberty University  
 Community Care and Counseling- Traumatology  
 School of Behavioral Sciences

You are invited to be in a study to research if and to what extent participants in self-esteem, the performance of prosocial behaviors, and teacher's perceptions of the overall classroom climate differ as a result of participation in Read to Dogs Programs

You were selected as a possible participant because you are a teacher whose class participates in a Read to Dogs or a volunteer therapy dog handler. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Kimberley Brush  
 Doctoral Candidate  
 Community Care and Counseling, Traumatology  
 School of Behavioral Sciences

**Background Information**

The purpose of this study is to investigate if participation in Read to Dogs programs has benefits beyond improving reading ability. More specifically, if and to what extent do students differ in self-esteem, prosocial behaviors, and perceptions of the overall classroom climate after participation in Read to Dogs programs.

**Procedures:**

If you agree to be in this study, you would be asked to do the following things:

For teachers –

You will be asked to complete a short questionnaire at the beginning of the study.

You will be asked to administer 4 short questionnaires to your students at the beginning of the study and 3 at the completion of the study. These should take no more than 10-15 minutes.

For volunteer therapy dog handlers-

You will be asked to complete one short questionnaire at the beginning of the study.

**Risks and Benefits of being in the Study**

Risks associated with this study are no more than would be encountered in everyday life.

**Benefits**

The benefits of participation are the thanks of a very grateful doctoral student

**Confidentiality:**

This study will be anonymous. No names will be required on any questionnaires and schools will

not be identified.

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

**Voluntary Nature of the Study:**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University, any participating school, or the researcher. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

**Contacts and Questions:**

The researcher conducting this study is Kim Brush. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [REDACTED]

[REDACTED] You may also contact my Faculty Advisor, Dr. Brigitte Hester at [REDACTED]

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Human Subject Office, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*You will be given a copy of this information to keep for your records.*

**Statement of Consent:**

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of parent or guardian: \_\_\_\_\_ Date: \_\_\_\_\_  
(If minors are involved)

Signature of Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

### **Child Assent to Participate in a Research Study**

Hello!

My name is Kim Brush. I am writing to ask you to participate in a study that I am doing so that I can complete my doctorate . The name of the study is the Differences in participants 'self-esteem, the performance of prosocial behaviors, and the teachers' perceptions of the overall classroom climate as a result of participation in Read to Dogs programs.

The purpose of this study is to find out if participating in Read to Dogs programs has benefits beyond improving reading skills. I want to know if there are differences in the self-esteem and performance of prosocial behaviors of participants as well as the teachers' perceptions of the overall classroom climate following participation.

You are being asked to be in this study because you participate in a Read to Dogs (RTD) program.

If you take part in the study, you will be asked to complete 4 short questionnaires at the beginning of the study and 3 at the completion. This should take approximately 10-15 minutes.

The study is completely anonymous. This means that your name will not be needed on any of the questionnaires.

***Do I have to be in this study?***

No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

***What if I have a question?***

You can ask questions at any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

Signing your name below means that you want to be in the study.

---

Signature of Child/Witness

Date

Kim Brush  
Doctoral Candidate

Bridgette Hester, Ph.D.

Faculty Advisor

Liberty University Institutional Review Board  
1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515  
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## Appendix E.

## Instrumentation

**Rosenberg Self-Esteem Scale****Instructions**

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

2. At times I think I am no good at all.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

3. I feel that I have a number of good qualities.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

4. I am able to do things as well as most other people.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

5. I feel I do not have much to be proud of.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

6. I certainly feel useless at times.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

8. I wish I could have more respect for myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

10. I take a positive attitude toward myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

### Strengths and Difficulties Questionnaire

P or T 4-10

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of the child's behavior over the last six months or this school year.

Child's name ..... Male/Female  
Date of birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children, for example toys, treats, pencils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often loses temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, prefers to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally well behaved, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries or often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, depressed or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often offers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets along better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good attention span, sees work through to the end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Signature ..... Date .....

Parent / Teacher / Other (Please specify):

**Thank you very much for your help**

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## Strengths and Difficulties Questionnaire

S 11-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you over the last six months.

Your name.....

Male/Female

Date of birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am restless, I cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get a lot of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually share with others, for example CD's, games, food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get very angry and often lose my temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would rather be alone than with people of my age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually do as I am told	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have one good friend or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I fight a lot. I can make other people do what I want	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often unhappy, depressed or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people my age generally like me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am easily distracted, I find it difficult to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am nervous in new situations. I easily lose confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often accused of lying or cheating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other children or young people pick on me or bully me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often offer to help others (parents, teachers, children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think before I do things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take things that are not mine from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get along better with adults than with people my own age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have many fears, I am easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I finish the work I'm doing. My attention is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Your Signature .....

Today's Date .....

**Thank you very much for your help**



# Classroom Climate Survey

## Classroom Climate Quality Analytic Assessment Instrument Secondary Student Version

### » [Assessment Protocol](#)

(Please read before conducting any assessment process.)

### Use of the CCAI-S-G

*The enclosed analytic-trait instrument is intended for use by authorized individuals only. Users must obtain copyright authorization through a site license from the Alliance for the Study of School Climate (ASSC formerly WASSC). This instrument is intended for use at the 6-12 level use by teachers, staff and administrators. Please use the CCAI-S-S when surveying student perceptions of classroom climate. For whole school level assessment we encourage you to use one of the ASSC SCAI school assessment instruments.*

### Directions:

Rate each item below. For each item there are 3 descriptions. Select the rating that best describes the current state at your school as a whole - Level 1 (high), 2 (middle) or 3 (low). If you feel that the practices at your school rates between two of the descriptions provided then select the middle level option. Each item should receive only 1 rating/mark.

1. Discipline Environment					
LEVEL - 3 (HIGH)		LEVEL - 2 (MIDDLE)		LEVEL - 1 (LOW)	
HIGH	HIGH-MIDDLE	MIDDLE	MIDDLE-LOW	LOW	
<b>1. a</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School-wide discipline policy is consistently applied.		School-wide discipline policy is used by some staff.		School-wide discipline policy exists in writing only.	
<b>1. b</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is evident from student behavior that there are clear expectations and consistency in the discipline policy.		In many classes there are clear expectations and most teachers are fair and unbiased.		Students have to determine what each teacher expects and behavioral interventions are defined by a high level of subjectivity.	
<b>1. c</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

maintains a positive affect, and follow-through with consequences in a calm and non-personal manner.	days he/she feels the need to complain about the class and/or get fed up with the "bad kids."	angered by students and there is a sense of antagonism between the class and the teacher.
<b>1. e</b>	<input type="radio"/>	<input type="radio"/>
Maximum use of student-generated ideas and input.	Occasional use of student-generated ideas.	Teacher makes the rules and students should follow them.
<b>1. f</b>	<input type="radio"/>	<input type="radio"/>
Teacher considers discipline within the lens of basic student needs that must be met for a functional class.	Teacher has some sensitivity to student needs, but the primary goal of classroom management is control.	Teacher views all student misconduct as disobedience and/or the student's fault.
<b>1. g</b>	<input type="radio"/>	<input type="radio"/>
Teacher-student interactions could be typically described as supportive and respectful.	Teacher-student interactions could be typically described as fair but teacher-dominated.	Teacher-student interactions are mostly teacher-dominated and reactive.
<b>1. h</b>	<input type="radio"/>	<input type="radio"/>
When disciplining students, teacher typically focuses on the problematic behavior, not the student as a person.	When disciplining students, teacher is typically assertive yet often reactive, and gives an overall inconsistent message.	When disciplining students, teacher is typically personal and often antagonistic.
<b>1. i</b>	<input type="radio"/>	<input type="radio"/>
Management strategies consistently promote increased student self-direction over time.	Management strategies promote acceptable levels of classroom control over time, but are mostly teacher-centered.	Management strategies result in mixed results: some classes seem to improve over time, while others seem to decline.
<b>1. j</b>	<input type="radio"/>	<input type="radio"/>
Teacher successfully creates a sense of community.	Teachers successfully create a working society in their classes.	Teachers create a competitive environment.

2. Student Interactions					
LEVEL - 3 (HIGH)		LEVEL - 2 (MIDDLE)		LEVEL - 1 (LOW)	
HIGH	HIGH-MIDDLE	MIDDLE	MIDDLE-LOW	LOW	
<b>2. a</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students feel a sense of community and the classroom is defined by a positive feeling among class members.		Students generally like the teacher but the class is just another place to learn some content.		Students feel little or no sense of affiliation with the teacher or the other students in the class.	
<b>2. b</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Various cultures and sub-groups blend, interrelate and feel like valid members of the classroom community		Various sub-groups avoid each other and do not share the same sense of legitimacy.		Various sub-groups are hostile to one another	



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Most students feel a responsibility to promote the collective success of all the students in the class.		Most students feel a sense of personal responsibility for their own learning.		Students feel little responsibility for their own success and/or see other students as competition.	
<b>2. e</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Popular students feel obliged but not entitled to act as leaders.		Popular kids treat the other popular kids in the class well.		Popular kids use their social capital to oppress the less popular students.	
<b>2. f</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is readily apparent that an effort is made by the teacher to promote positive interactions among students, and there is evidence that it is making a real difference.		The teacher has made a sincere effort to promote positive interactions among students, and it has made some difference.		The teacher has made little or no deliberate effort to promote positive interactions among the students in his/her class.	
<b>2. g</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most students in the class take on leadership roles willingly and regularly.		Leaders in the class come from a small clique of students.		Students avoid leadership for fear of being labeled as "goody goodies" or teacher's pets.	
<b>2. h</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students in the class believe their gifts are validated and recognized in a meaningful and systematic way.		Students in the class believe there is some validation of uniqueness and individual recognition, but it is not a clear priority.		The class structure promotes the recognition of the smarter and more talented students.	
<b>2. i</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most students expect to be given ownership over classroom decisions that affect them		Most students are upset when classroom rights are withdrawn, but typically take little action		Most students assume that they have few or no rights in the class.	

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<b>3. Learning/Assessment</b>					
<b>LEVEL - 3 (HIGH)</b>		<b>LEVEL - 2 (MIDDLE)</b>			<b>LEVEL - 1 (LOW)</b>
<b>HIGH</b>	<b>HIGH-MIDDLE</b>	<b>MIDDLE</b>	<b>MIDDLE-LOW</b>	<b>LOW</b>	
<b>3. a</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessment targets are clear and attainable for learners.		Most high-achieving students can find a way to meet the teacher's target.		Students see grades as relating to personal or accidental purposes.	
<b>3. b</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instruction/Assessment promotes student locus of control, sense of belonging, and sense of competence.		Instruction/Assessment is most often focused on relevant learning, yet mostly rewards the high-achievers.		Instruction/Assessment is focused on bits of knowledge that can be explained and then tested.	
<b>3. c</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student-controlled behavior (investment, process, effort, etc) is rewarded and even assessed when possible.		Student-controlled behavior is verbally rewarded.		Only quantifiable academic and athletic outcomes are rewarded.	



Instruction is dynamic, involving, learner-centered, and challenging.	Instruction is mostly based on relevant ideas but often seems to be busy-work.	Instruction is mostly "sit and get."
<b>3. f</b>	<input type="radio"/>	<input type="radio"/>
Students learn to work cooperatively and as members of teams.	Some teachers buy into the idea of cooperative learning.	Cooperative learning is seen as leading to chaos and cheating.
<b>3. g</b>	<input type="radio"/>	<input type="radio"/>
Students are given systematic opportunities to reflect on their learning progress.	Mostly higher-level students are given occasional opportunities to reflect on their learning in some classes.	Teaching is seen as providing maximum input, and little opportunity for reflection exists.
<b>3. h</b>	<input type="radio"/>	<input type="radio"/>
Students are seen as the primary users of assessment information, and assessment is used for the purpose of informing the learning process and is never used to punish or shame.	Assessment is seen as something that occurs at the end of assignments. Grades are used primarily for student-to-student comparison.	Assessment is used to compare students to one another and/or to send a message to lazy students.
<b>3. i</b>	<input type="radio"/>	<input type="radio"/>
Classroom dialogue is characterized by higher-order thinking (e.g., analysis, application, and synthesis).	Classroom dialogue is active and engaging but mostly related to obtaining right answers.	Classroom dialogue is infrequent and/or involves a small proportion of students.
<b>3. j</b>	<input type="radio"/>	<input type="radio"/>
Students consistently feel as though they are learning subjects in-depth.	Students are engaged in quality content, but the focus is mostly on content coverage.	Students feel the content is only occasionally meaningful and rarely covered in-depth.
<b>3. k</b>	<input type="radio"/>	<input type="radio"/>
Teacher promotes the view that intelligence and ability are a function of each students' effort and application, and are not fixed. The major emphasis is placed on the process over the product.	Teacher promotes the view that effort has a lot to do with how much students are able to accomplish. The major emphasis is placed on working to produce good products.	Teachers promote the view that intelligence and ability are fixed/innate traits and not all students have what it takes. The major emphasis is on the comparison of products/grades.

4. Attitude and Culture					
LEVEL - 3 (HIGH)		LEVEL - 2 (MIDDLE)		LEVEL - 1 (LOW)	
HIGH	HIGH-MIDDLE	MIDDLE	MIDDLE-LOW	LOW	
4. a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students feel as though they are part of a community.		Students feel as though they are part of a society.		Students feel as though they are visitors in a building.	
4. b	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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4. d	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students speak about the classroom in proud, positive terms.		Students speak of the classroom in neutral or mixed terms.		Students denigrate the classroom when they refer to it.	
4. e	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most students feel listened to, represented, and that they have a voice.		Most students see some evidence that some students have a voice.		Most students feel they have very little voice when at school.	
4. f	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most students feel a sense of belonging to something larger.		Most students see some evidence that efforts are made to promote school spirit.		Most students feel alone, alienated and/or part of a hostile environment.	
4. g	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher shares commonly high expectations for all students.		Teacher has high expectations for students who show promise.		Teachers often expresses doubts about the ability of some students.	
4. h	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students feel welcome and comfortable in talking to the teacher.		Some students feel comfortable talking to the teacher.		Students assume the teacher does not have any interest in their problems.	
4. i	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classroom has rituals and traditions that create a sense of belonging		Classroom has routines, but little sense of belonging.		No effort is make to create a sense of belonging.	

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[https://web.calstatela.edu/centers/schoolclimate/assessment/classroom\\_survey.html](https://web.calstatela.edu/centers/schoolclimate/assessment/classroom_survey.html)

## Appendix F.

### Demographic Questionnaires

#### Teacher Questionnaire

**Please complete one questionnaire for each class that participates in the RTD program.**

1. As a teacher, how long have you participated in this RTD program?
2. What is the total number of students in your class?
3. How many of your students participate in the RTD program?
4. How often are the therapy dog visits (e.g. once a week/month?)
5. How long does each student read to the dog?

Approximately how long does each visit last?

The purpose of the teacher questionnaire is to gain general knowledge about the teachers' experiences with Read to Dog programs. For example, are there greater differences in prosocial behaviors in classes with more experienced teachers or more frequent visits?

#### Therapy Dog Handler Questionnaire

**Please complete one questionnaire for each Read to Dog program that you participate in.**

1. How long have you participated in Read to Dogs (RTD) or Therapy Dog Interactions (TDI) programs?
2. How many schools do you visit?
3. How many dogs do you participate with? Assuming one dog per visit?
4. Name of Dog(s), breed(s) and age(s)

The purpose of the therapy dog handler questionnaire is to gain general

knowledge about the therapy dog team's experience with Read to Dog programs. For example, are there greater differences in the overall classroom climate with more experienced therapy dog and handler teams?

### **Student Demographic Questionnaire**

**Age:** \_\_\_\_\_

**Grade:** \_\_\_\_\_

**Please circle one: BOY                      GIRL**

The purpose of the Student Demographic Questionnaire is to gain knowledge about the ages, grades, and identified genders of the participants. iso-



## Appendix G.

### Power Analysis

