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SOCIAL, EMOTIONAL, AND COGNITIVE BENEFITS OF ANIMAL-ASSISTED
THERAPY FOR STUDENTS WITH DISABILITIES

A MASTER'S THESIS
SUBMITTED TO THE FACULTY
OF BETHEL UNIVERSITY

BY
ROCHELLE D. MOLDE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

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BETHEL UNIVERSITY

SOCIAL, EMOTIONAL, AND COGNITIVE BENEFITS OF ANIMAL-ASSISTED
THERAPY FOR STUDENTS WITH DISABILITIES

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MAY 2018

APPROVED

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To my mom, Gail, who has sadly passed from the realms of this world, but now rejoices in the presence of God's heavenly kingdom. She has guided me with love, patience, and prayer, and taught me that it is ok to fall, for it is only in doing so that I can learn how to fly.

To my husband, Jon, who vacuumed, did the dishes, and folded the laundry so that I would have time to write this; oh yea, and cooked dinner that one night.

To my supportive children, Alyssa & Mason, who have understood the sacrifice of time I have made in pursuing my goals, who encouraged me to do my best, and who didn't complain when I had to write this; well, maybe a little bit.

To my dog, Lily, my nonjudgmental companion who is always right by my side offering a paw to hold.

Love you all!!

Abstract

Research has shown that incorporating the use of a therapy dog in a school setting can reduce stress and anxiety, lower blood pressure, promote positive social interactions among peers, boost confidence, and increase motivation for learning in certain academic areas such as reading. The presence of a therapy dog generates an overall calming atmosphere in the classroom, resulting in students who are more willing to participate, engage in empathy, and display responsibility. The author of this thesis researched the social, emotional, and cognitive benefits of utilizing a therapy dog in the school setting with students with disabilities. A literature review was conducted to determine patterns of beneficial components of using a therapy dog in the classroom, recognize risks of using a therapy dog in the classroom, and to glean ideas for using therapy dogs effectively in schools for students with disabilities.

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CHAPTER I: INTRODUCTION

History of Animal-Assisted Therapy

For centuries people have noted that animals have a positive effect on human functioning and have been attributed to promoting a person's overall well-being (Nimer & Lundahl, 2007). In ancient Greece, people kept dogs in their temples to lick their wounds to aid in the healing process (Thurston, 1996). In Belgium during the 9th Century, disabled members of the community cared for the town animals. In 18th century England, mentally ill patients strolled through lovely gardens with small animals as companions. History has documented that animals have been used in hospitals to promote healing and mood, as well as offer friendly companionship. Florence Nightingale even used pets to provide comfort for her patients after discovering the power of healing animals can have on people (Boe, 2008).

Animals help the blind see, search for and rescue people, herd cattle, and entertain us at the circus. A chosen few have even had the honor of wearing a badge and assisting police officers in keeping communities safe around the world. While all of these duties are important and vital to our society, one the most important jobs an animal can have is motivating students with disabilities in learning environments while offering non-judgmental support, reducing their stress levels, and improving their overall emotional stability.

The first documented case of animal-assisted therapy is credited to Dr. Boris Levinson. In 1962, Levinson discovered that a child under his care made significant progress when he brought his dog, Jingles, with him to the sessions. This circumstantial meeting of Jingles and the child was credited to the overall emotional rehabilitation of the

child. As a result, Levinson became an advocate for encouraging other professionals to use animals for therapeutic purposes (Levinson, 1969).

Levinson paved the way for further research into the effects of animal assisted therapy (AAT). He is often referred to in literature as the pioneer of AAT with children. Levinson found that the dog acted as a “social lubricant” between the therapist and the child (Friesen, 2009). His discoveries and further investigation into the impact of using a dog as a way to help children feel more relaxed, less anxious, and better able to communicate about stressful or uncomfortable topics, led to an increase in the use of therapy dogs in schools. Since then, research has suggested numerous benefits in using therapy dogs to help children socially, emotionally, and academically. Countless research investigations have been conducted examining the benefits of AAT, but many of these lacked empirical value. Empirically based, peer-reviewed research on the effects of AAT has only recently become more prevalent.

What Is Animal-Assisted Therapy?

Many children struggle in school, especially those with disabilities. Repeated failures result in easily feeling defeated and overwhelmed. Students with IEPs generally have several interventions in place to help them with attention issues, deficits in academic skills, behavior struggles, or social challenges. AAT is a creative intervention to help students with disabilities build social skills, learn empathy and responsibility, and increase confidence in academic situations such as reading.

In a quantitative study conducted by Nimer and Lundahl in 2007, AAT is defined as “the deliberate inclusion of an animal in a treatment plan which is designed to accomplish predefined outcomes best addressed through the exposure of the animal” (p.

225). In AAT, the dog's owner/handler is generally a volunteer who works collaboratively with teachers or therapists to help children meet their goals. Animals used in AAT are required to go through training and registration with their handler/owner. Animal-Assisted Activities (AAA), on the other hand, provide opportunities for motivational or educational benefits which can occur in many different settings and are led by specially trained professionals or volunteers as well as the animal involved (Friesen, 2009). The activities that people participate in are aimed to enhance their quality of life (American Veterinary Medical Association, 2014). The biggest differences between AAT and AAA are that AAA do not include specific goals or a treatment plan and is often more spontaneous and less regimented than AAT. During AAA, an animal may simply visit and is not obligated to follow a specific lesson or therapeutic plan.

It is important to note that service animals are not the same as therapy animals. The Americans with Disabilities Act (ADA) defines service dogs as "animals that are individually trained to do work or perform tasks for people with disabilities." (ADA.gov, 2010). Service animals are specifically trained to help directly with the unique disability of a person such as helping the blind and deaf, or alerting a person of an upcoming seizure (Pet Partners, 2012). They work in conjunction with their disabled owner and generally only interact with their handler/owner. Owners generally discourage people from petting their animal since it may interfere with their duties. Dogs are the most common type of service animal.

In contrast, "therapy animals go with their owners to volunteer in settings such as schools, hospitals, and nursing homes. Therapy animals and their owners work as a team to improve the lives of people" (American Kennel Club, 2018). Similar to service

animals, therapy dogs and their owner/handler must go through training and also become registered. Therapy dogs should be well socialized, non-aggressive, and be able to handle lots of activity and loud or startling noises (Thompson, 2009). Therapy dogs and their owners must be insured, to protect them if someone were to be injured by the dog.

Parental permission should always be given before children partake in AAT at school.

The biggest difference between service animals and therapy animals is that the general public is encouraged to interact with the therapy dog as part of the therapeutic process, and the public is discouraged to interact with service dogs because it may distract them from performing their job.

Human-Animal Connection

Human connection with animals continues to exist today and possibly in more abundant venues. Animals have crept their way from hospitals, clinics, temples, and homes into schools and campuses across the world. The strong emotional, social, and cognitive benefits of animals have been witnessed for many years. The time has come for a new era of animal power to be practiced, studied, and researched with the most precious of our population: students with disabilities. While Greeks used animals to lick their wounds to promote physical healing, research studies have also shown that animals can “lick” invisible wounds caused by emotional, social, or academic struggles. Research on AAT is rapidly increasing, due to the many positive benefits documented since the Levinson case in 1962. More recent studies on the positive benefits of AAT have been completed by researchers such as Sams, Fortney, and Willenbring (2006), Friesen (2009), Beetz, Uvnas-Moberg, Julius, and Kotrschal (2012), Berry, Borgi, Francia, Alleva, and Cirulli (2013), and Jalongo (2015). AAT is not just partial to dogs. Dolphins, cats, pigs,

birds, elephants, and many small pets have been credited in providing assistance or companionship to people all over the world including children with disabilities. This review focuses on the benefits of canine-assisted therapy in schools for students with disabilities.

Attachment Theory

Animals and humans exhibit a reciprocal bond with each other that offers many benefits to people young and old. The attachment that a child may have with a pet can be explained using the attachment theory perspective (Jalongo, 2015). Research into child/animal attachment has been applied to many disciplines including sociology, psychology, and child development studies. Attachment theory is based on four themes which include the treatment of animals, influences on the child/animal bond, uniqueness of the child's attachment to the animal, and the behaviors of the animal (Jalongo, 2015). When a child forms an attachment with an animal such as a dog, certain behaviors emerge. These behaviors include wanting to be in close proximity with the animal, expecting protection and companionship from the animal, and an overall sense of security for both the child and the animal.

According to attachment theory, children are naturally drawn to seeking out physical contact and form emotional connections to figures with which they are familiar. They then rely on these figures for protection (Jalongo, 2015). In a positive relationship between a child and an animal, they both benefit. When children form a bond with a dog in the school setting through the use of AAT, it can help them feel more secure, confident, and motivated to perform required tasks, such as reading aloud. Researchers have found that the presence of a dog with whom a child has an attachment can release

oxytocin in the child, which in turn decreases the child's stress level (Jalongo, 2015). The underlying component for the positive effects of the child-animal connection is the activation of the oxytocinergic system, which regulates stress and makes the child feel secure (Beetz, Moberg, Julius & Kotrschal, 2012). When a child feels comfortable and secure, they are more apt to partake in activities that may otherwise be stressful for them, or in which they lack confidence.

Additionally, the child-animal bond can help children learn appropriate social skills, communication skills, responsibility, empathy and interpret non-verbal cues that the dog displays. This is especially helpful for children who have social deficits, which is a common characteristic of children with Autism Spectrum Disorder (ASD). As a result, the animal-child bond can be used to model qualities of healthy relationships in which the child and animal support each other. In a Pew Research Center (PRC) survey of pet owners, 85% of children with pets viewed their dogs as family members (Jalongo, 2015). Generalizing the extreme connection and attachment that children may have with their pets can be used as a catalyst in motivating children with disabilities at school. Some educators in Italy who have been implementing AAT into their classrooms with successful outcomes view the dog as the "fourth educator" (Jalongo, 2015). This demonstrates the effectiveness and the power of the child-animal connection that can assist teachers in implementing creative and meaningful interventions in social, academic, and emotional content for children with disabilities through the use of AAT.

Foundations and Current Trends of Animal-Assisted Therapy in Special Education

Millions of children in The United States struggle with reading (National Center for Education Statistics, 2009). There has been a steady increase in animal-assisted

literacy programs for students who struggle with reading over the past 30 years. Some of these struggling readers are students who receive special education services due to a disability. Students with disabilities, especially those with attention difficulties, tend to fall behind their peers in reading. The use of Animal-Assisted Therapy (AAT) involving dogs has become increasingly popular because it is a creative and meaningful intervention to help motivate students who struggle with reading. Reading to a dog can help reduce the stress involved in reading aloud. Studies show that students who struggle with reading skills prefer reading to a dog rather than an adult or peer because the dogs do not judge or correct them. Students are willing to take a risk, and in turn, that risk-taking allows the child to grow academically and expand their literacy skills (Friesen & Delisle, 2012).

Researchers have found that people with pets have lower blood pressure and heart rate than those without pets. Animal-assisted therapy can improve physical and mental health in children and can affect a child's hormones in a positive manner resulting in lowered blood pressure and heart rate (Beetz et al., 2012). Studies suggest that there are several benefits of AAT including relaxation, social, motivational, and cognitive effects (Busch, Tucha, Talarovicova, Fuermaier, Evans, & Tucha 2016).

The use of therapy dogs can help students with disabilities that may otherwise feel defeated in their ability to read, to practice their literacy skills, and increase positive attitudes toward reading (Anderson & Olson, 2006). Studies suggest the use of a therapy dog during literacy instruction can help a student focus better and creates a safe and playful learning environment for struggling readers through meaningful literacy experiences (Friesen & Delisle, 2012). Teachers and students alike have noted the overall

positive effects of the presence of a therapy dog during reading instruction, which includes a more safe and calm overall atmosphere for learning. Sociocultural theorists suggest that the environment in which a child learns in greatly impacts their learning (Vygotsky, 1986). Altering the atmosphere to be more appealing and nurturing for students who struggle can have a significant impact on their ability to read and learn.

AAT not only improves the learning environment, but it can also offer social and emotional benefits to students with disabilities. According to a 2017 research from The University of Cambridge, children get more satisfaction from relationships with an animal than their siblings or friends. Children with special needs can improve their ability to interact and communicate with people by practicing their social skills while interacting with therapy dogs. For example, children with Autism Spectrum Disorder (ASD) often have deficits in social and communication skills. Through their interaction with a therapy dog, these children are able to practice communicating, interpreting, and responding to the behavioral cues of the dog, which can facilitate a better understanding of human non-verbal cues (Berry et al., 2013). Therapy dogs may also help children with ASD, or other disabilities that have characteristic social deficits, in learning how to acquire a bond with a dog, and in turn generalize that bonding experience with the dog and apply it to a human-human bond.

Children with Autism Spectrum Disorder (ASD) exhibit greater sensory seeking, social motivation, less inattention, distractibility, and sedentary behavior during AAT sessions (Busch et al., 2016). As a result, schools are increasingly implementing animal therapy programs to help support students emotionally, behaviorally, and cognitively

while also improving the overall motivation and engagement of students in the learning environment.

Students with emotional and behavioral struggles such as those who have emotional-behavioral disorders (EBD) can also benefit from interacting with a therapy dog in the school setting. Learning to care for the dog can help build empathy, which is often lacking within these students. Moreover, it can help them learn responsibility for meeting the unique needs of the animal. In an eight-week qualitative study conducted by Anderson and Olson in 2006, data showed evidence that students with EBD increased their emotional stability, had improved attitudes toward school, were more responsible, respectful, and empathetic through their daily interactions with a therapy dog (Anderson & Olson, 2006).

Students with EBD, mood disorders, Oppositional Defiant Disorder (ODD), Attention-Deficit Hyperactivity Disorder (ADHD), and Bi-Polar Disorders who had been unsuccessful in the general education setting used their interaction with a therapy dog as a calming tool to de-escalate behaviors & avoid emotional crisis (Anderson & Olson, 2006). Research suggests that many students who struggle emotionally or behaviorally can benefit through direct instruction of how to care for the animal, improve coping skills, and improve their overall emotional stability through the presence of a therapy dog in their learning environment. With the many difficulties students with disabilities face on a daily basis, the use of a therapy dog has been recognized as a valid intervention to improve social, emotional, and cognitive aspects of these children's lives.

Personal Connection to Animal-Assisted Therapy

My experience as a general education teacher for eighteen years, a special education teacher for two years, and my love of animals, has inspired my interest in learning more about how animal-assisted therapy can help students emotionally, socially, and cognitively. I am interested in learning more about the benefits of AAT in schools and what impact it has on the overall learning environment and emotional states of students. I am especially eager to understand the benefits of AAT for students with social problems, which is a common characteristic in students with ASD.

I had the privilege of helping pilot an animal-assisted therapy program for students with disabilities at my school, and I was amazed to see the transformation in students while in the presence of the dogs that would visit. Students who were typically uninterested in engaging with peers were suddenly laughing and enjoying themselves with the dog and their peers. Students who had severe behavioral problems were displaying empathy for the dogs and caring for them. I am curious to discover what research says about AAT in schools on a larger level, other than my own personal experiences. Based on current research, this study will explore the question: What are the social, emotional, and cognitive benefits of incorporating animal-assisted therapy in learning environments for students with disabilities? As I write this, my golden retriever, Lily, is lying next to me. She is reducing my stress, providing companionship, and encouraging me with her presence. Aside from the wet nose and the snoring, my overall mood has improved, and I hope this is similar to what children may experience in the presence of a non-judgmental furry friend at school. Through reviewing multiple studies, I aim to disclose the positive benefits of AAT for students with disabilities at school.

CHAPTER II: LITERATURE REVIEW

Overview of the Research Process

The research for this study was conducted using academic peer-reviewed articles. The articles were retrieved from databases such as ERIC, Academic Search Premier, and Research Gate. Statistical information and the history of using animal-assisted therapy with children was collected from informational reports. Research was also gathered from previously published theses related to this topic. Key words included in the search were animal-assisted therapy, animal-assisted therapy in schools, animal-assisted therapy for children with disabilities, human-animal bond, and benefits of animal-assisted therapy. Upon researching peer-reviewed empirical studies on this topic, studies were also examined on the emotional, social, and cognitive benefits of using animal-assisted therapy for students with disabilities, as well as the physical and physiological components of the human-animal bond. Information was compared to develop connections between studies, and patterns emerged among several of the research studies. Recurrent themes of the social, emotional, and academic benefits of using animal-assisted therapy with students with disabilities in schools were prevalent in the research studies.

One reoccurring theme that was identified through the research studies was the benefit of human-animal connections. Studies conducted by Headley and Grabka, 2007; Beetz et al., 2012; Pinto and Foulkes, 2014; Jalongo, 2015; and Busch et al., 2016, identified the reciprocal, physical, and psychological benefits of the child-animal bond. An abundance of research focused on the social benefits of AAT, especially with children with ASD or other disabilities that manifest in social challenges at school (Martin & Farnum, 2002; Sams et al., 2006; Esteves & Stokes, 2008; Friesen, 2009; O’Haire, 2012;

Berry et al., 2013; Stevenson, Jarred, Hinchcliffe, & Roberts, 2015). Other research focused on the emotional/behavioral benefits of AAT with children with disabilities (Jalongo, Astorino, & Bomboy, 2004; Anderson & Olson, 2006; Boe, 2008; Stewart, Chang, & Rice, 2013; Schneider, Rosenberg, Baker, & Biringen, 2014). The final theme that emerged in the research was the cognitive benefits of AAT with children with disabilities, primarily in the area of reading and literacy skills (Kaymen, 2005; Booten, 2011; Friesen & Delisle, 2012; Le Roux, Swartz, & Swart, 2014; and Bassette & Taber-Doughty, 2013 & 2016). A minimal amount of studies focused on the challenges and risks of incorporating AAT in the school setting for students with disabilities (Heimlich, 2001; Jalongo, 2008; Friesen, 2009; Nikolyska, 2012; and Kirnan, Siminerio, & Wong, 2015). It became evident through reading numerous studies on the effects of AAT that there are many positive benefits of the implementation of AAT in educational settings for students with disabilities. These benefits are examined and discussed more thoroughly in the remainder of this chapter.

Human-Animal Bond

It is estimated that there are 78 million dogs and 85.8 million cats in American households today. Approximately 44% of all households have a dog, and 35% have a cat (American Pet Products Association, 2015-2016). Why do so many people enjoy the companionship and comfort of having a pet in their home? Animals offer love, emotional support, and companionship. A positive relationship with a pet can release oxytocin, a “feel-good” chemical, in both the person and the animal. The public is becoming more aware of the benefits of animals not only in their homes, but also in

hospitals, clinics, and schools. Pets have the capacity to assist people in daily functioning, as well as reduce stress, anxiety, loneliness, and improve overall quality of life.

Beetz and colleagues (2012) conducted a study on the psychosocial and psychophysiological effects of human-animal interactions. The researchers found that the majority of the positive effects of human-animal bond (HAB) comes from the release of oxytocin, which is evident in both the animal and the person (Beetz et al., 2012). The release of oxytocin stimulates social interactions including increased eye contact, empathy, and decreased aggression and depression (Beetz et al., 2012). The closer the bond between the animal and person, the more oxytocin is released through positive interactions such as petting.

A strong positive bond between an animal and a person can also counteract stress. Oxytocin can decrease the stress hormone cortisol and also reduce blood pressure (Beetz et al., 2012). Researchers found an overlap of increased levels of oxytocin and reduced levels of stress after stroking a dog for five minutes (Beetz et al., 2012). Overall findings in this study showed reduction of stress levels in humans through interactions with their pet. The unconditional love that is present between a pet and their owner increases the amount of oxytocin in both the animal and the person causing reciprocal benefits that combat stress.

Animals can fulfill important relationship functions including companionship and reducing stress. Pinto and Foulkes (2014) found further evidence of the positive benefits of the human-animal bond. This quantitative study explored how animals affected students' emotional well-being in a high school setting. The study included 15 students ages 15-17. A program called "Dog Daycare Co-op" was developed at a high school in

Canada to help students with disabilities who were not making progress at school (Pinto & Foulkes, 2014). Students followed a curriculum designed to teach responsibility for caring for dogs. Students were also required to interact with the dogs. Data was collected using the Empathy Index for Children and Adolescents (IECA), (Pinto & Foulkes, 2014). At the end of the semester-long program, researchers interviewed the students regarding their experiences with the dogs, and gathered information from the IECA.

Results of this study showed two themes emerged. Students were interested in continuing to work with the dogs, and students confirmed that they had an increase in a sense of belonging at school because of the bond they had formed with the dogs. Almost all of the students reported that they had formed “friendships” with the dogs (Pinto & Foulkes, 2014). They felt like they had a purpose to go to school, and the dogs helped to teach them empathy and responsibility. Several students reported “feeling loved” by the dogs (Pinto & Foulkes, 2014). Overall attendance of the students improved, as well as the students’ attitudes and confidence. They reported that the relationship they had with the dog motivated them to come to school because they did not want to let the dogs down.

One student communicated that she had suffered from severe anxiety and depression, and that she hated coming to school. She did not like people and disliked interacting with people. She said the program changed her life by teaching her to care for someone other than herself. She learned empathy by caring for the dog. She also learned how to appropriately interact with others because she had learned to do so through her interactions with the dogs. The student-dog bond was so strong that the student cried after the program had ended (Pinto & Foulkes, 2014).

Multiple students reported observing other students being “calmed” by the dogs (Pinto & Foulkes, 2014). One student described witnessing another student with anger issues remain calm in stressful situations when he interacted with the dog. The overall results of this study indicate that programs such as “Dog Daycare Co-op” can help students become successful in school through positive bonds with animals. Positive bonds with an animal have an overall calming effect, exhibit a sense of belonging, give purpose to activities, and teach responsibility and empathy. Moreover, positive bonds with animals can be a catalyst for positive bonds with people. What children learn and experience from positive relationships with animals can be applied to their interactions with people.

Jalongo (2015) found similar positive benefits of the child-animal bond in a literature review. Research findings revealed four reoccurring themes: the treatment of animals, influences on the child-animal bond, attachments with dogs, and attachment behaviors (Jalongo, 2015). Family interactions with a pet can improve overall family functioning; “85% of dog owners consider their dogs to be family members” (p. 2). Well-adjusted families with pets use their pets to teach values to their children such as how to nurture, being responsible for caring for the animal, and showing love and empathy towards living things.

The more time a child spends caring for a dog, the stronger the bond becomes. Jalongo (2015) found that children whose parents were absent more often had stronger bonds with their pet. Younger children also reported having stronger bonds with their pet than older children (Jalongo, 2015). Children view their family pet in many facets. They view their pet as a younger sibling, and “assume the role of the pet’s teacher by teaching

it a command or trick” (p. 4). Children see their pet as a friend, “where the pet is more of an equal status, functioning as a playmate or confidante” (p. 4). Children also view their pet as a parental figure, and “someone who is wise and offers unflagging emotional support” (p. 4). The type of bond the child has with the pet determines how they view the role of their pet.

The bond between a child and a dog is greater than any other type of companion animal (Jalongo, 2015). This is due to a dog’s interactive nature with people, such as going for walks or playing catch. It is easier to form a bond with an animal, such as a dog, in which time is spent playing or interacting with, rather than a fish or hermit crab that just sits in a tank and does not provide reciprocal interaction. Bonds with pets not only offer physical and emotional benefits, but also provide consistency in a child’s life. According to Melson (2003), “75% of children in America are more likely to grow up with a pet than with both parents” (p. 2). This startling statistic acknowledges the important role that animals play in childrens’ lives. They not only provide support through companionship, consistency, and friendship, but also offer several health benefits to people.

In an international longitudinal study by Headley and Grabka (2007), researchers found that people who continuously owned pets, with whom they had strong positive bonds, were healthier. They had lower blood pressure and reported they were less stressed than people who did not own pets (Headley & Grabka, 2007). People who have positive emotional and reciprocal bonds with their pets have lower blood pressure and heart rate than those without pets. Further, a close bond with an animal can help people overcome a lack of self-esteem, reduce stress and anxiety, and build confidence

(Sanchez, 2014). Studies suggest that there are several benefits of the human-animal bond including calming, socializing, motivational, and cognitive effects (Busch et al., 2016). Children with disabilities exhibit greater sensory seeking, social motivation, less inattention, less distractibility, and less anxiety during animal-assisted therapy sessions (Busch et al., 2016). As a result of these findings, schools are increasingly implementing animal therapy programs to help support students socially, emotionally, and cognitively, while also improving the overall atmosphere of the learning environment.

Social Benefits of Animal-Assisted Therapy

AAT can transcend in many forms. One of the most valuable elements of AAT is helping students with social impairments, which are a common characteristic of children with ASD. AAT can help students practice and improve their social skills through using the therapy dog as a conduit for learning these invaluable and often hard to master social skills. The first published study that explores the benefits of AAT for students with ASD in relation to generalizing social behaviors developed through their interaction with a therapy dog in a school setting, and applying these skills to their interactions with their teachers, was completed by Stevenson, Jarred, Hinchcliffe, and Roberts (2015). This study consisted of three male children with ASD ranging in age from seven to twelve. Participants were chosen for the study because of their low motivation, isolated behaviors, and lack of positive social skills (Stevenson et al., 2015). Five repeated observations of the children interacting with the therapy dog were conducted, and qualitative and quantitative data was collected over a ten-week period. The authors concluded all three students were able to transfer the knowledge they gained on improving their overall social skills, and were able to apply these skills beyond the

classroom to peers and adults (Stevenson et al., 2015). The overall results of the study found that the participants exhibited a reduction of negative behaviors, reduced anxiety, and increased independence.

Therapy dogs act as “magnets” for children due to their calming presence and pleasant demeanor. Most children enjoy playing and interacting with dogs; therefore, therapy dogs are a natural choice to motivate students with social challenges to communicate and initiate interactions. The results of this study also found that therapy dogs can enhance a child’s intrinsic motivation to participate in social situations in which they may not otherwise be interested or willing to partake (Stevenson et al., 2015). Furthermore, the way in which dogs communicate their intentions may be easier for students lacking appropriate social skills to understand because of their simplistic nature. Interacting with therapy dogs requires no scripted verbal interactions. Students with ASD often have difficulty interpreting social cues from humans because of their complex nature, such as interpreting facial expressions, tone of voice, or body language. This makes it difficult for them to understand people’s intentions (Stevenson et al., 2015). By practicing communication skills with a therapy dog first, and building confidence in their communication and social skills in this simplistic manner, students are more apt to be prepared to apply these learned skills to humans.

This study expands the amount of empirical research that implies that therapy dogs can improve social and communicative skills for students with social deficits. The authors state limitations to this study which consisted of a small sample size and a lack of a control group to compare results. The authors also caution that it is important to consider that children with ASD are highly unique and require differentiated

interventions that can help them improve their overall social and communication skills. What might work for one child with ASD may have a zero or negative effect on another child. The use of a therapy dog may be one beneficial social intervention for students with ASD or other social impairments.

Martin and Farnum (2002) conducted one of the first quantitative scientific studies on the interactions of children with pervasive developmental disorders (PDD) with a therapy dog. Children with PDD are characterized by a severe impairment of social functioning and interactions (American Psychiatric Association, 1994). The authors theorized that the use of a therapy dog with children with PDD could help improve their social and communicative skills. The study involved researchers and therapists who evaluated how students with PDD interacted both verbally and behaviorally with a therapy dog.

In this study, ten children ranging in ages from three to thirteen with a diagnosis of PDD took part in forty-five minute sessions with a therapist. The students met with the therapist three times a week for fifteen minutes. The children were given the Psychoeducational Profile Revised (PEP-R) to assess areas of functioning including motor skills, coordination, imitation, perception, cognitive, and verbal interactions (Martin & Farnum, 2002). Repeated measures were designed so all of the children were exposed to all three experimental conditions. The experimental conditions consisted of presenting the children with a ball, a stuffed dog, or a live dog (Martin & Farnum, 2002). The childrens' interactions were videotaped and then analyzed based on behavior and verbal interactions.

The authors concluded that based on behavior, all of the children laughed more, seemed happier, were more playful, and had increased energy in the presence of the live therapy dog versus the ball condition or stuffed dog condition (Martin & Farnum, 2002). Further, the children were able to focus better and were more likely to engage in reciprocal conversations with the therapist while in the presence of the therapy dog than when exposed to the ball or stuffed dog. The children also had increased interactions with the dog and participated in conversations more often with the therapist while in the presence of the live dog. The authors also noted that the children were more compliant with the therapist and were more likely to answer “yes” to the therapists requests while working with the live dog instead of just the ball or the stuffed dog.

While the findings of this study provide promising evidence supporting the social benefits of using a therapy dog for students with social deficits, the author notes that the sample size of this study makes it difficult to generalize these results to larger populations. The authors also indicated that the therapists used a research-type protocol instead of a therapy-type protocol, making it difficult to attribute these findings to AAT alone (Martin & Farnum, 2002). However, these results are encouraging that a therapy dog may improve overall social interactions among students who struggle with social and communication skills.

Esteves and Stokes (2008) conducted a similar study suggesting the social benefits of a therapy dog for students with marked social impairments. The study tested the effects of the presence of a therapy dog on social interactions between three children ages five to nine with developmental disabilities (Esteves & Stokes, 2008). The children in the study were selected because of their limited social and communicative skills and

their limited ability to verbalize words. A special education teacher conducted the sessions with the students, and the sessions were video recorded.

Students' social behaviors were categorized as positive/negative, verbal/non-verbal, and initiations/responses (Esteves & Stokes, 2008). Each child participated in eight-minute sessions, five days per week, and interval recordings were used to measure dependent variables (Esteves & Stokes, 2008). Data was collected by two trained observers, who participated in inter-rater reliability activities prior to the study to ensure validity. Similar to the study by Martin and Farnum (2002), the authors collected baseline data by observing the students' verbal and social interactions in the presence of a ball, a car, a stuffed dog, a dog leash, dog biscuits, a brush, a dog toy, and a live dog (Esteves & Stokes, 2008).

The results indicated that baseline data collected showed all three participants displayed low positive verbal and non-verbal interactions with the dog or any of the items. Upon completion of the sessions, student one had a moderate increase in positive initiated verbal interactions in the presence of the therapy dog, with a mean of 4% and a range of 0-16%. Student two showed an increase in positive initiated verbal interactions in the presence of the therapy dog with a mean of 24% and a range of 3-50%. Student three displayed an increase in positive verbal interactions in the presence of the dog with a mean of 14% and a range of 3-28% (Esteves & Stokes, 2008). Positive initiated non-verbal interactions also increased significantly throughout the study when in the presence of the therapy dog (Esteves & Stokes, 2008).

The authors note that student one and student three did have some minimal negative non-verbal interactions toward the teacher and dog throughout the sessions.

Based on this research, the authors concluded that the therapy dog helped students with social impairments increase their verbal and non-verbal interactions. The qualitative evaluation also showed that generalized improvements with additional teachers following the intervention sessions with the dogs indicated the students were able to generalize their experiences into another setting (Esteves & Stokes, 2008).

This study supports Martin and Farnum's (2002) research by observing and collecting data on the effects of the presence of a live dog versus an inanimate object in increasing verbal and social communications and interactions between the dog and teacher/therapist. The authors caution that the small number of participants in this study may make it difficult to render generalization of these findings into other settings and across age groups. It does however offer evidence that the presence of a therapy dog with children with social impairments can be a creative intervention in improving social and communicative skills.

Like Martin and Farnum (2002) and Esteves and Stokes (2008) further evidence suggesting the social benefits of implementing therapy dogs for children with disabilities involves using sensory stimulus. Sensory integration is a common practice for helping students with social challenges (Ayres, 1972). A survey given to occupational therapists working with children with ASD and social deficits found that many of them prefer to use sensory integration during their therapy sessions (Watling, Deitz, Kanny, & McLaughlin, 1999). Students with ASD and social deficits often have problems with "sensory processing including processing information in social and communicative context, which presents itself as over-responsiveness and under-responsiveness to sensory stimuli" (Sams, Fortney, & Willenbring, 2006, p. 268).

Sams and colleagues (2006) initiated a study involving 22 students with autism receiving occupational therapy at school. The participants took part in a regional study on the effects of incorporating a therapy dog into occupational therapy sessions for students with autism. The frequency of social interactions and language was analyzed during the sessions. Each child received one session of regular occupational therapy each week, along with one session of occupational therapy involving a therapy dog (Sams et al., 2006). Over a 15-week period, participants were observed by trained researchers on their level of social interactions, use of language, and sensory skills.

The results of this quantitative study indicated that the students engaged in significantly greater use of language and social interaction in sessions which included the therapy dog (Sams et al., 2006). This data is further evidence of the social benefits of incorporating a therapy dog into activities involving students with social impairments. The introduction of the dog as a sensory stimulus proved to be a beneficial intervention in improving the students' overall social engagement. The bond and enjoyment of interactions between the dog and students allowed the students to expand on their natural interest in the dog, and apply it to other contexts, such as social interactions.

According to the "biophilia" hypothesis, humans have learned to be attentive to both human and non-human things in their environment. Kellert and Wilson (1993) define biophilia as "the human biologically-based attraction for nature and all of its life forms... a tendency to impute worth and importance to the natural world" (p. 13).

Temple Grandin, a PhD and animal science professor who has autism, credits her disability to providing her a unique perspective in relating to animals. In her book, *Thinking in Pictures: And Other Reports from My Life with Autism*, Grandin wrote,

“Being autistic has helped me to understand how the animals feel” (p. 155). She attributes her ability to overcome social obstacles due to her autism through her connection with animals. Other empirical research supports this biocentric approach in developing social skills with children with autism. A group of children with autism ranging in age from seven to ten, reported that it was easier for them to talk with their pets than their peers, and that their pets helped them have more empathy toward their peers (Melson, 2003). The writings of Temple Grandin as well as further biocentric studies have tapped into the effectiveness and positive benefits of utilizing animals to help students with social impairments form social connections and then generalize these non-human connections to humans.

While Temple Grandin provides detailed personal accounts of her connections to animals and the significant impact they had on helping her overcome social challenges, research on how therapy dogs can help students with autism engage in social interactions has been occurring for many years (Solomon, 2010). Dogs and other animals can help children form emotional connections, which is often an area in which they struggle. It is often easier for a child with social deficits to interact with an animal because they are non-judgmental and less complicated than human interactions. In Friesen’s (2009) review of studies on the positive effects of AAT in schools, the recurring theme of marked social benefits of AAT emerged. Just as Levinson found that a dog can act as a “social lubricant,” other researchers (Mallon, 1994; Zasloff & Hart, 1999; Jalongo et al., 2004; and Anderson & Olson, 2006) agree that the use of AAT in schools can enhance the desire for social engagements for students with social impairments, by providing a more calming overall atmosphere, increasing motivation to interact, improving focus, building

confidence, facilitating risk-taking behaviors, providing emotional support, and bridging communicative interactions, as reviewed by Friesen (2009).

O’Haire (2012) and Berry et al.’s, (2013) studies agree with all the previous studies on the positive social effects of using a therapy dog with children with ASD. The authors reviewed several research articles on the benefits of using a therapy dog for students with ASD and social challenges. The authors indicated the majority of studies they reviewed assert that interventions based on the social aspects of relationships with the therapy dog can encourage simple social interactions for students with ASD, because these interactions do not require the child to interpret social or verbal cues (O’Haire, 2012, & Berry et al., 2013). The calming presence of the therapy dog can be beneficial to sensory needs and can assist the child in responding more effectively and partaking in reciprocal interactions (Berry et al., 2013). As both Martin and Farnum (2002) and Esteves and Stokes (2008) found, the increase in positive social interactions with a therapy dog can then be transferred to positive social interactions with peers and teachers. Therapy dogs can offer children a non-judgmental venue to communicate. When students with ASD partake in communication that comes naturally to them and is not stressful, their confidence, motivation, and enjoyment in communicative situations can increase.

Emotional Benefits of Animal-Assisted Therapy

It is estimated that over 70% of children of all ages talk to and confide in their animals (Jalongo et al., 2004). Interventions such as AAT are not only beneficial for improving social skills for students with disabilities, but can also provide emotional benefits for students with disabilities, such as reducing stress and anxiety (Anderson & Olson, 2006). Several case studies supporting the use of animals to help students with

emotional or behavioral problems in schools occur throughout literature. In one of these studies by Anderson and Olson (2006), six students with Emotional Behavioral Disorders (EBD) participated in an eight-week study that collected behavioral qualitative data.

Because the six students were unsuccessful in the general education setting and resource room, they were placed in a self-contained setting. Due to the students' violent history of outbursts, great caution was taken to ensure the safety of the dog. Students had to demonstrate self-control and the rules of a quiet classroom before they were allowed any contact with the dog (Anderson & Olson, 2006).

The authors theorized that students with emotional and behavioral difficulties fail to form meaningful connections with others, due to their lack of trust, and therefore lack the emotional support to help them become successful at school. The importance of the students bonding with the dog was integral to this study (Anderson & Olson, 2006). The teacher/researcher performed daily observations as the students were involved in activities with the dog such as reading, social interactions, and playing. In addition, the teacher/researcher provided specific social skills instruction on how to interact with the dog, care for the dog, and meet the dog's needs. The authors' goal was to teach the students how to bond with the dog and treat the dog with respect, and then generalize that respect to people.

Baseline data was collected on the students prior to the onset of the study. Students were rated qualitatively on how they could solve their problems in an emotional crisis through problem solving sheets consisting of an antecedent, behavior, and consequence (ABC), (Anderson & Olson, 2006). Data was again collected at the completion of the study. The authors found that all the students had improvement in their

overall emotional stability, improved attitudes towards school, were more responsible and respectful, and were able to show empathy to their peers (Anderson & Olson, 2006). The students in the study enjoyed interacting with the dog, and several of them indicated that they used the dog as a calming tool to help them deescalate before an emotional outburst (Anderson & Olson, 2006).

All of the students developed meaningful bonds with the dog, just as the authors theorized. Through practicing respect for the dog, being responsible for caring for the dog, and positive social interactions with the dog, the students were able to transfer this knowledge into managing their own behaviors more consistently. They were also able to apply this knowledge into more appropriate communication with their peers and teachers. The emotional support that animals can offer through their calming presence can help students with emotional and/or behavioral struggles learn how to form a meaningful bond. Using a therapy dog to build emotional endurance acts as a bridge for appropriate emotional and behavioral responses for students lacking in this area.

The authors suggest that although this study had positive implications for the use of a dog in improving emotional and behavioral responses in students diagnosed with EBD, further empirical studies are necessary to quantify this data. The accumulation of further quantitative studies on this topic are required to be able to compare multiple studies over time in special education settings (Anderson & Olson, 2006). The authors also stated that direct instruction on the care and treatment of dogs is required for ethical studies, and no negative verbal or physical aggressions were exhibited toward the dog in this study. The authors communicated that the dog in this study was not a certified therapy dog; therefore, some researchers may reject the validity of the findings. The

safety of the dog and the participants must be the number one concern when dealing with settings that can easily erupt into violent situations (Anderson & Olson, 2006). This study gives credence to the hypothesis that dogs can improve the overall emotional well being of students with disabilities. “Strong bonds between children and an animal contribute to the stabilization of the child’s emotions” (Anderson & Olson, 2006, p. 47). Creative interventions, such as the use of an animal, should be deemed in high regard as a way for these students to make necessary emotional connections to improve their chances of succeeding in school.

AAT can “increase self-esteem, socialization, and problem-solving skills for children with emotional/behavioral disorders as well as children who have been neglected or abused” (Reichert, 1998). The use of a non-judgmental companion can act as a powerful healing intervention by teaching the child it is ok to trust. When an emotionally unstable child learns to trust, the door is then opened for professional educators and/or therapists to enter and offer a helping hand.

A single case study of a student with EBD asserts that animals have the power to heal the spirit through unconditional love (Boe, 2008). Quantitative data was collected on one student with an Individualized Education Plan (IEP) over a four-week period in a high school setting. This student had behavior regulation goals included on his IEP. His teachers recommended additional emotional and behavioral support to reach his goals.

The Rosenberg Self-Esteem Scale, The Coopersmith Self-Esteem Inventory, and behavior tracking sheets were used to collect data (Boe, 2008). Baseline data was collected on the student’s self esteem, impolite behavior, off task behavior, and non-compliance. Additional data was collected after each week of the study. The student was

introduced to a therapy dog in his classroom, and was responsible to groom, exercise, play with the dog, and give commands. Observational data on the student's interaction with the dog was also noted.

The results of the study showed that the student's self esteem increased from 70% to 75%, impolite behavior was reduced by 23%, off task behavior was reduced by 52%, and non-compliance was reduced by 58%. This is promising evidence that AAT is beneficial for students with EBD at any age.

Schneider and team (2014) conducted a similar study on students with EBD. Nine male children with challenging behaviors, hyperactivity, anxiety, depression, and emotional instability were involved in this study (Schneider et al., 2014). Students with emotional and behavioral problems often need specific and direct instruction on coping skills and behavior regulation. Researchers found that the use of AAT has been effective in reducing stress, decreasing anxiety, and offers a calming outlet for students experiencing emotional or behavioral distress. The authors of this study hypothesized that using AAT with "high-risk boys", could offer support in dealing with their emotions and behaviors in a creative manner. This group of boys had several previous unsuccessful interventions in place to help them reach their IEP goals in the areas of emotional and behavioral development. Schneider and colleagues (2014) believed AAT could "foster a secure relationship between a trained dog and a child exhibiting emotional and behavioral challenges" (p. 1).

The students were chosen to participate because of their lack of progress on their IEPs, higher than average number of absences, and high number of disciplinary referrals at school (Schneider et al., 2014). Baseline data collected indicated that almost half of the

participants, 44%, were in the clinical range for hyperactivity and inattentiveness (Schneider et al., 2014). The Emotional Availability Scale (EA) 4th Edition was used to examine the effectiveness of the relationship developed between the children and the therapy dog. This included the child's involvement with the dog, the child's responses to the dog, and how the dog responded to the child.

This study was very unique because Temple Grandin, mentioned previously, advised the research team on which factors to take into account when reading the emotions of the dog and the child/dog body language (Schneider et al., 2014). Coders recorded the dog's specific reactions such as tail wagging, proximity, and mouth posture. The results of this ten-week study showed that all the students were able to form more positive emotional relationships with the dog, peers, and adults (Schneider et al., 2014). The students exhibited fewer behavioral problems, and there was a decrease in the number of disciplinary referrals for all participants.

The authors view the findings as evidence of the positive influence therapy dogs have over students with emotional or behavioral impairments; however, they also indicate there were several limitations to this study, including no female participants, small sample size, and limited communications with the family. Additionally, some of the students were receiving outside counseling services and medication, so these factors need to be included in the overall validity of the findings (Schneider et al., 2014).

AAT can be used in place of traditional therapist/client counseling to aid students in improving overall emotional health. A strong bond created between a child and an animal can help combat depression by promoting the release of serotonin, prolactin, and oxytocin. These are all hormones that elevate mood. The ability for an animal to help

children feel more relaxed, offer companionship, reduce anxiety, and increase the child's ability to maintain focus and attention, are all factors that help the child make progress towards emotional, behavioral, social, and academic success at school. This study is another piece of empirical evidence that supports the emotional benefits of AAT.

Animals can act as a "therapist" for students with emotional or behavioral impairments. Although animals are not able to verbally communicate, their presence alone can offer emotional support and a level of non-judgmental understanding. Children are more apt to disclose feelings and emotions to someone by whom they do not feel judged (Stewart, Chang, & Rice, 2013). Having someone to confide in and trust can promote emotional well-being. Research suggests the practice of involving animals in therapeutic contexts improves therapy sessions by relaxing the child.

In a study by Stewart et al., (2013) researchers found that incorporating AAT into counseling for children is beneficial as an additional intervention for treatment of emotional trauma. This study consisted of 14 mental health professionals who work as counselors for children in both school and clinical settings. Qualitative research data was collected via semi-structured interviews with the participants.

The results of the research indicated all participants agreed AAT has a positive impact on the therapeutic process (Stewart et al., 2013). Animals have the capacity to influence emotions and behaviors. One therapist stated, "It's almost like a relief for the child to see the animal; you can just feel them relax" (Stewart et al., 2013, p. 340). AAT improves the overall climate, allowing children to communicate about their feelings more freely. Animals can serve as an icebreaker and improve the overall mood and tone of the

atmosphere (Stewart et al., 2013) and rapport between the therapist and client is built more quickly through their mutual bonding experience with the animal.

Results indicated 13 of the 14 participants described AAT as a unique intervention to use in therapy sessions because it allows the opportunity for “therapeutic touch”, which is something a therapist cannot ethically do. One participant said, “I think one of the biggest benefits of AAT is touch” (Stewart et al., 2013, p. 342). Children can hug, kiss, and pet the animal, which allows for deeper bonding. All participants stated AAT makes their job easier, because the clients viewed the therapists as “less-threatening” in the presence of the animal. “Animals have an unconditional positive regard and don’t care what you did or didn’t do, what you look like, who you are, or who you’re not, they are OK with it” (Stewart et al., 2013, p. 342). Based on these findings, AAT can play an essential role in counseling children, and improve their overall emotional well-being.

Overall, AAT is a beneficial intervention for helping students with emotional or behavioral challenges by making them feel loved and accepted, reducing anxiety, teaching them respect and responsibility, improving self-esteem, and acting as a “bridge” when learning how to form positive bonds and connections with people.

Cognitive Benefits of Animal-Assisted Therapy

According to The National Assessment of Educational Progress (NAEP), only 36% of students in grade four in The United States are performing at or above proficiency in reading (NAEP, 2015). Students who struggle to read are stressed out by their continual lack of progress, have poor attitudes toward reading, and have learned to dislike reading due to repeated failures. The deficits in reading proficiency require

creative interventions to reach these struggling readers. AAT assists children in learning in a creative way. Just as AAT has been shown to assist children with emotional deficits, AAT can also be used to improve students' reading skills. Research is rich in the cognitive benefits of AAT, particularly in the area of increasing reading fluency, comprehension, decreasing anxiety in reading aloud, and improving students' attitudes toward reading.

Research suggests that students who struggle with reading often have increased anxiety when having to read aloud to adults or peers (Kaymen, 2005). Their confidence is compromised from being continually corrected for the mistakes they make when reading aloud. They may be teased or embarrassed when reading aloud and often lack confidence in their reading skills. Consequently, students who experience these negative effects begin to form a dislike for reading and dread reading aloud. New alternatives to reach struggling readers need to be explored in classrooms to ignite interest in reading for the many students who struggle.

Kaymen (2005) conducted a qualitative study examining how struggling readers react when reading to a dog instead of an adult. Four third grade students were studied in a reading lab. The participants were chosen because they struggled with reading, and their school wanted to partake in the "Share A Book" program initiated by the local humane society. In this program, students read to dogs from the humane society at school on a weekly basis. The purpose of the program is to help struggling readers through alternative interventions, which include reading to the dogs.

Before beginning the study, the researcher gained permission from the school, the humane society, the parents, and the teachers. A letter was sent to all participants and

their families explaining the details of the program and research. Initially there were concerns from the teachers that the dogs might be distracting to the students, but the researcher found that students were more engaged, focused, and alert while reading to the dogs than they were at other times (Kaymen, 2005).

Research studies, such as this one, have shown a correlation between reading aloud and an increase in blood pressure (Kaymen, 2005). It can be very stressful for children to read in front of their peers or adults, especially if they lack the confidence and ability to read fluently. The researcher used objective and reflective field notes, studied the students' reading behavior and reaction to the dogs, and performed semi-structured interviews with the students about how they feel about reading and how they feel about the dogs.

The author concluded the children and teachers all agreed the program was fun and exciting, and the teachers felt the program offered a positive, non-threatening experience for the students (Kaymen, 2005). No concrete results were found as to how using the therapy dogs as a reading intervention affected the students' literacy skills; however, results showed that the students found the process of reading more enjoyable, were less anxious, and more relaxed when reading to the dogs rather than an adult (Kaymen, 2005). All students stated they would much rather read to a dog than an adult, and all students responded positively to the dogs (Kaymen, 2005). Although there was no definitive data that the use of AAT promoted the children's literacy skills, it did improve their attitudes toward reading, boosted their confidence, and decreased their anxiety in reading aloud (Kaymen, 2005).

Booten (2011) conducted a study on the effects of a therapy dog on children's reading and behavior. Behavior and reading statistics were collected from 32 students in two fifth-grade classrooms. The participants were split into two groups in which 17 of the students received AAT during reading instruction, and 15 of the students did not. Baseline behavior and reading grades were collected prior to the study. Over an eight-week period, group one had a therapy dog present in their classroom three days a week. The therapy dog interacted with the students during reading activities. Group two did not have a therapy dog and conducted regular reading activities.

Results of this study found no significant difference in behavior grades for either group (Booten, 2011). Significant improvement was shown in both group one and group two's reading scores, indicating that the presence of the therapy dog did not have a major impact on group one's reading skills (Booten, 2011). Since both groups made improvements in their reading skills, it could not be concluded that AAT had a positive effect on reading.

Although this study showed no improvement on behavior or reading, the author concludes this may be due to the ineffective methods of data collection (Booten, 2011). Data was collected on behavior grades only and did not break down specific improvements in sub-categories of behavior such as on-task behavior or attitude. The author stated that if the overall mood of the classroom, anxiety levels of the children when reading, and the culture of the classroom were measured, data results would have shown an improvement in these areas for group one (Booten, 2011).

Reading interventions that are effective reach the child on emotional, social, and academic levels (Friesen & Delisle, 2012). Children need to feel safe in order to take the

necessary risks to push themselves past their current level of progress in reading. AAT is one way in which children feel safe and comfortable while reading and are less afraid to make mistakes. Bassette and Taber-Doughty (2013) conducted a study “to evaluate the effects of a dog reading visitation program on academic engagement behaviors of elementary aged students with emotional and behavioral disabilities” (p. 239). Students with EBD “may have academic difficulties and frequently receive lower grades, and many students with EBD have insufficient reading skills” (p. 240). Their disruptive behavior often interferes with their learning (Bassette Taber-Doughty, 2013).

Quantitative baseline data was collected on the participants’ comprehension skills and on-task behavior prior to the study. This data showed that all three participants had difficulty with on-task behavior during reading and read below grade level.

A therapy dog from “Pet Partners” was introduced during one of the reading stations. The participants were allowed to sit next to the therapy dog and his owner/handler during reading instruction. On-task behavior was documented on the participants during their interactions with the therapy dog, and then in the absence of the therapy dog at the other stations. “On-task reading aloud behavior was defined as eyes on the book and reading loud enough for the observer to hear the words read by the student” (Bassette & Taber-Doughty, 2013, p. 244). There were three different “Pet Partner” teams that visited this class each week.

The results of the four-week intervention indicated that all participants exhibited an immediate increase in comprehension scores and on-task behavior. Student one had an increase of on-task behaviors from 5% to 96%. Student two had an increase of on-task behaviors from 70% at the beginning of the study to 92% following AAT intervention.

Student three had an increase of on-task behavior from 72% initially to 97% after the intervention. Student three was even observed being on-task 100% of the time in the presence of the therapy dog on several occasions (Bassette & Taber-Doughty, 2013).

Overall, the results of this study indicate on-task behaviors and reading comprehension skills improved in all participants. This study is particularly promising because students with EBD often struggle with on-task behaviors, and therefore do not make adequate academic gains in reading. This study is yet further evidence that the use of a therapy dog can be a successful intervention in reaching students with disabilities to help them improve behavior and literacy skills.

Bassette and Taber-Doughty (2016) conducted another study similar to the previous one. This study examined the reading fluency and comprehension skills of four fifth-grade students with EBD in the presence of a classroom pet dog. All participants struggled with reading and were performing below grade level in reading. They also had behavioral difficulties such as work refusal, verbal outbursts, and oppositional behavior (Bassette & Taber-Doughty, 2016).

The special education teacher's dog became the "class pet." Students were trained in how to appropriately care for and interact with the dog, and the dog was used as an incentive for their class behavior management system. The dog was not a certified therapy dog, therefore special permission had to be granted by the school administration to let the students participate with her (Bassette & Taber-Doughty, 2016).

Over the course of the three-month study, students were given 27 reading passages at their instructional level. The participants read ten of the passages with the dog present, and ten of them without the dog present. The remainder of the passages were

used to collect pre-intervention and post-intervention scores. Students were also given maintenance probes several weeks after the completion of the intervention.

Results of this study showed that three of the four students had an overall increase in reading skills when reading to the dog (Bassette & Taber-Doughty, 2016). Reading skills were “assessed on fluency, comprehension, and level of motivation” (p. 1). One student showed a slight decrease in fluency in the presence of the dog. Three of the four participants stated that they enjoyed reading more in the presence of the dog, and one student had no preference to dog present or dog absent condition (Bassette & Taber-Doughty, 2016). The students agreed that other students could benefit from reading interventions involving the dog. This is yet more evidence that utilizing an animal as an academic intervention can provide beneficial results in the progress of students’ academic skills.

Le Roux, Swartz, and Swart (2014) completed a study similar to the previous study analyzing the effects of implementing an animal-assisted reading program. This study is the first known investigation into the impact of an animal-assisted reading program using a pre-test/post-test control group design (Le Roux et al., 2014). The authors modeled their research after the Reading Education Assistance Dogs (READ) program run by Intermountain Therapy Animals (ITA) (Jalongo et al., 2004). This is the most well-known animal-assisted reading program. The purpose of the READ program is to encourage struggling readers to build their literacy skills through reading to a therapy dog. Some benefits of the READ program include “rapid increase in comprehension, improved self-confidence, fewer absences from school, and development of strong empathetic relationships with the animal” (Kaymen, 2005, p. 18). Programs like READ

are becoming increasingly popular in an effort to reach struggling readers through creative and exciting interventions using AAT. This current study took place in South Africa.

This study took place over a ten-week period with a group of third grade students. During weekly reading instruction, 27 students read to a dog and its owner, 24 students read to an adult, 26 students read to a teddy bear and an adult, and 25 of the students continued as normal with no added variables (Le Roux et al., 2014). Baseline data was collected prior to the start of the intervention, and then immediately after the ten-week program. There were no significant differences between baseline reading rate, accuracy, and comprehension, among the four groups.

The results of the study showed no significant differences between reading rate or accuracy in all four groups. However, the “dog group” had significantly higher comprehension scores at the end of the study (Le Roux et al., 2014). The students in the “dog group” were the only group to make overall improvements on comprehension skills. The authors conclude the improvement in comprehension skills in the “dog group” was due to the calming, non-judgmental presence of the dog (Le Roux et al., 2014). The students in the “dog group” felt an overall connection and bond with the dog, which provided a more relaxed atmosphere for them to learn. The physical effects of the presence of the dog promoted the students’ motivation and attitude toward reading, making it possible for them to make significant progress in their comprehension skills (Le Roux et al., 2014). The findings of this study agree with Jalongo and team (2004) and Friesen and Delisle (2012) who reported improvement in reading skills of students when reading to a therapy dog.

Kirnan, Siminerio, and Wong (2015) conducted a study with similar positive effects of a therapy dog being used to help improve students' reading skills. This study took place in a public elementary school in New Jersey. The researchers conducted a mixed-methods research model consisting of both qualitative and quantitative data. Interviews with the students, parents, teachers, and dog owners were performed, and data was collected regarding their perceptions of the overall benefits and challenges of the program. Students were specifically interviewed on their attitudes towards reading before and after the implementation of the program.

169 students in grades Kindergarten through fifth grade were involved in this study. One teacher was responsible for implementing the dog-assisted reading program at the school. Permission was granted from all of the participants' parents, as well as the local humane society, dog owners, teachers, and volunteers. The therapy dogs participated with the students in reading centered activities once a week for an hour. In traditional classrooms, the students would read to the dogs in small groups, and in the Special Education setting, the students would read to the dogs individually. Baseline data was collected through interviews from the students, their parents, teachers, and volunteers on their attitudes towards reading and to the program. After several weeks, the same interviews were again conducted, and the data was compared to the initial interviews.

The researcher gathered baseline data scores from standardized NWEA MAP Reading tests prior to beginning the program. The NWEA MAP Reading test scores were then compared to the scores documented after another round of testing. The results of the data indicated that there were significant improvements in students' reading skills and attitudes towards reading in all grades. The most notable improvements in reading and

writing skills occurred with the Kindergarten students. Significant improvement in reading skills and attitudes towards reading were also present in the Special Education population, and the ESL students. Results also showed that students' overall confidence, self-esteem, interest, and participation in reading improved in most grades.

The previous studies all suggest the benefits of AAT on students' literacy skills and attitudes toward reading. Research shows that working with a therapy dog can help motivate students to learn, provide a calm atmosphere, and offer non-judgmental support. Reading to a dog offers a way for students to practice their reading skills, without fear of negative feedback or corrections. Reading to a therapy dog has also shown to improve self-confidence in reading. Although there are a multitude of positive social, emotional, physical, and cognitive effects of AAT, there are also certain challenges of AAT that must be considered. The following section discusses some of these challenges.

Risks of AAT

When using a live animal as an intervention with children, several safety concerns should be considered. A student may be allergic to the animal, may be fearful of the animal, the animal may become aggressive or bite, or the animal may become stressed, ill, or die. It is necessary to ensure the safety of the children, the animal, the owner, the teacher, and all others participating in the process.

As mentioned, allergies to the therapy animal are a definite concern. Before participation, it must be determined if anyone coming into contact with the dog is allergic. According to The Asthma and Allergy Foundation of America (AAFA, 2018) 15% of Americans currently are allergic to pets. Symptoms of animal allergies include sneezing, watery eyes, rash, runny nose, or itching (AAFA, 2018). The obvious side

effects of a child or adult developing an allergic reaction to the animal would omit them from participating in an AAT intervention.

A study by Kirnan and team (2015) found a way to overcome this obstacle. “A student with severe allergies was able to participate remotely through the use of an iPad” (p. 645). This is one way to modify AAT while still practicing inclusion for all students. Students were able to improve their reading skills and attitudes toward reading without being in physical contact with the dog.

Another concern with AAT is the possibility for the dog to bite or become aggressive. As noted by Jalongo (2008) and Friesen (2009) dog bites are common among children, but can be prevented with direct instruction on how to care for and interact with the dog in an appropriate manner. Teaching children how to be empathetic towards the dog’s needs can avoid biting or aggressive occurrences and can also teach the child responsibility and caring by being aware of the special needs of the dog. Informed parental consent is a definite must when using AAT in schools, and parents and students should be made aware of the risks involved when working with a live animal. The child and the animal should never be left alone to increase safety measures.

An additional concern in AAT revolves around the animal itself. The owner/handler should be constantly aware of any visible signs of stress in the dog, which may include excessive licking, scratching, drooling, or pacing (Heimlich, 2001). In Heimlich’s quantitative study of AAT and a severely disabled child, the therapy dog, Cody, experienced extreme stress. Cody ended up with Cushing’s Syndrome, which resulted in elevated cortisol levels believed to be induced from chronic stress. Some of the participants tried to physically harm him, and he ended up with several infections

because his immune system was compromised from the stress. Cody became lethargic and depressed, and the study had to be ended early (Heimlich, 2001). In this case, Cody's owner/handler was observant to the changes occurring in Cody. She was able to get him the medical care he needed before the stress-induced effects were permanent. This is evidence for making sure that the handler is hyper-vigilant to the physical and emotional well-being of the dog. The students that were harming Cody had been explicitly taught how to care for him but had emotional and behavioral challenges that caused them to ignore the appropriate way to interact with him. The therapy dog is providing a valuable service and should be ethically taken care of just as the human participants should be.

Another risk of AAT is fear of animals. Potential fear of the animal should be identified before involving a child in AAT. A child may have a previous negative interaction with a specific animal, and therefore be leery of interacting with one (Chandler, 2005). Screening devices such as student or parent surveys should be implemented prior to any contact with an animal. The child may still wish to be involved in AAT, if their fears are addressed, and an action plan is taken in helping the child overcome their fears. AAT is a safe and structured opportunity for a child to have the opportunity to confront their fears with adult support and guidance.

Additional risks that may occur and should be considered before implementing AAT are the possibility of the animal passing away, retiring, or no longer being able to participate due to illness or injury. The author of this thesis has witnessed the death of a therapy animal to be an emotional experience for children, especially when the child has developed an emotional bond with the animal. Professionals implementing AAT should be aware that difficult conversations about death may need to take place if the animal

passes. It can be a detrimental experience for all participants. Children may need specific counseling when learning how to handle the loss of a beloved animal. These risks should be considered before implementing AAT, especially with children who may already have emotional challenges.

A final risk of AAT is the child and the animal may not be a good match. Both the animal and child's behavioral characteristics must be identified to determine if they will work well together (Nikolsyka, 2012). In the 2012 study, Nikolsyka asserts, "A child with ADHD will irritate a passive animal possibly triggering fear or aggression, while an active animal may trigger anxiety or irritation in a child with autism" (p. 638). Careful consideration should be made when pairing each unique therapy animal with each unique child. Although AAT offers many positive emotional, social, and cognitive benefits as previously discussed, there are definitely potential risks that should be identified and thoroughly considered before implementing AAT. If the risks outweigh the benefits, then it can be determined that AAT is not a good fit for the specific child, or the environment in which they will be working.

CHAPTER III: DISCUSSION AND CONCLUSION

Summary

This research was designed to determine the social, emotional, and cognitive benefits of AAT for children with disabilities. The research revealed how AAT could serve as an intervention for students with disabilities in the school setting. Furthermore, the history of AAT as well as the human/animal bond were addressed. Risks and challenges of implementing AAT were also researched. There was a vast amount of information available in all aspects of the research, which can serve as a guide to potential benefits of AAT for general education and special education teachers. Ideas for how to successfully implement AAT in schools, and what groups of students can best benefit from AAT, are other helpful components of this research.

Researchers agreed that there are several social, emotional, and cognitive benefits of using AAT as an intervention for students who struggle in these areas. Animals have been helpful to humans throughout history dating back to ancient Greece, where dogs helped lick wounds to promote healing (Thurston, 1996). Animals have provided companionship dating back to the 9th century where disabled members of the community cared for and spent time with the town animals. In 18th century England, mentally ill patients were given animals to serve as companions and support mental health (Boe, 2008).

Documented research into the benefits of AAT was noted as early as 1962, with Boris Levinson's discovery that a child under his care made significant social and emotional progress when he brought his dog, Jingles, with him to therapy sessions. Levinson determined that a dog can act as a "social lubricant" between the therapist and

client (Friesen, 2009). His findings helped pave the way for further research into the social and emotional benefits of AAT.

Several researchers agreed on the social benefits of AAT in schools. Stevenson and colleagues (2015) found that AAT helped students improve their social skills by using a dog as a conduit to practice communication skills. Children were able to gain knowledge of social skills through interactions with dogs and transferred this knowledge to peers and adults (Stevenson et al., 2015). The study further revealed practicing communication skills with a non-judgmental therapy dog builds confidence and motivation to participate in social situations, in which students with social deficits may not otherwise be willing to participate (Stevenson et al., 2015).

Like Stevenson and colleagues (2015) Martin and Farnum (2002) also found that AAT helps students with impairments in social functioning improve their social and communicative skills. Students were able to improve verbal communications with a therapist while in the presence of a therapy dog. The researchers found that students were more comfortable and less anxious, and therefore more willing to participate in reciprocal conversations when a therapy dog was present in their sessions.

Esteves and Stokes (2008) also agree with Stevenson and colleagues (2015) and Martin and Farnum (2002) that AAT can aid in improving social and communication skills for students with social challenges. Students in this study had an increase of positive initiated verbal interactions while in the presence of a therapy dog. Students were able to generalize skills they had learned on appropriate social and communicative interactions with a therapy dog and generalize those experiences into other settings (Esteves & Stokes, 2008).

Additional researchers such as Sams and colleagues (2006), Solomon (2010), O’Haire (2012), and Berry and team (2013) found that AAT can help students with ASD improve social interactions and communicative skills. Students with ASD often have difficulty making connections with others and engaging in reciprocal conversations. AAT can help students with ASD learn how to appropriately interact and communicate with others through practicing these skills with a therapy dog. The bond the students form, and the enjoyment experienced when interacting with a therapy dog, allows the students to expand their natural interest in the dog and apply it to other contexts (Sams et al., 2006). Students with ASD involved in AAT showed greater use of language and overall social interaction (Sams et al., 2006). All of these researchers found that AAT can help students with ASD overcome social challenges through forming emotional connections with the therapy dogs. The calming and non-judgmental nature of the therapy dogs allows student to take social risks and improve overall social and communicative skills.

The second benefit of AAT is supporting students with emotional challenges at school by reducing stress and anxiety (Anderson & Olson, 2006). Students with emotional and behavioral deficits often fail to make meaningful connections with others and lack the emotional support to be successful in school (Anderson & Olson, 2006). AAT can help these students through forming emotional bonds with the dog, engaging in appropriate care for the animal, learning empathy through being responsible for the animal’s well-being, and engaging in positive social interactions with the animal (Anderson & Olson, 2006). Animals can offer emotional support for students with emotional or behavioral struggles and can act as a bridge to appropriate interactions with humans.

Studies by Reichert (1998) and Anderson and Olson (2006) revealed AAT supports self-esteem, improves socialization, and increases appropriate problem-solving skills for students with emotional/behavioral disorders (Reichert, 1998). Boe (2008) also agrees with these findings. In her research, she found that AAT improved students' self-esteem, reduced impolite behavior, reduced off-task behavior, and also reduced non-compliance.

Still other research focused on using AAT for improving challenging behaviors. Schneider and colleagues (2014) found that AAT is beneficial in reducing stress, decreasing anxiety, and offers a calming outlet for students with EBD, hyperactivity, depression, or anxiety. AAT can be a beneficial alternative intervention for students with emotional/behavioral challenges, through forming a positive and nurturing bond with an animal. Students with EBD exhibited fewer behavioral problems and had a decreased number of disciplinary referrals after engaging in AAT for several weeks (Schneider et al., 2014). A strong bond with an animal can help elevate mood through the release of feel-good chemicals such as serotonin and oxytocin (Schneider et al., 2014).

Overall, the researchers agreed that AAT offers several emotional benefits to students with emotional challenges. These benefits include learning empathy through interactions with the therapy animal, increasing responsibility by caring for the animal, using the animal's calming presence as a way to calm themselves, and exhibiting appropriate behaviors and interactions through practicing these skills with the therapy animal.

The third benefit of AAT is helping students improve cognitive skills in educational settings. Students with disabilities may struggle with reading skills. Therapy

dogs can be used as an intervention in improving literacy skills. Several researchers agree that using AAT as a reading intervention can have positive benefits. Kaymen (2005) asserts that students who struggle with reading often have anxiety when reading aloud to adults or peers. Students who struggle to read lack confidence in reading aloud due to continuously being corrected by adults or being teased by peers for their poor reading skills. Kaymen's 2005 research found that students who participated in AAT found reading more enjoyable and were able to build confidence in their reading skills through practicing with an animal versus an adult or peer. All of the participants in the study indicated they would rather read to a dog than an adult (Kaymen, 2005).

Friesen and Delisle's (2012) study agrees with Kaymen (2005) in that using AAT as a reading intervention reduces the anxiety and stress involved in reading aloud. Reading interventions that are successful help the child feel safe, so they are less afraid to make mistakes (Friesen & Delisle, 2012). That is what is accomplished using AAT as a reading intervention. On-task reading behavior is improved during AAT, because it offers an exciting way to improve reading skills, thus capturing the student's attention. Students are willing to engage with the differentiation of reading to an animal rather than consistently reading to a teacher or peer. Students in this study had overall improvements in reading comprehension scores and improved on-task behavior (Friesen & Delisle, 2012).

Bassette and Taber-Doughty (2016) also conducted research that resulted in improvement of children's reading scores through the use of AAT. Results of this study found that 75% of the participants involved with AAT had an overall increase in reading skills (Bassette & Taber-Doughty, 2016). Still further research by Le Roux, Swartz, and

Swart (2014) found evidence that AAT improves overall reading skills. Results of this study found that after ten weeks of AAT, students had significantly higher comprehension scores (Le Roux et al., 2014). Researchers agree that AAT has many positive benefits as an intervention for improving reading. Animals can help improve motivation to read, decrease anxiety when reading aloud, and offer exciting venues to practice reading skills, therefore having a beneficial impact on student's overall reading skills.

This research also revealed that there are potential risks in implementing AAT with children. Safety concerns such as allergic reactions, aggressive animals or children, stress for the animal, and fear of animals need to be carefully considered when using AAT with children. Children should never be left alone with an animal, and adults involved with AAT must pay close attention to physical signs of distress among the child or animal. Ethical treatment of the animal should be enforced. The owner/handler and teachers should ensure that the animal and the child are a good fit for each other in order to procure the full potential benefits of AAT.

Professional Application

As part of this research, I wanted to identify the social, emotional, and cognitive benefits of AAT for students with disabilities. The purpose of this was to pinpoint how AAT could benefit specific groups of my students through purposeful and creative interventions. Through my research I identified promising evidence for professional application of AAT.

The research suggests social benefits of AAT for students with disabilities in school settings. This is intriguing evidence for special education teachers across the

United States. Using AAT as a bridge for improving social skills and communicative interactions is thoroughly evident in the research. Since the first documented case of AAT in 1962 with Dr. Boris Levinson and his dog, Jingles, to current practices of incorporating AAT, researchers have asserted many positive social effects of AAT. AAT can be a useful intervention tool for special or general educators.

AAT is also a promising intervention for students with social challenges, which is a common characteristic of ASD. Implementation of AAT in a school setting can improve social motivation, increase attention, and decrease distractibility (Busch et al., 2016). This is one factor of the increase of AAT in schools throughout the United States. Students are able to practice communicating with the therapy animal, and then generalize those communicative skills learned to peers and adults (Stevenson et al., 2015). Students who are more engaged and have developed appropriate social skills, can more easily identify and communicate their needs verbally to their teachers and peers.

Professionally, AAT provides educators with an alternative intervention for students with negative behaviors or emotional deficits. Meaningful bonds developed between a student and a therapy animal, can provide the student with emotional support to be more successful at school (Anderson & Olson, 2006). Further, AAT can help improve students' attitudes and willingness to participate at school, and students with emotional difficulties can use a therapy animal to help deescalate when frustrated or angry as an alternative to a calm-down zone or sensory items (Anderson & Olson, 2006).

In addition to using AAT to help regulate behavior, students are able to learn responsibility and empathy through caring for the animal. Students can improve problem-solving skills, socialization, emotional stability, and improve self-esteem through AAT

(Reichert, 1998). These are all positive implications for overall improvement of the mood and tone of the classroom, therefore providing a positive learning environment.

Another promising professional application of AAT is that it can be beneficial to students and educators by decreasing anxiety and reducing stress, while improving students' overall emotional well-being in the classroom. As teachers, we are always looking for ways to help our students feel welcome and safe. AAT can help students to feel more calm and relaxed, thereby reducing negative behaviors and interactions. AAT can be an essential part of a calm, supportive learning environment, which can be an asset to educators at all levels. Having students that are more relaxed, less anxious, and more motivated is an ideal situation for educators to deliver academic and life skills content to their students.

AAT also has positive academic implications for students struggling with reading. This is hopeful evidence for teachers looking for interventions to motivate students to read, increase student engagement, and improve fluency and comprehension skills. Students who struggle to read or have a dislike for reading, can practice fluency skills through reading aloud to a dog rather than a peer or adult. Reading to a dog is a non-threatening way for children to practice reading (Kaymen, 2005). Students reading to a dog find it more enjoyable and have less anxiety than when reading to an adult (Kaymen, 2005). Improvements in comprehension and confidence in reading have been identified through this research, which is further hopeful evidence for teachers in incorporating successful academic interventions in the area of reading.

Limitations of the Research

Each research study had its own unique limitations, but several researchers noted common limitations. First, many of the studies indicated small sample sizes. For example, Stevenson and colleagues (2015) noted that the small sample size in their study made it difficult to use the data to generalize results to other groups of students and to understand if the studies would apply across differentiated settings, and diverse populations of children. Rosenberg (2016) also asserted that a small sample size was a limitation in her study, as well as bias and scheduling conflicts.

Secondly, Rosenberg (2016) noted several other studies described bias as a limitation in their studies. Teachers who had prior knowledge of the purpose of the study may have differing results of the success of AAT as an intervention. Bias can occur based on the teacher's feelings towards therapy animals or wanting the study to provide positive measurable results. Rosenberg (2016) asserted "I am incredibly invested in the outcome of the study because I have a son with a disability and I am also the owner of the therapy dog" (p. 23). Teachers or raters may have bias towards or against therapy animals, which may "fog" the results.

Another limitation of the research was a lack of quantitative data. The data relied strongly on questionnaires and surveys, making it less common to have quantitative data. Esteves & Stokes (2008) noted that most of the current research is informal. Researchers also indicated that the studies were mainly short-term studies and discussed the need for more longitudinal data to track progress or regression over longer periods, including data collected post-intervention.

From the research studies, it was also difficult to determine if the improvements of AAT came solely from the use of the therapy animal, or if adult interactions with the teacher or owner/handler also influenced the improvements. I would be curious to know how much the owner/handlers assisted the students in the study. For example, Bassette Taber-Doughty (2013) stated, “It is not known if behavioral effects were a result of the students reading to dogs, or if the student’s behavior was impacted by the presence of many adults” (p. 253). If the adults supplied assistance in social, emotional, or cognitive domains, the results of the data would therefore be skewed.

If control groups were present in studies, it would be easier to determine if the improvements were influenced by adult interaction across multiple groups. The lack of a control group can make it arduous to identify if the results of the data were influenced only by the presence of the therapy animal (Stevenson et al., 2015). Ensuring that studies have a control group would improve the validity of the data.

A few studies had unique limitations which included the therapy animal having to be removed from the study due to ethical concerns with the safety of the therapy dog. The safety and wellness of the therapy animal has to be carefully watched to ensure the animal’s safety (Stevenson et al., 2015). Another study discussed that it was problematic to measure human/animal bond, and therefore difficult to get concrete data. Still another study by Rosenberg (2016) found that following the school’s schedule and limited time to interact with the students was a problem in her research. Other complications mentioned were parents unwilling to let their child participate, the therapy animal becoming sick, student absences, and student transfers in and out of the district. Although these limitations mentioned were present, the overall research is still strong in supporting

the many positive social, emotional, and cognitive benefits of incorporating AAT for students with disabilities in the school setting.

I was expecting to find data on how AAT can help students with disabilities in other academic content areas besides reading. I did not find any reliable research on how AAT can assist students who struggle in math, and very little was found on the impact of AAT on writing. Therefore, the research pool had to be limited to researching how AAT affects reading and literacy skills.

Implications for Further Research

The limitations discussed and topics that came to the forefront as a result of the research generated implications for further research. First, several researchers discussed the need for further longitudinal studies to be able to get more concrete evidence on the long-term benefits of AAT. “Further longitudinal studies are needed in identifying the theoretical understandings of underlying mechanisms that are impacted by the dog’s presence” (Hall, Gee, & Mills, 2016, p. 17). Many of the studies in this research were short term studies making it difficult to determine how AAT affects students with disabilities over time. Bassette Taber-Doughty (2013) and Boe (2008) suggest the importance of longitudinal studies examining AAT interventions, to determine the beneficial long-term effects of AAT. More evidence can be collected through longer studies, making the evidence collected more valid and reliable.

Another implication for further research is acquiring more quantitative data on the benefits of AAT. Many of the studies used qualitative data. A balance of all types of studies including qualitative, quantitative, and mixed-method models are needed (Jalongo, 2015). Many of the researchers collected data through surveys or questionnaires

from the teachers, students, and parents, therefore limiting the amount of quantitative data collected. Quantitative data would make it easier to generalize findings into multiple settings and age groups. Sams (2006) agrees with Jalongo (2015) regarding the need for further quantitative research to be able to generalize findings.

Further research on AAT should involve the use of control groups to be able to compare information collected in the presence of AAT, and in the absence of AAT in similar grade levels or groups. Trials that use both an experimental and a control group offer better evidence (Hall et al., 2016). The lack of control groups makes it difficult to prove if the data collected was only influenced by the presence of a therapy animal, or if other factors contributed to the results. “Further research could examine similar sessions with a comparison group to be clear about the specific sessions with the dog and the impact of the dog on the children” (Stevenson et al., 2015, p. 361). A group design could better compare the results of the data.

Further research should also include additional studies on young children. Many of the studies focused on students in elementary, middle, and high school. There was a lack of empirical data on how AAT effects younger children and children in primary grades. It is essential to investigate how human attachment with animals takes place with young children, in order to better understand the process of attachment, so young children can be better represented in future studies.

Another area to be researched regarding AAT is how it can be effectively implemented in other academic areas besides reading. Multiple studies explored the cognitive benefits of AAT on students’ reading skills, but there was very little research found on how AAT can be used as an intervention in other subject areas. “Identifying

other opportunities for live animals to be paired with teachers during academic interventions for students who lack motivation during typical instructional approaches could be beneficial” (Bassette Taber-Doughty, 2016, p. 17). I would be curious to learn how AAT can help students who struggle with math or writing.

A final area that deserves more research is the impact of teacher interaction on students during AAT. Esteves and Stokes (2008) suggest researchers need to consider if academic improvements are primarily the result of the student’s interaction with the therapy animal, or if other factors, such as additional adult support, impact student improvement. It may be difficult to prove that positive academic, social, or emotional benefits of AAT is due to the influence of only the therapy animal, or if other adults impact the results. Measures must be taken to collect valid data obtained from just the presence of the therapy animal and find ways to exclude or limit additional adult supports to be able to isolate the findings on only the impact of the therapy animal.

Some new questions that came up in the research include how laws for AAT will be implemented and changed over time. Will the Americans with Disabilities Act (ADA) add laws regarding the inclusion of therapy or companion animals at schools? What will these new laws include? Since there is “an increase in mentally ill students in The United States” (Von Bergen, 2015, p. 16), will these students gain rights to have a therapy or companion animal accompany them to school? Currently there are laws regarding the inclusion of service animals, but it is unclear whether there are laws that address therapy animals at school. “Animals that provide some type of disability related assistance may need to be permitted as an accommodation” (Von Bergen, 2015, p. 8).

One question I still have is how many schools across the country have successful full-time therapy animals at their schools. There was no concrete data on this topic. Since AAT is relatively a new field of intervention in schools, the lack of quantitative longitudinal data is unavailable to provide accurate statistics in this area.

Another question that emerged from this research is how the inclusion of AAT will change over time. Will it become increasingly more common to have therapy animals in schools in the near future? Researchers interested in the impact of AAT should also focus their studies on animal inclusion (Pinto & Foulkes, 2014). Through multiple methods of data collection, it is safe to assume beneficiary evidence of AAT will flood the educational system and provide evidentiary reasons for schools to implement AAT. This could also bring about financial issues of AAT. Pinto & Foulkes (2014) assert that the cost of implementing AAT in schools in the future may have a dynamic impact on school budgets. If schools become mandated or districts agree to incorporate AAT in their schools, there will be a definitive financial burden on some schools to implement the programs and pay for the service of therapy animals and owners. Many new “therapy teams” will need to be trained in the field to provide enough therapy animals to meet the needs of the growing number of schools choosing to include their services.

Conclusion

AAT for students with disabilities is important to me for several reasons. I have always had a pet growing up, and I believe that pets can offer companionship and friendship. They teach people how to trust, how to be responsible, how to show empathy, and the resulting relationship brings joy that can develop out of love and loyalty. The non-judgmental nature of animals makes it a perfect pairing in assisting our nation’s

children who may feel unwelcome, not included, lack friends, lack trust, lack positive support, or have limited joys in their lives due to the struggles that may arise from their disabilities.

As a general education teacher for 18 years, and a special education teacher for two years, I have had a lot of experience working with children with disabilities. Sometimes I have a heavy heart for them and wish I could ease some of their burdens. A therapy animal is able to do just that. They are able to help them emotionally by reducing their stress and anxiety. They are able to help them socially by being a “silent partner” in practicing communicative skills, while also modeling qualities of healthy friendships. Therapy animals can also assist students academically through just being there to listen, and not inundating them with negative or hurtful feedback. I have witnessed the positive effects that animals can have on children in schools, and in my own home. Our closest friends and allies are the ones who lift us up, accept our imperfections, and are always by our side when we need them. Therapy animals can offer these priceless gifts to our most precious children: those with disabilities.

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