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The Role of Animal-Assisted Interventions in Communication Skills of Children With Autism

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Abstract

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MEd, East Stroudsburg University, 2003

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Many children with autism spectrum disorder (ASD) have difficulties with social communication and prosocial behaviors. Due to a lack of social communication and social interaction skills among children with ASD, special education teachers are tasked with providing meaningful social opportunities to them to facilitate their learning of these skills. Special education literature lacks research studies about how dog-based animal-assisted interventions (AAI) can improve social communication outcomes for children in a school setting. The purpose of this qualitative exploratory case study, guided by Bowlby's theory of attachment and the human-animal bond concept, was to explore, describe, and improve the understanding of how elementary teachers use dog-based AAI programs in their classrooms to facilitate social communication skill development for students with ASD. Data were collected through individual interviews of 10 elementary teachers and child-study team members who used AAI programs within their buildings. Data were openly coded using thematic analysis. Key findings of the study revealed that a therapy dog could act as a stimulus for social interactions as well as facilitate students' social interaction participation. The results also indicated the importance of the teacher's role in implementing AAI programs that target social communication skills. This study may contribute to the field of special education practice by promoting the implementation of more AAI programs in educational settings, not just for students with ASD, but also potentially for the whole school community.

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Dedication

I dedicate this research to Amber and Savannah, my two furry, loving therapy dogs who were the inspiration for this study. Throughout the years, I watched as you touched and changed the lives of many children with autism and other disabilities. I have been blessed to be able to bring such loving animals into my students' lives.

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To my husband, Glenn, I cannot express how much it meant to have your unconditional love, support, and encouragement during this journey. You always knew when I needed an extra push, a break, or a good laugh to reduce my stress. Thank you for being supportive of my decision to complete this journey. I love you more than you know.

To my parents, Chuck and Cathi, you have always been supportive of my decision to advance my education, no matter how often it was. You support, encouragement, and belief that I could accomplish anything mean the world to me. I love you both very much.

To my cheerleading team, Carolanne, Rebecca, and Jen, thank you for being there for me throughout this long journey. You all listened when I needed to vent, stood by when I needed to talk through ideas, and always had faith I would finish. Love you all.

I want to acknowledge and thank all the participants of this study. Each one is an incredible educator who has dedicated their career to enhancing the lives of children with disabilities. Thank you all for your participation in this study.

Finally, I want to acknowledge and give tremendous appreciation to my doctoral committee. Dr. JoBeth DeSoto, thank you for always being supportive and providing me guidance on this journey. You always answered my questions, tamed my impatience, and pushed me to continue forward. Dr. Judy Shoemaker, thank you for always providing encouragement and being such a strong supporter of animal-assisted therapy. Dr. Joel Goodin, thank you for pushing me to write a stronger paper.

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Chapter 1: Introduction to the Study

According to the Centers for Disease Control and Prevention (CDC, 2016), the prevalence of autism spectrum disorder (ASD) is 1 in 68 individuals. The CDC estimates that there are 1 to 1.2 million children under the age of 21 identified with ASD in the United States. Today, there are more students with ASD who are educated alongside their nondisabled peers in general education classrooms than in previous years (McKenny, Stachniak, Albright, Jewell, & Dorencz, 2016; Rosenbloom, Mason, Wills, & Mason, 2016). Finding alternate therapies and teaching modalities for children with ASD is key to increasing gains in skill deficit areas.

Children with ASD display deficits in social communication skills, which are often considered to be an early indicator of autism (Anagnostou et al., 2015). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-V) defined social communication impairments in ASD as deficits in social-emotional reciprocity, nonverbal behavior, and imitative and make-believe play (American Psychiatric Association [APA], 2017). Children with ASD struggle to develop and maintain verbal exchanges and social approach behaviors, both of which are considered to be elements of social communication behaviors (Anagnostou et al., 2015). Social isolation, difficulty forming and maintaining relationships, depression, anxiety disorders, and low self-esteem are correlated with a deficit in social communication skills (Becker, Rogers, & Burrows, 2017). As children with ASD are being educated in public schools and within general education classrooms, teachers are noting these students' difficulties in navigating the

complex social situations of classrooms (Bettini, Kimerling, Park, & Murphy, 2015; Lane, Gast, Shepley, & Ledford, 2015).

Current research on animal-assisted interventions (AAI) that use certified therapy dogs has been designed to evaluate the positive effects that AAI may have on children with ASD (Becker et al., 2017; Brelsford, Meints, Gee, & Pfeffer, 2017; Davis et al., 2015). Many studies aim to document increases in prosocial behaviors, which may include increases in communication, decreases in aggressive behaviors, and overall improvement in social skills (Becker et al., 2017; Wright & McCathren, 2012). Research also suggests that the presence of a dog can bring social improvements by increasing social interactions and by decreasing the prompt level and the number of prompts needed for social interactions to occur (Fung, 2017b). When a dog is present, children with ASD may demonstrate more social approach behaviors as well, which may include talking, looking at faces, and making tactile contact responses (O'Haire, McKenzie, McCune, & Slaughter, 2013; Harris & Sholtis, 2016). The presence of a therapy dog can also elicit more social approaches from peers, who may be curious about the animal and want to be around the animal too (Becker et al., 2017; Fung, 2017b; Harris & Sholtis, 2016).

This study may contribute to the field of special education practice for students with ASD and other developmental disabilities. Recent research studies have focused on the benefits that therapy dogs can provide to elderly patients in long-term care facilities (Eber & Oh, 2017), to pediatric patients (Goddard & Gilmer, 2015) and to patients in counseling (Fine, 2015). However, there is little information regarding how teachers use therapy dogs in special education classrooms (Fine & Gee, 2017; Sroufe, 2017). Further

understanding of how dog-based AAI programs are incorporated into special education classrooms could allow this cost-effective therapy to be used in more classrooms for children with ASD. This study could also support and provide a deeper understanding of how attachment relationships and the human-animal bond may help students in a school setting. Research that allows for professional application that is supported by evidence may lead to alternate teaching interventions and strategies to support teaching students with ASD. The results of this study provide evidence on how AAI programs facilitate social communication skills in children with ASD. Identifying additional interventions may offer teachers and staff alternate methods for teaching and reinforcement (Beetz, 2013). The opportunity for social change in this study derives from its contribution to the field of special education practice, primarily at the local level through the implementation of more AAI programs in educational settings for students with ASD. It could also add to a growing body of knowledge in the fields of ASD and AAI.

The background section of this chapter summarizes research literature on AAI programs and their utilization for children with ASD. The intentions of this study are provided in the problem statement and purpose section. This section is followed by the research questions and the means to answer these questions. The conceptual frameworks for this study were attachment theory and the human-animal bond concept. Key definitions and assumptions are presented, and the last part of this chapter addresses the scope, delimitations, and limitations of the study.

Background

Fung and Leung (2014) evaluated the effectiveness of using therapy dogs in play sessions to increase social interactions for children with ASD. The results of the study by Fung and Leung (2014) indicated that there was a substantial increase in verbal exchanges and social behaviors of children during the AAI phase versus the comparison group, which used a doll in place of AAI. O'Haire, McKenzie, McCune, and Slaughter (2013) found increases in social approach behaviors, a decrease in withdrawal behaviors, and an increase in social skills following an 8-week AAI program. Funahashi, Gruebler, Aoki, Kadone, and Suzuki (2014) tracked the smiles of a young boy with ASD during animal-assisted therapy sessions; the findings found that after the fourth session, the child's meaningful eye contact and smiles drastically increased, and he began to ask for help to hold the dog during the sessions. Becker, Rogers, and Burrows (2017) found that AAI programs used during social skills training (SST) significantly reduced depression and feelings of isolation in children with ASD.

The above studies demonstrate that a therapy dog can serve as a social catalyst for children with ASD. The animal can offer a unique means of promoting positive social interaction, reducing stress, and allowing the child to use nonverbal communication. There is a gap in educational research and practice on how incorporating AAI programs could be an effective and reliable school-based intervention for children with ASD (Davis et al., 2015; Fine & Gee, 2017; O'Haire & Gabriels, 2017). This study supported and demonstrated that therapy dog programs result in educational improvement for children with ASD. The majority of existing research on AAI has been based in clinical settings

and published in social science journals, although a small amount has been published in educational journals. There is also a gap in educational research on how incorporating AAI programs could be effective, and whether school-based intervention is a reliable option for children with ASD (Davis et al., 2015; Grandin, Fine, O'Haire, Carlisle, & Bowers, 2015; O'Haire & Gabriels, 2017).

Problem Statement

Many children with ASD have difficulties with social communication and prosocial behaviors (Anagnosto et al., 2015; Beetz, 2017; Whalon et al., 2015). Due to this lack of social communication and social interaction skills, special education teachers are tasked with providing meaningful social opportunities for children with ASD to learn to use these skills (Kamps et al., 2015; Lane et al., 2015; Rosenburg et al., 2015). The problem is that there is a gap in special education research on how dog-based AAI programs can improve social communication outcomes for children in a school setting, particularly for children with ASD (Davis et al., 2015; Fine & Gee, 2017; O'Haire & Gabriels, 2017). Deficits in social language and communication skills can limit and exclude a child with ASD from interacting with peers (Locke, Shih, Kretzmann, & Kasari, 2016; Qualls & Corbett, 2017). Interactions between therapy dogs and children with ASD have the potential to increase the children's social communication skills, social skills, and academic skills (Beetz, 2017; Carlisle, 2015; Fung, 2015). Little is known about how elementary teachers use therapy dogs to prompt social communication for children with ASD. Therefore, knowing how teachers use dogs in their classrooms as a

prompt for social communication might help in determining whether including AAI as an alternate therapy for students with ASD is a viable support.

Purpose of the Study

The purpose of this qualitative study was to explore, describe, and improve the understanding of how elementary teachers use dog-based AAI programs in their classrooms to prompt social communication for students with ASD. More specifically, I aimed to gain a better understanding of how certified therapy dogs can affect social communication skills in children with ASD, and how the integration of a therapy dog AAI program can change the way in which children interact with their peers. If school district leaders understand how elementary teachers use therapy dogs in their classrooms, educators will be able to develop better AAI programs for students with ASD (Bettini et al., 2015; Brelsford et al., 2017). Exploring how teachers use therapy dogs as a prompt for social communication can help to fill a gap in the literature regarding the use of therapy dogs for children with ASD (Fine & Gee, 2017; Sroufe, 2017). This study provided information to promote and increase the use of therapy dogs in classrooms for children with ASD.

Research Question(s)—Qualitative

1. How do elementary teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD?
2. How do public school administrators or child-study team members support AAI programs within special education programs?

3. What do elementary teachers perceive to be the benefits of AAI in their classrooms for children with ASD?

Conceptual Framework—Qualitative

The conceptual frameworks for this qualitative study were Bowlby's (1969) theory of attachment, human-animal interaction (HAI) theory, and components of the human-animal bond concept. Bowlby's (1969) attachment theory is based on child development and states that when adults give emotional support in a predictable, consistent, and safe environment, children learn to become more self-reliant and are more willing to take risks as they explore the world. Attachment theory proposes that if an attachment relationship is present, then the person feels safe. This feeling of safety can produce a secure attachment, which can enhance other skills (Payne, Bennett, & McGreevy, 2015). Jalongo (2015) found that young children's attachments are not only with human beings; they also "form bonds with companion animals, particularly dogs" (p. 395).

A core belief of attachment theory is that attachment allows a child to form a sense of security during stressful situations by seeking closeness and support from a caregiver whom the child trusts (Teague, Gray, Tonge, & Newman, 2017). Children who have insecure attachments display a disparity in proximity-seeking behaviors and in exploratory behaviors and do not benefit from the social support of others (Ainsworth, Blehar, Waters, & Wall, 2015; Beetz, 2017). By studying attachment theory and its relationship to children with ASD, researchers can develop interventions that target the behaviors needed to enhance and improve relationships with peers. Byström and

Lundqvist (2015) contended that individuals with ASD display behaviors toward an animal that they do not express to any other member of their family or peer group. Children with ASD may also regulate their emotions and reactions while a dog is present because a dog is thought to elicit attachment-related behaviors in children (Hawkins, Williams, & Scottish Society for the Prevention of Cruelty to Animals, 2017). This thought suggests that animals may evoke behaviors and relationships in children with ASD that other individuals are not able to do. Sable (2013) proposed that a relationship that a person has with an animal, particularly a dog, does reflect the dynamics of attachment theory. The dog supplies a component of attachment and promotes a sense of well-being and security (Beetz, 2017; Sable, 2013). Another way to view this theory in the context of AAI is that if a child can form an attachment bond to an animal, then the child can use this secure base and sense of safe well-being to communicate and connect with peers (Kirnan, Siminerio, & Wong, 2016).

According to Payne, Bennett, and McGreevy (2015), the human-animal relationship is thought to involve attachment bonds that are similar to those that describe the human caregiver–infant relationship. Animals can have a powerful influence on child development, and children can form unique bonds with them (Jalongo, 2015). Therefore, I sought in this study to understand how teachers use dog-based AAI programs in their classrooms to prompt social communication behaviors in children with ASD. Currently, there are no documented AAI programs in a school setting that are based on attachment theory. However, an AAI program that uses dogs along with proponents of the human-animal relationship may help children with ASD feel safe in their school environment.

Attachment theory may also provide an explanation for the improvement in communication skills demonstrated by children with ASD that stem from interactions and the bond created with the animal. Conducting a qualitative research study allowed a more in-depth understanding of teachers' perceptions of how therapy dogs prompt social communication behaviors. A more thorough, in-depth explanation of the attachment theory and its relationship to AAI is provided in Chapter 2 of this study.

Nature of the Study

The aim of this study was to improve the understanding of how elementary teachers used dog-based AAI programs to promote social communication skills for students with ASD. A qualitative exploratory case study design was used to answer the research questions. Case study research is an appropriate choice when answering *how* and *why* questions (Yin, 2018). The study was based on two types of data: (a) in-depth interviews with special education or general teachers, child-study team members (CST), or district administrators from three different counties in New Jersey, (b) and researcher field notes. Researchers can explore experiences, opinions, and different perspectives of participants using in-depth interviews (Rubin & Rubin, 2012).

Researcher notes and interview data were transcribed and entered into an Excel spreadsheet and into a Word document. Once all data had been transcribed and inserted into Excel, primary open coding was used to identify major recurrent codes and patterns in the data. The data were organized into meaningful cluster categories. A second cycle of coding was completed using the NVivo (QDAS) software program. Nodes and keywords in NVivo were generated before themes/concepts were generated. Subsequent

cycles of coding were conducted to ensure that no data were overlooked. The process of coding and recoding allows the reclassification and discovery of new, refined categories (Saldaña, 2016). Continual examination and recoding of like terms and categories lead to emerging themes. The final themes that emerged from the data reflected and supported the research questions.

Definitions

The following operational definitions are provided to help the reader have a better understanding of the terms and elements of special education and animal-assisted interventions. Pet Partners (formerly Delta Society) published definitions for AAI terms in an attempt to create standardized definitions and reduce confusion between the multitudes of terms that were being used in articles (e.g., *pet therapy*, *pet-facilitated therapy*, *canine-assisted therapy*, *animal-assisted play therapy*, *dog therapy*).

Animal-assisted activities (AAA): AAA are not goal oriented but are opportunities that provide "motivational, educational, and/or recreational benefits" to improve quality of life for an individual or group of individuals (Pet Partners, n.d., para. 4). A trained professional, educator, handler, or volunteer in partnership with a certified therapy animal typically provides the activities (Jegatheesan, 2014; Pet Partners, n.d.).

Animal-assisted education (AAE): AAE is administered by a general or special education teacher and is a goal-oriented, structured program. The intent is to document and measure student progress on academic skills or prosocial skills while the therapy animal is present (Jegatheesan, 2014; Pet Partners, n.d.).

Animal-assisted interventions (AAI): This is the umbrella term that *animal-assisted therapy (AAT), animal-assisted education (AAE)*, and *animal-assisted activities (AAA)* fall under (Jegatheesan, 2014; Pet Partners, n.d.).

Animal-assisted therapy (AAT): AAT is considered to be a goal-oriented, planned, and structured therapeutic intervention that requires documentation of progress. AAT is typically regulated by health and human service providers but can be used in educational settings (Jegatheesan, 2014; Pet Partners, n.d.).

Autism spectrum disorder (ASD): Characterized by challenges in the areas of social skills (the ability to interact with others), repetitive behaviors, communication skills (both verbal and nonverbal), cognitive abilities, and limited interests or activities. The disorder appears in early childhood and is pervasive throughout an individual's lifespan. It is considered a spectrum disorder because it affects each individual differently (American Psychiatric Association, 2017; National Institute of Mental Health, 2017).

Evidence-based practices: An evidence-based practice is an intervention that is supported by empirical evidence from sound research. The Council for Exceptional Children and the American Speech and Hearing Association have both developed standards that detail the level of evidence that is required for an intervention to be considered "evidence-based" (Wong et al., 2015).

Facility dog: An animal that is trained in obedience and can sustain interactions with humans for long periods of time. The animal either lives at a facility or frequently visits the same facility. The animal can also reside with a handler and join the handler at his or her workplace on a daily basis. Facility dogs are not specially trained to provide a

task related to a disability; they are not covered or protected under the Americans With Disabilities Act (ADA; Pet Partners, n.d.; U.S. Department of Justice [USDOJ], 2015).

Handler: Typically, the owner of the animal. The handler receives training on how to provide animal-assisted interactions through the therapy organization the animal belongs to. On occasion, an animal can have a handler who is not the owner. However, this person is still required to pass the organization's training protocol. The handler is the volunteer who accompanies the therapy animal on visits to a facility. The handler is not allowed to leave the therapy animal while at a site (Pet Partners, n.d.; Therapy Dogs International, 2017a).

Prosocial behaviors: Helping and voluntary behaviors that are meant to benefit others, are learned in early stages of development, and foster relationships and friendships with others later in life (Kita et al., 2017).

Self-contained classrooms: A specialized classroom that focuses on functional, behavioral, and academic needs of students with autism and other moderate to severe disabilities (Asaro-Saddler, Arcidiacono, & Morris Deyoe, 2017). It is a classroom where students with disabilities spend most of their time in while in school. A special education teacher with the support of paraprofessionals and therapists provides instruction in a self-contained classroom (Dev & Haynes, 2015).

Service dog: A dog that is specially trained to assist an individual with a disability. A service dog is trained to perform and provide a specific task related to the person's disability. Service dogs are protected under the ADA and may enter any facility that the person whom they serve enters (USDOJ, 2015).

Social communication deficits: Social communication deficits in children with ASD can include difficulty in initiating and maintaining social interactions with peers, difficulty reading nonverbal cues, atypical eye contact, and difficulty sustaining peer relationships (Becker et al., 2017).

Special education teacher: A specially trained teacher equipped with the knowledge and skills to provide specialized instruction for students with disabilities (Shepherd, Fowler, McCormick, Wilson, & Morgan, 2016). This includes academic, behavioral, and social-emotional skills. Special education teachers also need to collaborate and work with general education teachers to provide tiered systems of support (Shepherd et al., 2016).

Therapy animal: Any animal that has met the requirements set forth by a therapy organization. The animal holds certain characteristics and skills needed to interact with students, patients, clients, or intended persons within a facility (Pet Partners, n.d.). Therapy dogs are not service animals; these animals are not protected by any law and may not enter a facility unless a policy or agreement is in place. For the purpose of this paper, any mention of a therapy animal refers to a certified therapy dog.

Assumptions

The first assumption on which this study was based was that all participants provided honest answers that were based on their knowledge of the subject to the questions asked during the interviews. This assumption presented a base for data validity. There was no way to determine whether a participant was dishonest in any way; thus, the data that were collected were assumed to be truthful and reliable. A second

assumption was that time of day and length of visit for therapy dog sessions in each classroom did not differ substantially. Therapy dog organizations are typically volunteer-based programs. It is typically up to the handler on how long the visit will last and how often the therapy dog will be present. It was assumed that the participant's classroom had established a relationship with the therapy dog organization and that the therapy dog and handler had a determined routine and schedule.

Scope and Delimitations

This study addressed the difficulties with social communication and prosocial behaviors that children with ASD experience, and relevant issues that special education teachers face in implementing successful social opportunities for children with ASD. Evidence of successful AAI programs implemented by teachers to increase social communication skills was the key focus of this study and the reason why each area (i.e., alternate conceptual framework, students with ASD, participant pool) is addressed.

The conceptual frameworks for this study were attachment theory and human-animal interaction theory. An alternate framework that potentially could have supported this study was Bandura's social learning theory. However, the focus of this study was on how teachers incorporated AAI programs for children with ASD. Bandura's social learning theory posits that individuals learn from each other through observations, modeling of behaviors, and imitation (Bandura, 1971). This theory was not a viable option because social awareness is often a deficit for children with ASD. Another area of focus was the relationship and secure feeling that a therapy dog provides to a child. Bandura's social learning theory did not support this focus.

I decided to focus on AAI programs designed for children with ASD. The population could have been expanded to all students with disabilities. However, I wanted to target a specific population to determine if AAI might be a viable alternate therapy to prompt meaningful social opportunities for children with ASD. This population of children demonstrates deficits in social communication and functioning.

The goal of this study was not to compare two variables or to compare how AAI programs differ for two different populations of children. The purpose of this study was to explore, describe, and improve the understanding of how elementary teachers incorporated AAI programs into their classrooms, and how therapy dogs prompted social communication skills for students with ASD. For this reason, a qualitative research design was selected.

The participant pool and location of participants for this study were purposefully selected. According to Ravitch and Carl (2016), purposeful sampling "provides context-rich and detailed accounts of specific populations and locations" (p. 128). Patton (2015) stated that purposeful sampling in qualitative research usually concentrates on smaller groups to study a specific topic. This sampling included 10 teachers, child-study team members, or school administrators from different public schools in the state of New Jersey. The location was concentrated on three counties within New Jersey: Morris County, Monmouth County, and Somerset County.

Participants had to meet specific criteria to be considered for this study. Teachers who had integrated therapy dogs into their classrooms at least one time per week or one time every 2 weeks were considered. There was a large enough selection of participants

who used an AAI program in various types of classrooms and who were willing to participate in this study. The participants were from different locations; this helped in understanding any similarities and differences between cases and programs.

Transferability is associated with external validity in quantitative studies (Ravitch & Carl, 2016). To establish transferability, I provided evidence to demonstrate that the findings of this study could apply to other contexts or populations of students. A very detailed description of the setting, how teachers started programs, current program implementation, and any changes in social communication skills is presented.

Limitations

The first limitation addressed in this study was researcher bias. According to Ravitch and Carl (2016), the purpose of qualitative research is to better understand how participants perceive, experience, and think about a particular topic. Due to this, researchers must declare and address all biases that they might bring to a study. I acknowledged my passion for AAI programs and educating children with ASD. Because the use of AAI for children with ASD in an educational setting is a fairly new phenomenon, learning more about how other educators used therapy dogs to increase social communication skills in students with ASD and viewed AAI as a viable alternate therapy is of significant interest. The gains from this study could allow for a more detailed outline and process for incorporating dog-based AAI programs in school settings.

Acknowledging and explaining my history and connection to AAI and children with ASD was one measure I used so that my personal bias did not become an ethical

issue. I used member checking as a second measure to address the limitations of this study. Each participant was emailed a detailed summary of his or her interview data to confirm and verify accuracy in the meaning and my interpretation of the words (Creswell, 2014; Yin, 2016). This process further reduced any bias arising from my personal opinions and experiences. One last measure to reduce limitations to this study was to have a qualified peer review the results. This independent person identified gaps in my evaluation wherein evidence and data needed to be addressed. This also confirmed that any conclusions made were sound and reasonable, and it established dependability by creating an audit trail (Ravitch & Carl, 2016, Yin, 2016). Using a code-recode strategy also helped in establishing dependability (Anney, 2014). By coding the data and then recoding the same data after a waiting period, I was able to compare the results of each coding session to see if they were the same or different (Anney, 2014).

I took memos and used reflexive journaling throughout the research process. Providing a rich description and detailed account of my interviews and research methods helped to minimize transferability (Yin, 2016). The rich descriptions provided specific details and information about the therapy animals, location of AAI programs, methods used to study the effects the therapy dog had on children with ASD, and my role in this study.

Significance

This study contributes to the field of special education practice for students with ASD. There have been numerous studies recently about animal-assisted therapy and interventions. However, the majority of these studies have not addressed implementation

procedures for teachers within their classrooms (Brelsford et al., 2017; Fujisawa, Kumasaka, Masu, & Kataoka, 2016; Harris & Sholtis, 2016; Zents, Fisk, & Lauback, 2017). Studies that have been published have focused on how AAI is beneficial for individuals in counseling settings (Maharaj, 2016), nursing homes (Holt, Johnson, Yaglom, & Brenner, 2015), hospitals (Abrahamson, Cai, Richards, Cline, & O'Haire, 2016) and correctional facilities (Allison & Ramaswamy, 2017). In contrast, the body of research on how AAI can be beneficial for students with ASD in the school setting is small (Davis et al., 2015; Hallyburton & Hinton, 2017).

There is a need for research that allows for professional application. Research that supports professional practice by finding alternate teaching interventions and strategies that support teaching social communication skills in a school setting for children with ASD. Using AAI can create a safe, nonjudgmental learning environment for students with ASD (Jalongo, 2015). By identifying additional interventions, it is possible to offer teachers and staff alternate methods of teaching and reinforcement. A dog may act as a facilitator for a student with ASD to show intrinsic motivation and can create a secure environment for the student to learn (O'Haire & Gabriels, 2017). In a general education setting, AAI can also function as a behavioral motivator for students and can be a prompt for a student to regulate behavior (Pendry, Carr, & Vandagriff, 2017).

The problem statement and research questions for this study were geared toward a social change at the local level. Even though the research was primarily conducted at the local level, it does add to the growing body of literature on animals in education. The

findings may lead to positive social change by offering evidence in support of teachers incorporating AAI programs. The findings may also have an influence on educational practices for children with ASD and students with exceptionalities.

Summary

Given the number of children with ASD who are educated in public schools, finding and using alternate therapies to address skill deficits and increase social communication skills for these students is worthwhile. It is important for school districts to find ways to help students with ASD be successful in the public school setting. Students with ASD continue to fall behind socially, and this gap will continue to widen as these students get older.

As noted, delays and deficits in social communication skills for children with ASD have an impact on their ability to make and maintain social relationships with typically developing peers (Becker et al., 2017). Teachers are finding it difficult to teach social communication behaviors and motivate students to use learned skills to be successful throughout all areas of the school. Education relies on research for evidence-based practices (Wong et al., 2015), and the research on the benefits of using AAI programs for children with ASD is limited. This in part may be due to the policy and regulations that are currently in place within a school district restricting animals/dogs in schools. For AAI programs to be more widely used and valued in education, more research is needed to demonstrate the potential of AAI to increase skills.

Animals have been used to motivate and entertain children since the 18th century; it is now time to determine whether AAT should be used more readily in academic

settings. Dogs are perceived to be nonjudgmental and a secure base for children. Therefore, AAI have the potential to impact social, emotional, and academic skills for children. In Chapter 2, I examine how AAI is currently being used and the importance of using AAI as an alternate therapy for children with ASD.

Chapter 2: Literature Review

Many children with ASD have difficulties in social communication and prosocial behaviors (Anagnosto et al., 2015; Beetz, 2017; Whalon et al., 2015). Due to this lack of social communication and social interaction skills, teachers are tasked with providing meaningful social opportunities for children with ASD to learn to use these skills (Lane et al., 2015; Kamps et al., 2015; Rosenburg et al., 2015). The problem is that there is a gap in special education research about how AAI using therapy dogs can increase social communication outcomes for children in a school setting, particularly children with ASD (Davis et al., 2015; O'Haire & Gabriels, 2017). Deficits in social language and communication skills can limit and exclude a child with ASD from interacting with peers (Locke et al., 2016; Qualls & Corbett, 2017). Interactions between therapy dogs and children with ASD have the potential to increase the children's social communication skills, social skills, and academic skills (Beetz, 2017; Carlisle, 2015; Fung, 2015). However, little is known about how elementary teachers use therapy dogs to prompt social communication for children with ASD. Therefore, knowing how teachers have used dogs in their classrooms as a prompt for social communication may help in determining whether including AAI as an alternate therapy for students with ASD is a viable support.

The purpose of this qualitative study was to explore, describe, and improve the understanding of how elementary teachers used dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. More specifically, I aimed to gain a better understanding of how certified therapy dogs can

affect social communication skills in children with ASD, and how the integration of a dog-based AAI program changed the way children interacted with their peers. If school district leaders understand how elementary teachers use therapy dogs in their classrooms, educators will be able to develop better AAI programs for students with ASD (Bettini et al., 2015; Brelsford et al., 2017). Exploring how teachers used therapy dogs as a prompt for social communication helped to fill a gap in the literature regarding the use of therapy dogs for children with ASD. This study also provided information to promote and increase the use of therapy dogs in classrooms for children with ASD.

More and more children with ASD are being educated in public schools alongside their nondisabled peers. Therefore, teachers need to stay current on evidence-based practices and alternate teaching methodologies for these students (Wong et al., 2015). A core characteristic of ASD is the presence of social communication deficits, and this is one area that teachers need to target continuously. Anagnosto et al. (2015) defined eye contact, joint attention, imitation skills, interactive play, and peer interactions as areas encompassed in social communication skills. Lane, Gast, Shepley, and Ledford (2015) discussed how children with social communication delays are "more likely to display difficulties acquiring appropriate behaviors indicative of long-term academic and social success" (p. 4). Teachers in elementary schools need to address all areas of a child's life, including academic, emotional, and social skills. Teachers need to learn to incorporate opportunities for children with ASD to practice social communication skills in nonstressful and motivating ways.

According to the Division for Early Childhood (2014), special education teachers need to target behaviors that will teach, prompt, and encourage skills that are necessary for inclusive classroom settings. Locke, Shih, Kretzmann, and Kasari (2016) reported that children with ASD struggle with social skills and social situations when compared to their nondisabled peers. Research indicates that children with ASD are often not the initiators of social interactions with peers (Becker et al., 2017; Locke et al., 2016; O'Haire, McKenzie, Beck & Slaughter, 2015). They are more likely to respond to an initiation by a peer (Locke et al., 2016).

Teachers need to seek more support from administration when their students display emotional, social, and behavioral issues (Bettini et al., 2015). It is important for children with ASD to succeed in situations that are demanding, difficult, and stressful for them. Teachers need to be advocates and agents of social change (Lai Mui Lee, Yeung, Tracey, & Barker, 2015). They must also possess a positive attitude that aids in motivating fellow teachers and students (Lai Mui Lee et al., 2015). Teaching children with significant disabilities is challenging. Teachers need to meet academic standards while remediating any academic deficits, implementing behavioral interventions to address behavioral issues, and making sure that students advance their social and emotional learning (Bettini et al., 2015).

In this chapter, I review the current literature on AAI and ASD. The chapter begins with a review of the conceptual framework of this study. First, attachment theory is defined. This is followed by a discussion of how insecure attachments are associated with ASD, how the teacher-child relationship is viewed through attachment theory, and

how animals can assist in creating attachments in children with ASD. Next, key concepts are reviewed. This section includes a description of social communication deficits in ASD and how motivation plays a key role in learning. The literature review then focuses on AAI. It begins with a brief overview of AAI, how motivation is affected by AAI, how animals are used as social facilitators, where AAI programs are currently being used, and the medical conditions that AAI programs are used for. This chapter ends with an overview of policy and safety issues that may arise in AAI programs, the types of animals used, and finally how animals help children learn.

Literature Search Strategy

Academic Search Complete and Google Scholar were the two primary databases used to explore the scope of this study. This study required cross-examination of several topics related to AAI. The following databases were also used to conduct an exhaustive search of the literature: ProQuest Central, SAGE Premier, PsychINFO, ERIC, and Education Source. The following keywords were used for these search engines: *therapy dogs*, *therapy animals*, *animal-assisted therapy*, *animal-assisted interventions*, *canine-assisted therapy*, *dog therapy*, *pet therapy*, *equine-assisted therapy*, *motivation*, *autism spectrum disorder*, *social communication deficits*, *social communication and autism*, *attachment theory*, *human-animal bond*, *human-animal interaction*, *behavioral treatment*, *assistance dogs*, *companion dogs*, *attachment theory*, and *teacher-child bond*. The following keywords were used to explore germane topics: *pediatric cancer*, *ADHD*, *effective learning*, *social skills*, *social/emotional learning*, and *zoonosis*. There is a gap in research (i.e., scant scholarly sources) on how public schools use therapy dogs within

classrooms. Due to this, several books that were relevant to animals in education and dogs as canine companions were included as sources.

Conceptual Framework/Theoretical Foundation

Attachment Theory

The conceptual framework for this study was Bowlby's (1969) theory of attachment. Attachment theory is considered one of the most significant theories in the field of personality and developmental psychology (Zilcha-Mano, Mikulincer, & Shaver, 2011). According to Teague, Gray, Tonge, and Newman (2017), "attachment is the innate neurobiological system underlying the development of relationships between children and caregivers to ensure the child's safety" (p. 35). Attachments are considered to be secure, insecure, avoidant, ambivalent, or disorganized based upon interactions with others (Biba, 2017; Rehn & Keeling, 2016).

A core belief of attachment theory is that attachment allows a child to form a sense of security during stressful situations by seeking closeness and support from a caregiver whom the child trusts (Teague et al., 2017). Beetz (2017) suggested that attachment is "a behavioral system" in an individual that seeks to establish and maintain proximity to caregivers (p. 144). Attachment behaviors are supposed to change and continue to develop as a child grows. Bowlby (1969) stated that the degree of attachment in a child is affected by the type and quality of experiences that a child has with a particular caregiver. Children who have a secure attachment will exhibit "proximity-seeking behaviors" when stressed and "exploratory behaviors" when they feel secure (Teague et al., 2017, p. 36). Rehn and Keeling (2016) reported that infants and children

with secure attachments have their heart rate return to baseline levels more quickly than those with an insecure attachment. Children who have insecure attachments also display a disparity in proximity-seeking behaviors and in exploratory behaviors and benefit less from the social support of others (Ainsworth et al., 2015; Beetz, 2017).

Another major component of attachment theory is individuals' use of an "internal working model" (Zents et al., 2017, p. 84). Internal working models are created by the types of interactions that people have with their parents, teachers, and peers (Zents et al., 2017). These interactions then determine how people feel about themselves and their expectations of others (Bowlby, 1988; Zents et al., 2017). Children's views and how they feel about other people can be determined by how they interact with a therapy dog (Levinson, 1970). The positive interactions that a child can have with a therapy dog constitute a rewarding experience and reinforce this behavior. In turn, these positive interactions can modify a child's internal working model and begin to increase self-worth by demonstrating that not all interactions are negative and hurtful experiences (Levinson, 1970; Zents et al., 2017).

Attachment Theory and Autism Spectrum Disorder

Children with ASD were once thought to be unable to form any type of attachment behavior toward caregivers, and the term *refrigerator-mother* came about to describe this relationship (Teague et al., 2017). By studying attachment theory and its relationship to children with ASD, researchers can develop interventions that target the behaviors needed to enhance and improve relationships with peers. Byström and Lundqvist (2015) contended that individuals with ASD display different behaviors

toward an animal—behavior that they do not express to any other member of their family or peer group. Children with ASD also regulate their emotions and reactions while a dog is present because the dog is thought to elicit attachment-related behaviors in children (Hawkins et al., 2017). This thought prompts the idea that animals can evoke behaviors and relationships in children with ASD that other individuals are not able to.

Teacher-Child Relationships Viewed Through Attachment Theory

A large portion of a child's day is spent in school. Creating and maintaining a positive teacher-child relationship can impact a child's social, emotional, behavioral, and academic development (McGrath & Van Bergen, 2015). The role of the teacher replaces that of the parent in providing a secure base or safe haven for a student, especially a young student. This relationship can also impact future relationships with teachers (McGrath & Van Bergen, 2015). The teacher-child relationship is also considered an important component in shaping a child's behavior and in preventing problem behaviors (Vancraeyveldt, Verschueren, Van Craeyevelt, Wouters, & Colpin, 2015). Gus, Rose, and Gilbert (2015) stated, "attachment is fostered through attunement"; thus, a child's emotional and physiological state needs to be the main focus of the adult (p. 32). In maintaining this focus, an adult promotes a sense of security for the child, which contributes to the child's overall functioning and success in school (Gus et al., 2015). As children get older, these secure teacher-child relationships become more important and influential in their lives (Gus et al., 2015).

Attachment Theory and AAI

AAI programs are used throughout a variety of settings and with a variety of individuals. Sable (2013) proposed that a relationship with an animal, particularly a dog, reflects the dynamics of attachment theory. One such dynamic is the secure base and the constant connection that the dog provides to an individual throughout all stages of life (Hart & Yamamoto, 2017; Sable, 2013). Hart and Yamamoto (2017) reported that dogs might have stronger attachments with humans because they form attachments to their owners, remain near to them, and most often make physical contact with them; this can allow the dog and owner to feel secure from harm. Dogs and other animals prompt positive emotions in children and adults, and they make people feel less lonely (Mueller, 2014). The dog supplies a component of attachment and promotes a sense of well-being and security (Beetz, 2017; Sable, 2013). Zilcha-Mano et al. (2011) reviewed the literature on human-pet bonds and concluded that these bonds meet all four prerequisites for attachment bonds. These four prerequisites—proximity seeking, safe haven, secure base, and separation distress—allow an animal to be considered an attachment figure (Zilcha-Mano et al., 2011). Jalongo (2015) suggested that a child's attachment behavior toward an animal also involves touch, especially during times of stress.

According to Levinson (1972), an emotional relationship between a child and an animal does designate a secure attachment. During therapy sessions, Levinson used his dog as a source of attachment for a child patient. In his theory of emotional relationships, Levinson postulated that an animal can provide social support to a child and can help the child facilitate communication with other individuals (Byström & Lundqvist, 2015;

Levinson, 1972). Another way to view this theory is that if a child can form an attachment bond to an animal, then the child can use this secure base and sense of secure well-being to communicate and connect with peers (Kirnan et al., 2016). Hawkins et al. (2017) reported that the attachment between a child and an animal is also associated with the development of and increases in empathy and prosocial behavior skills. Empathy is developed when the child takes responsibility for caring for and protecting the animal (Hawkins et al., 2017). Maharaj, Kazanjiam, and Haney (2016) stated that throughout all stages of development, an animal can function as a source of protection and friendship while reducing any feelings of isolation.

Mueller (2014) conducted a study to seek the connection between HAI and positive youth development. One major component of the study was examining the level of attachment that an individual displayed toward an animal. This attachment is considered an important aspect to an individual's development, especially in developing comprehensive connections to family, friends, and the community at large (Mueller, 2014). Biba (2017) reported that strong attachments with animals could alter children's perceptions of the world around them.

Human-Animal Interaction (HAI) Theory/Human-Animal Bond (HAB)

This paper is also framed by the construct of HAI theory and the component of the HAB concept. According to Purdue University's College of Veterinary Medicine (2017), HAI is "a broad term referring to any manner of relationship or interaction between a person and a non-human animal" (para. 1). One of the main components of HAI is the HAB. The HAB is defined by the American Veterinary Medical Association

as “a mutually beneficial and dynamic relationship between people and other animals that is influenced by behaviors that are essential to the health and well-being of both” (Fine & Beck, 2015, p. 5).

As noted above, Levinson (1962/1969) used his dog Jingles to build rapport with his patients during counseling sessions (Goddard & Gilmer, 2015; Levinson, 1962, 1969). This discovery prompted Levinson to investigate further the relationships built between his dog and the child patient. He concluded that animals, specifically dogs, naturally play a significant role in a child’s life (Levinson, 1997). Thus, he encouraged other professionals to use animals in their work. Payne et al. (2015) suggested that dogs have the ability to read, interpret, and react to a human’s nonverbal and verbal communication far better than other animals can. The authors also stated that the human-dog relationship is bidirectional, in that the human relies on the dog just as much as the dog relies on the human (Payne et al., 2015). The human and the dog both feel the physiological and emotions benefits of the HAB (Beetz, 2017; Payne et al., 2015). Biba (2017) noted that having an animal present reduced stress and allowed a child to interact with the environment by “removing previous inhibition and promoting self-awareness and resilience” (p. 41).

Through physical and nonphysical activities, research has demonstrated that the human-animal interaction causes the release of oxytocin (Hediger & Beetz, 2015; Hediger, Gee, & Griffin, 2017; Pendry et al., 2017). This is important because the release of oxytocin suppresses the production of cortisol, which helps to reduce the stress response and helps to regulate behavior (Hediger et al., 2017; Pendry et al., 2017).

HAI and Effective Learning

Recently, researchers have begun to examine the social, emotional, and physical benefits of HAI and how it impacts a child's health and development in early childhood educational settings (Beetz, 2017; Rajan, Gee, Michnick-Golinkoff, & Hirsh-Pasek, 2017). HAI is thought to be associated with effective learning because it activates a student's attention to learn. The information that will be learned becomes meaningful to the child with an animal present, and it is considered an interactive activity (Rajan et al., 2017). Having an animal present in early childhood classrooms can create hands-on activities that increase interest, attention, and time on task through active learning (Rajan et al., 2017). Having an animal present also teaches a young child to have empathy, which means having the ability to understand someone else's feelings or perspective (Beetz, 2017; Levinson, 1962; Rajan et al., 2017).

HAI are also associated with the ability to self-regulate (Kaufmann, Beetz, Kinoshita, & Ross, 2015; Rajan et al., 2017). Having mastery of self-regulation skills early in development has an impact on school success later in life. School programs that incorporate animals and focus on social, emotional well-being help students stay calm, feel secure, supported, and could potentially increase executive functioning skills (Beetz, 2017; Kaufmann et al., 2015; Rajan et al., 2017) especially when these skills are built into a play situation or activity. Physical activity also impacts self-regulation skills, having an animal in a learning situation keeps the students active and engaged (Rajan et al., 2017).

Literature Review Related to Key Concepts and Variables

Social Communication Deficits in ASD/Social Skills

Children with ASD exhibit impairments in social development and social communication (Grandgeorge, Degrez, Alavi, & Lemonnier, 2016). Some of these difficulties are in maintaining eye contact, processing facial expressions and intentions, and voice prosody (Grandgeorge et al., 2016; Owada et al., 2018). Smith and Dale (2016) reported that deficits in social communication skills may lead to negative behaviors and negative consequences for the child because there is less peer-to-peer interactions and interactive playtime. Kamps et al. (2015) stated children with ASD have difficulties in initiating interactions, maintaining reciprocity, and responding to peers, all of which will impact social outcomes throughout their life. Motivation also plays an important role in in the willingness and ability of children with ASD to seek out and engage in social situations. According to High and Scharp (2015) motivation is important for help-seeking behaviors and for an individual to be more involved and engaged in social situations. Schreibman et al. (2015) postulated that highly reinforcing, child-centered activities, might heighten a child's motivation to participate in social situations while decreasing maladaptive behaviors. Social skills training programs need to be incorporated into classrooms on a daily basis and should take place in naturally occurring settings (Kamps et al., 2015). Teachers need to find fun, motivating ways to embed social skills training for children with ASD. The programs need to reduce stress and anxiety associated with social situations, and at the same time be rewarding and reinforcing to the student (Hart &Yamamoto, 2017; Kamps et al., 2015; Lane et al.,

2015).

Motivation and Autism

Stavropoulos and Carver (2014) postulated that a child's motivation to learn is highly motivated by social cues and social praise. The findings discussed how eye contact, in particular, activates the "brain's reward system" in typically developing children (Stavropoulos & Carver, 2014, p. 1398). Understanding nonverbal communication and social cues are deficit areas for children with ASD, making their reward system completely different from there typically developing peers (Stavropoulos & Carver, 2014). Sparapani, Morgan, Reinhardt, Schatschneider, and Wetherby (2016), highlighted difficulties children with ASD have in maintaining attention with a social partner and objects. Due to this lack of joint attention, children with ASD are less likely to attend to instruction or peers during a communicative exchange (Sparapani et al., 2016). The lack of social motivation in children with ASD is also referred to as a lack of intrinsic motivation. According to Ryan and Deci (2000) intrinsic motivation is the "inherent tendency to seek out novelty and challenges, to extend one's capacities, to explore, and to learn" (p. 70). Intrinsic motivation is considered an inherent trait (Ryan & Deci, 2000). It produces a natural exploration and curiosity of a person's environment, and is tied to a person's cognitive and social development (Ryan & Deci, 2000). However, Ryan and Deci (2000) discussed how intrinsic motivation needs conditions to support, sustain, and elicit such behavior. Thus, many teachers use extrinsic means to motivate a child with ASD to learn a difficult task (Stavropoulos & Carver, 2014).

However, when the extrinsic motivators are not present the drive to complete difficult social tasks decreases (Stavropoulos & Carver, 2014).

Animal-Assisted Interventions

Evidence describing how animals provide a social function to children dates back in the literature to the 17th century (Serpell, 2015). In the 17th century, animals were used to teach children to learn to reflect on and control their behavior by taking care of different types of animals (Serpell, 2015). In the 18th century, many theories began to surface about the influence animal companionship had on socialization for individuals who were mentally ill (Serpell, 2015). In the 1960's, Boris Levinson discovered that the presence of a dog during therapy sessions sparked a young child who was nonverbal to speak to his dog (Fine, Tedeschi, & Elvove, 2015; Levinson, 1962, 1969). In the 1970's, Samuel Corson and Elizabeth O'Leary Corson were two of the first known researchers to study canine-assisted interventions at Ohio State University. The findings from the research conducted by Corson and Corson demonstrated significant improvements in patients when dogs were integrated into their treatment (Fine et al., 2015).

Today, animals, particularly dogs, are believed to be a stimulus for motivation for an individual to take part in difficult situations such as a healthcare interventions, therapeutic exercises, and social interactions (Miklósi & Topál, 2013; Palestrini et al., 2017). Dogs are most often used as therapy animals due to their ability to adapt with ease in a variety of different environments (Miklósi & Topál, 2013). Dogs can be found in places individuals live, work, and play. Thus, they can provide a partnership in all aspects of a person's life (Reisner, 2016).

Motivation and AAI

Children with ASD are completely different; no two individuals with the disorder are alike. Characteristics and deficit areas may be shared, but the severity along the spectrum and the intensity of behaviors are different for each individual. As a result of this, what may be intrinsically motivating to one individual may not be the same for another (Stevenson, Jarred, Hinchliffe, & Roberts, 2015). Therefore, finding naturalistic, extrinsic motivators may be the key to educational success for children with ASD in public schools (Stevenson et al., 2015). Special education teachers constantly use preference-assessments to increase the selection of motivators for children with ASD (Grandin et al., 2015). Grandin et al. (2015), discussed a study completed in 2009, the study assessed a child with ASD's preference for and responsiveness to a dog. Conclusions from the study by Grandin et al. (2015) revealed that dogs make their "behavioral intentions" more easily understandable, and since children with ASD are thought to have sensory-based thinking, it is easier for them to relate to and understand this nonverbal form of communication (p. 227).

Sparapani et al. (2016), reported children with ASD need to be actively engaged in learning for a minimum of 25 hours each week. In doing so will help reduce problem behaviors, increase communication skills, and promote an overall increase in academic success (Sparapani et al., 2016). The problem lies in the multitude of learning challenges a child with ASD faces. Teachers must find ways to motivate students to overcome and change these challenges. Beetz (2017), and Stevenson et al. (2015), highlighted how

therapy dogs were utilized to motivate students with ASD to increase their social interactions and engagement time with teachers.

Facilitators of Social Interaction

Hart and Yamamoto (2017), Grandin et al. (2015), and Serpell (2015) reported a dog could serve as an opening stimulus for social interactions, with the hopes that this first interaction may lead to a more sustained relationship. Fine (2015) defined the animal as a link in conversation or social lubricant as a "rippling effect" (p. 143). Meaning the animal affords the client a sense of comfort, which then incites rapport in a relationship (Fine, 2015). According to Byström and Lundqvist (2015) parents of children with ASD stated the family's companion animal increased social interactions with their child. The dog also increased social communication at school because the children with ASD used their dog as a topic of communication (Byström & Lundqvist, 2015; Hart & Yamamoto, 2017). The dog opened an avenue for a child with ASD to have contact and a relationship with another person, thus increasing social communication skills. Utilizing a therapy dog or companion dog creates an animal-child dyad; this dyad is often then expanded to other individuals around the child when the dog is present (Byström & Lundqvist, 2015; Grandin et al., 2015). Hart and Yamamoto (2017) reported dogs act as "icebreakers" and increase the number of exchanges in social conversations while providing a stress-relief for those that experience anxiety during social situations (p. 256).

Research has also documented how stress levels in children with ASD increase during social situations (Grandin et al., 2015; Hart & Yamamoto, 2015; Quinn & Peters,

2017). Not only may the dog serve as a catalyst for social interactions, but the dog may also aid in reducing high levels of stress for children with ASD while engaging in social situations (Grandin et al., 2015; Hart & Yamamoto, 2017; Serpell, 2015).

Social Skills, ASD, and AAI

As stated above, children with ASD have deficits in social skills (Becker et al., 2017; Carlisle, 2015). There has been an influx of research in how using animals can increase social skills in children with ASD. One of the reoccurring themes in the literature is how the animal acts as a social catalyst and prompts social interactions in students with ASD (Becker et al., 2017; O'Haire, McKenzie, Beck, et al., 2015; O'Haire et al., 2013; Smith & Dale, 2016). According to Becker et al. (2017), a reduction in symptoms of depression, feelings of isolation, and ineffectiveness, were also noted in their study on animal-assisted social skills training.

Animals also appear to affect the quality of social interactions as well (Becker et al., 2017). This could be because children with ASD use both verbal and nonverbal communication when the dog is present, and animals communicate their acts and intents through body language and nonverbal signals (Grandgeorge et al., 2016). Utilizing a therapy dog during social skills training may also increase social communication skills, interactive play with peers, and emotional bonding with the dog and with peers (Smith & Dale, 2016). Fung (2017b) reported positive results in nonverbal social behavior and verbal social behavior in two boys with ASD during and after the completion of a canine-assisted play therapy sessions. Teachers play a critical role in implementing AAI programs that target social communication skills. Understanding how teachers use

therapy dogs and their attitudes towards AAI programs could help improve support for having AAI programs in schools.

Where AAI Programs Are Used

AAI programs are used throughout the medical field. Research has demonstrated positive connections and benefits between therapy animals and patients in hospitals, psychiatric wards, pediatric hospitals, hospice, and nursing homes (Hubrecht, Wickens, & Kirkwood, 2016; Kirnan et al., 2016). Therapy Dogs International (2015a) stated that the therapy dog creates a sense of normalcy at a stressful time in an individual's life. The therapy dog also provides a distraction for medical conditions and any pain patients may experience from this condition (Hubrecht et al., 2016; Kirnan et al., 2016; TDI, 2015a).

AAI programs are also currently being used in the mental health field. Many psychologists and therapist consider animals, particularly dogs, as adjuncts to creating and maintaining a therapeutic relationship with their clients (Fine, 2015). Fine (2015) described the clinical environment to be considered more friendly and comfortable to clients when an animal is present. VanFleet, Fine, O'Callaghan, Mackintosh, and Gimeno (2015), indicated animal-assisted play therapy used with children could decrease behavioral meltdowns by allowing the child to use the animal to express their feelings or emotions.

AAI, mainly AAT, is being used in conjunction with Occupational Therapy (OT) and Speech-Language therapy. AAT is being used as a means to capture a client's attention, to motivate clients to perform difficult tasks, and to help build rapport with the therapist (Vanfleet et al., 2015). According to Mey (2017), therapy dogs have the ability

to increase interactions and ease communication between a therapist and a client. Becker et al. (2017), found that children with ASD use more language during OT sessions when a dog is present verses OT sessions without a dog. Foreman, Glenn, Meade, and Wirth (2017) found that therapy dogs that work with Occupational Therapist improved an individual's gross motor abilities through exercises such as, grooming, playing catch with the dog, or even walking next to the dog (Foreman, Glenn, Meade, & Wirth, 2017).

Animals are also being used in nursing homes for elderly residents (Pope, Hunt, & Ellison, 2016). AAT programs are used in nursing homes to help improve well-being and quality of life (Pope et al., 2016). Eber and Oh (2017) found that AAI helped to reduce the negative experience some residence felt when initially moving to a long-term care facility. Many patients in nursing homes suffer from dementia and AAT is thought to decrease withdrawal symptoms, increase short-term memory, help to trigger long-term memories, and promote communication skills (Pope et al., 2016).

Hospitals are also utilizing AAI, especially for pediatric patients with cancer. According to McCullough et al. (2017), each year there were 40,000 children under the age of fourteen that undergo cancer treatments. Not only do the children experience physical pain, but many develop psychological issues as well. AAI is one noninvasive intervention that could potentially help children and their families cope with all aspects of a cancer diagnosis (McCullough et al., 2017). Likewise, dogs can distract a child from any pain they may be feeling, be a sense of encouragement and support during treatment, and be a safe outlet for the child to express their feelings (Goddard & Gilmer, 2015; McCullough et al., 2017). Therapy dogs can also decrease anxiety that children

experience while being in the hospital (Abrahamson et al., 2016). This anxiety and stress could be caused by multiple factors, such as separation from parents, limited physical activity, and being in an unfamiliar setting with unfamiliar people (Goddard & Gilmer, 2015).

Colleges and Universities are beginning to utilize therapy dogs during the week of final exams to help reduce stress and anxiety (Barker, Barker, McCain, & Schubert, 2016). Exams can signal stress, depression, and isolation in college students (Barker et al., 2016; Preuß, Schoofs, Schlotz, & Wolf, 2010). A study conducted by Preuß et al. (2010) demonstrated increased levels of salivary cortisol in students before exams, and increased levels of cortisol are linked to stress and poor test performance. Based on these results, Barker et al. (2016) studied the effects of perceived stress reduction using visiting therapy dog teams and found a significant reduction in perceived stress. Jalongo and McDevitt (2015) studied the use of therapy dogs in a campus library to increase engagement and reduce stress during exams. The authors found an overwhelming positive response from students regarding the implementation of the therapy dog teams (Jalongo & McDevitt, 2015). Students reported lower stress levels, having more motivation to study, and overall general appreciation of having the dogs present (Jalongo & McDevitt, 2015).

Therapy Dogs International and Intermountain Therapy Animals are two organizations that have implemented reading programs for children utilizing trained therapy dogs. Reading Education Assistance Dogs (R.E.A.D.) and Tail Waggin Tutors were created to produce a safe, comfortable, motivating environment where children can

practice reading and improve their communication skills (Intermountain Therapy Dogs, n.d.; Therapy Dogs International, 2017b). Lenihan, McCobb, Diurba, Linder, and Freeman (2016) stated motivation is one of the biggest keys to success when teaching a child to read and to sustain independent reading. However, children who have low reading abilities and struggle with reading also have low motivation (Lenihan et al., 2016). Using therapy dogs in reading programs in school environments have the potential to reduce stress and allow students to read in a nonjudgmental way (Lenihan et al., 2016). Levinson, Vogt, Barker, Jalongo, and Van Zandt (2017) reported therapy dogs that are incorporated into reading programs also improve attention, focus, and oral fluency skills in children.

Disabilities/Medical Conditions

AAI, which includes AAT, AAA, and AAE, are often found in classrooms that serve children with special needs. Attention deficit hyperactivity disorder (ADHD), ASD, oppositional defiant disorder (ODD), and emotional/behavioral disorders are the conditions most commonly served using AAI programs in school settings (Gee, Fine, & Schuck, 2015). Vanfleet et al. (2015) reported the presence of a therapy dog may have a calming effect on a classroom environment. Vanfleet et al. (2015) reported the dog's ability to reduce stress and elicit an emotional response in children make AAI in classrooms an ideal supplemental intervention.

Busch et al. (2016) conducted a study to explore alternate treatment approaches for individuals with ADHD. The authors reported that AAI increased motivation in children with ADHD, which in turn decreased associated behavior problems and overall

ADHD symptoms. Schuck, Emmerson, Fine, and Lakes (2015) also reported a deficit in motivation as a symptom of ADHD. This lack of motivation is caused by an "under arousal of the catecholamine system" (Schuck et al., 2015, p. 126). AAI has demonstrated an increase in motivation by heightening arousal, and increasing emotional responses during therapy sessions (Schuck et al., 2015). Additionally, when AAI is used in a classroom setting, children with ADHD display an increase in self-regulation skills (Sorin, Brooks, & Lloyd, 2015).

Service dogs, therapy dogs, and dog-training programs are all being explored as treatment options for military personnel who suffer from posttraumatic stress disorder (PTSD). According to Kloep, Hunter, & Kertz (2017), PTSD is more prevalent in combat military veterans than the rates of PTSD in the general population of the United States. The debilitating symptoms associated with PTSD constantly interrupt the daily lives of the veterans diagnosed with PTSD, thus making contact with an animal a viable alternate treatment solution (Kloep et al., 2017). The use of the animal in this situation would alleviate symptoms of PTSD such as isolation, an alert to high stress levels, and also serve as a companion to help decrease depression and increase social interactions with others (Kloep et al., 2017; Krause-Parello, Sarni, & Padden, 2016).

Policy and Safety Issues

Many countries embrace having dogs and other animals in their schools and classrooms. Germany, Austria, and Finland are three countries that train teachers and assess dogs to create teams that enhance student learning (Fine & Gee, 2017). To date, there is no "official" system or "set of rules" for bringing animals into educational

settings in the United States (Linder, Siebens, Mueller, Gibbs, & Freeman, 2017; Meints, Brelsford, Gee, & Fine, 2017). The biggest legal concern in using AAI programs in educational settings is the liability of someone being injured by an animal or activity during an AAI session (Huss & Fine, 2017). One way to minimize this risk is for the district or accompanying therapy dog organization to have liability insurance. Another factor to minimize risk is for the school district to require an animal policy be in place before having a therapy dog visit. The handler must also follow regulations set forth by the therapy organization. Therapy dog organizations require a facility to sign a Memorandum of Understanding before a dog/handler team may visit (TDI, 2017a).

Having a dog in an educational setting brings forth certain risks, procedures, and safety concerns that should be considered before the AAI program begins. One recommendation is that all students are introduced and educated on how to "read" a dog's body language. Since the students will have physical contact with the animal they should know the basic understanding on how to read the behavior signs emitted by the animal (Meints et al., 2017). Even though certified therapy dogs are evaluated for their temperament in a variety of locations, young children can at times crowd the animal and this has the potential of creating stress in the dog. Having a policy in place to address how the dog will be introduced to the school, and procedures on how to interact with the dog will help to minimize the potential risk.

Another precaution that should be taken to ensure the safety of all students is to make sure all phobias, allergies, and zoonosis are addressed (Meints et al., 2017; Linder et al., 2017). When dogs are going to be used in an educational setting, all staff and

students must be made aware and taught how to behave around the animal and to the animal. Doing so will ensure the safety of the animal as well as the students (Meints et al., 2017). The school district also needs to protect and reduce stress in any students who are fearful of dogs (Hart & Yamamoto, 2017). Employing an AAE program in conjunction with an AAI program will teach children to respect, have empathy for, and reduce fear about the dog (Hart & Yamamoto, 2017). The school nurse should work closely with the teacher associated with the AAI program and address any potential allergies with the parents.

Zoonosis concerns the transfer of disease between animals and humans. No "human or animal health organization" regulates or monitors AAI programs in any location. However, the Society for Healthcare Epidemiology of America (SHEA) established and produced guidelines and steps for animals that provide services in health care facilities (Linder et al., 2017). Bert et al. (2016) discussed how the implementation of a hygiene protocol could reduce the risk of zoonosis. The authors recommended washing hands after having contact with the animal, weekly bathing of the therapy animal, and strict veterinary health screenings on a regular basis (Bert et al., 2016).

Types of Animals Used in AAI

Dogs are the most commonly used animals in AAI programs. Dogs are conveyed as the type of animal that help children with ASD the most to have a connection with people outside their immediate family (Byström & Lundqvist, 2015; Gradin et al., 2015). Parents of children with ASD reported dogs improved their child's functioning and development because the animal acted as a "provider of comfort, regulator of feelings

and stress, and facilitator of motor development and coping with difficult life events" (Byström & Lundqvist, 2015, p. 269).

The second most commonly used animal in AAI programs is the horse (O'Haire, Guérin, Kirkham, & Daigle, 2015). The Professional Association of Therapeutic Horsemanship International (PATH) is the leading organization for equine-assisted activities and therapies (EAAT). The goal of PATH is to provide safe and effective therapeutic horseback riding programs for individuals with disabilities (Professional Association of Therapeutic Horsemanship International, 2018). According to O'Haire, Guérin, Kirkham, and Daigle (2015), an increase in social functioning was the most common outcome reported in EAAT. Borgi et al. (2016) studied the effects equine-assisted therapy had on improving adaptive and executive functioning skills in children with ASD. The authors reported how therapeutic horseback riding delivered positive results on increasing social, emotional, and physical skills in a child with ASD (Borgi et al., 2016). Equine-assisted therapy is also reported to improve self-efficacy and self-esteem skills in children with ASD (Borgi et al., 2016). Latella and Abrams (2015) found that weekly therapeutic riding lessons increased social motivation, attentiveness, eye contact, and verbal language in children with ASD.

Guinea pigs are also being studied as animals that can be used during AAI (O'Haire & Gabriels, 2017; O'Haire et al., 2013). Guinea pigs are a common animal in educational classroom settings due to their size, gentle nature, and ease of care (Gee et al., 2017; O'Haire, Guérin et al., 2015). Due to these characteristics, guinea pigs are defined as "pocket pets" (Gee et al., 2017, p. 199). O'Haire et al. (2013) conducted an 8-

week study utilizing guinea pigs within general education classrooms. The results from the study indicated an increase in social skills and a decrease in problem behaviors (O'Haire et al., 2013). A decrease in physiological arousal during social interactions was also noted as an outcome of using guinea pigs in AAI program (O'Haire, McKenzie, Beck, et al., 2015).

How Animals Can Help Children Learn

Researchers have documented how animals can benefit an individual's psychological and physiological state (Fung, 2017a; Hediger & Beetz, 2015). The research on how animals can benefit a child in an educational setting is still a growing area of study. According to Pendry, Carr, and Vandagriff (2017), for students to have an increase in positive youth development and social competence skills, schools need to provide opportunities for students to engage in prosocial behaviors. Opportunities need to include having the ability to demonstrate learned skills with reinforcement to increase the likelihood the skills will be repeated (Pendry et al., 2017). In schools, positive youth development and social competence fall under School-Wide Positive Behavior Supports and Social Emotional Learning (SEL) (Pendry et al., 2017). Since canines are thought to share some behavioral aspects with humans, educators can use canines as a means for a child to practice and engage in their own socially competent behaviors. This occurs because dogs encourage children to engage and not be socially withdrawn or isolated while in school (Pendry et al., 2017).

Hergovich, Monshi, Semmler, and Zieglmayer (2002), Kotrschal and Ortbauer (2003) and Beetz (2013) all studied the effects of having a dog present in an elementary

school setting over a long period of time. All three studies reported an increase in empathy, an increase in social integration, an increase in attention to task/teacher, and fewer behavioral outburst (Beetz, 2013; Hergovich, Monshi, Semmler, & Zieglmayer, 2002; Kotrschal & Ortbauer, 2003). Beetz (2013) also reported the students had an increase in positive attitudes towards school and learning.

Special education teachers who teach children with ASD seek ways to increase task completion and task performance for their students. Hediger, Gee, and Griffin (2017) declared that a dog's presence had a positive impact on task performance. The authors concluded that the dog is in fact a highly significant stimulus to encourage a student to focus on a presented task. Having a stimulus for learning present in the classroom will help teachers optimize student learning and cognitive processes (Beetz, 2017). This presence will also allow the children to feel supported while completing more difficult tasks (Hediger et al., 2017). In essence, the dog changes the atmosphere of the classroom into a more positive, nonjudgmental environment (Fung, 2017a; Hediger et al., 2017).

Children with ASD are reported to have deficits in executive functioning (EF) skills (Cascia & Barr, 2016; MacMullen-Freeman, Locke, Rotheram-Fuller, & Mandell, 2017). Children who display deficits in EF skills are thought to have lifelong learning difficulties and are at a "greater risk to develop oppositional behaviors, impaired social interactions, and school failure" (Schuck & Fine, 2017, p. 70). Many children with deficits in EF skills are taught in special education classrooms and the impact this has on educators can be difficult and demanding. School-based canine AAI programs could

target the EF characteristics of under-arousal and poor self-regulation skills in children (Kaufmann et al., 2015). For learning to take place, children need optimal arousal levels. Schuck and Fine (2017) postulated that the presence of a dog could make a child become more aware of their environment, better able to tune-out distractions, and increase their attention to task. The child-dog interaction itself may be the "hook" that is needed to provoke engagement and heighten arousal in children with EF deficits (Schuck & Fine, 2017, p. 73).

Tactile stimulation is a necessary part of human development but is discouraged in school environments. A therapy dog can assist in learning through multi-sensory stimulation. Zents, Fisk, and Lauback (2017), discussed how therapy dogs allow children this tactile stimulation through touching and petting the dog. This sense of touch can allow the child to feel safe, reduce stress, and create a bond with the animal (Jalongo & McDevitt, 2015; Zents et al., 2017).

Summary and Conclusions

According to the American Pet Products Manufacturers Association (APPMA, 2017), 68% of all American households own a pet, with 48% of this total owning a dog. The National Pet Owner Survey concluded that over the past two decades, pet ownership continued to display an upward trend. Beyond the companion animals, children are also making contact with animals at neighboring homes and in their classrooms (Melson & Fine, 2015). Contact is also made through other medias, such as, art, movies, books, TV shows, and in zoos (Melson & Fine, 2015).

Many elementary classroom teachers are acquiring classroom pets. The animal is

a permanent resident and teaches the students' responsibility and compassion (Gee et al., 2015). Classroom pets also promote self-esteem and are used to facilitate social interaction (Gee et al., 2015). Classroom pets can be fish, lizards, guinea pigs, hamsters, gerbils, turtles, frogs, or rabbits and typically are found in early primary grades. As noted above, canine reading programs are becoming more popular in elementary schools. Canine reading programs are not meant to follow a curriculum but instead afford students' the opportunity to practice their reading skills with a nonjudgmental, calming partner (Gee, et al., 2015).

What is not known is the significance animals could play in a child's life, both socially and academically. Conducting research will help in the understanding of how and why animals have the ability to positively impact a child. For special education teachers who teach children with ASD, searching for and implementing effective teaching strategies, and alternate interventions that will help students navigate the complex social situations in school are a priority (O'Haire & Gabriels, 2017). The specific learning styles of children with ASD also effect school success, special education teachers need to be aware of these differences and be able to implement interventions that will be successful. In addition, teachers typically have a closer relationship to a student with ASD than a general education teacher to a typically developing child (O'Haire & Gabriels, 2017). This closer relationship produces a secure base for the child and could allow a teacher to implement alternate interventions, such as AAI, that would enhance social communication skills. The animal could produce a positive association with school, increase social emotional responses, reduce stress, and decrease behavior

incidents in children with ASD (Byström & Lundqvist, 2015; Fine & Gee, 2017; Grandin et al, 2015; O'Haire & Gabriels, 2017).

In Chapter 3, I offer a description of qualitative case study design, details on the methodology chosen for this study, and justification for its use in this study. A plan for the analysis of information received during the interview sessions, and field notes were provided. Explanations of any ethical considerations that appeared were also addressed.

Chapter 3: Research Method

Introduction

The purpose of this qualitative study was to explore, describe, and improve the understanding of how elementary teachers used dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. More specifically, I aimed to gain a better understanding of how certified therapy dogs can affect social communication skills in children with ASD, and how the integration of a dog-based AAI program changed the way in which children interacted with their peers. If school district leaders understand how elementary teachers used therapy dogs in their classrooms, educators will be able to develop better AAI programs for students with ASD (Bettini et al., 2015; Brelsford et al., 2017). Exploring how teachers used therapy dogs as a prompt for social communication helped to fill a gap in the literature regarding the use of therapy dogs for children with ASD. This study also provided information to promote and increase the use of therapy dogs in classrooms for children with ASD.

This chapter describes the study's research design and includes information on the following: the research design and rationale for a qualitative research approach, the proposed research questions, the central concept of the study, the research sites and participants, anticipated data collection methods, instrumentation, issues of trustworthiness, ethical procedures, and credibility.

Research Design and Rationale

The following were the research questions for this study.

1. How do elementary teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD?
2. How do public school administrators or child-study team members support AAI programs within special education programs?
3. What do elementary teachers perceive to be the benefits of AAI in their classrooms for children with ASD?

The central concept and phenomenon of this study was the use of dog-based AAI programs for children with ASD and how teachers used these programs to increase social communication skills in children with ASD. According to Yin (2018), a research design "links the data to be collected to the initial questions of the study" and can be thought of as a blueprint for the research that will be conducted (p. 24). Burkholder et al. (2016) described qualitative research as exploratory, "its function is to gain an understanding of a phenomena through observation and description" (p. 68).

A qualitative case study design was used to answer the research questions. A case study design was selected for this study because a case study "deals directly with individual cases in its actual context" and "gets as close as possible to the subject of interest" (Yin, 2016, p. 53). Case study research is also an appropriate choice when answering *how* and *why* questions (Yin, 2018). Yin (2018) discussed the use of a constructivist approach for a case study when the study is designed to capture the "perspectives of different participants" and focus on "how their different meanings enhance the topic of study" (p. 16).

Stake (1995) stated that a teacher or an innovative program could be considered a case. For this study, a case was defined as an individual teacher, CST member, or district administrator. The school employees did not need to be from the same school or school district. However, all individuals who were considered a *case* must have incorporated or been part of an AAI program. Because this study focused on how people (teachers, CST members, and school administrators) incorporated therapy dogs into public school classrooms, a case study design was an appropriate overall strategy that suited this inquiry.

There are several reasons that I selected a qualitative approach over a mixed-methods or quantitative approach. I wanted to understand how teachers incorporated dog-based AAI programs into their classrooms; for this reason, I selected a qualitative research design. I studied the views and perspectives of study participants about AAI programs. Capturing the perspectives of teachers who incorporated AAI was a key purpose of this qualitative research study. Lastly, a qualitative research approach allowed me to highlight emerging codes, concepts, or themes related to how AAI programs increased social communication skills (e.g., increased eye contact, social approach behaviors) in children with ASD.

Quantitative Approach

According to Creswell (2014), a quantitative research design is used to test a theory or theories by "examining the relationship of the variables" (Creswell, 2014, p. 4). Quantitative research uses statistical procedures; information is gathered on the variables and is measured and analyzed using numbered data. Studying variations in different

social communication skills that may increase with the use of therapy dogs in an AAI program was not aligned with this study's research questions. For these reasons, a quantitative approach was not considered for this study.

Mixed-Methods Approach

A mixed-methods approach involves the use of both quantitative and qualitative data to study and extend the understanding of a phenomenon (Burkholder et al., 2016). If the proposed research questions cannot be answered by either a quantitative or qualitative approach, then a mixed method approach may be considered. A mixed-methods approach was first considered for this study's approach because it would have allowed me to use quantitative data from the results of a standardized test such as the Children's Communication Checklist (CCC-2) to document any increase in a student's communication skills. This would have allowed any increases in social communication after the implementation of a dog-based AAI program to be highlighted. This approach was determined not to be appropriate because the AAI programs were already underway. This would have produced skewed data in using a standardized test for quantitative research purposes.

Role of the Researcher

I served in many roles during this qualitative research study. The first and most significant role I served was that of the primary instrument for gathering potential data and analyzing these data. Ravitch and Carl (2016) asserted that researchers must define their positionality and social location; both are essential factors in understanding the researcher's role. I decided to use the district in which I work. However, I did not use the

specific school I work in, and I made sure to identify my relationship to the participants within the district where I work to reduce researcher bias.

Researcher reflexivity is another essential factor in qualitative research (Ravitch & Carl, 2016). *Researcher reflexivity* is defined as "an active and ongoing awareness of how the researcher may influence the theory and ideas behind the study" (Ravitch & Carl, 2016, p. 15). Researchers must be upfront about their beliefs, bias, personal experiences, and any potential relationships they may have or form with participants (Creswell, 2014; Ravitch & Carl, 2016). The role of the researcher influences each part of a study (Ravitch & Carl, 2016), and I provided information on relevant aspects of myself, including any bias, assumptions, or experience I had, during the research process to all participants.

My interest in this topic stemmed from my personal history with AAT, and from my experience of teaching children with ASD for 20 years. I first learned about and became a part of an AAT program more than 10 years ago. At the time, I was teaching in a kindergarten to Grade 2 (K-2) self-contained classroom for children with ASD. My supervisor approached me to be part of the district's first AAT program. I had little knowledge of the benefits of using animals to assist students in learning. Over the past 10 years, I have conducted research and learned more about AAI. In 2015, I enrolled in the University of Denver's animal and human health certification program. Through this program, I learned about and how to create AAI programs. This certification program strengthened my personal belief that animals can assist children in learning and in maintaining their behaviors. However, as a special education teacher, I advocate for

using evidence-based practices. This has led to my interest in finding evidence that AAI is a promising and beneficial therapy for children with ASD. In communicating with participants in this study, I acknowledged and explained my history and connection to AAI and children with ASD so that my personal bias did not become an ethical issue. I provided all participants with the results of this study to further reduce bias from my personal opinions and experiences. Sharing results with the participants provided clarification and allowed me to check the accuracy of the information provided (Creswell, 2014; Yin, 2016).

Methodology

Participant Selection (Qualitative)

The target population for this study was special education or general teachers who had integrated therapy dogs into their classrooms at least one time per week or one time every 2 weeks. Child-study team (CST) members and district administrators were also selected if the school district personnel supported an AAI program within their building. Purposive sampling was used in this study; according to Patton (2015) and Ravitch and Carl (2016), it is the primary sampling method used in qualitative research. Yin (2016) stated that purposive sampling allows a researcher to select participants who will produce the most relevant and complete data. The participant pool included nine teachers who currently were implementing dog-based AAI programs or who had implemented AAI programs in their classrooms for a minimum of 1 day per week or 1 day every 2 weeks, and one CST member. The study had a narrow aim, seeking comprehensive information from participants meeting specific criteria. According to Guest, Bunce, and Johnson

(2006), when "participants are chosen based on common criteria, and the more similar participants are in their experiences, the quicker data saturation will occur" (p. 76). The data collected from the 10 participants in this study demonstrated data saturation. It was vital to this study that participants met the predetermined criteria (Yin, 2016). Whether or not a participant met the predetermined criteria was completed via email communication with district superintendents. I was able to identify participants in each approved district who currently had or previously had an AAI program within their classrooms. I confirmed that they met the inclusion criteria for this study after they responded to my solicitation for participation. In using purposive sampling, I was able to collect context-rich, detailed information regarding a specific topic and a specific population (Ravitch & Carl, 2016).

Ravitch and Carl (2016) stated that a unit of analysis could be "focused on people, structure, perspectives, geography, activity or time" (p. 138). The unit of analysis for this study was 10 special education teachers, general education teachers, CST members, or district administrators who agreed to partake in the study. The intended sample size of this study was 10 participants. The data gathered from the 10 participants in this study were sufficient in answering all of the research questions proposed. If I felt the research questions had not been thoroughly answered, more participants would have been obtained. However, as Morse (2000) stated, "if the nature of the topic and questions being asked during the interview process are easily obtained in the interview session, fewer participants are needed" (p. 3). The questions asked of participants in this study

produced rich, thick descriptions of their experiences with AAI. All data collected were on target and thoroughly answered the research questions proposed.

Instrumentation (Qualitative)

I used open-ended, semistructured interviews for this study. Rubin and Rubin (2016) stated that in a semistructured interview, the researcher generates a limited number of questions in advance, with the intent to ask further probing and clarifying questions as needed. Patton (2015) discussed how an interview in qualitative research is also an observation. The interviewer observes the interviewee and assesses the answers heard, while the interviewee assesses how the interviewer asks questions (Patton, 2015). Establishing and maintaining rapport with the interviewees was critical and established trustworthiness. I kept the interview conversational in manner, and I asked open-ended questions that led the conversation (see Appendix D). Rubin and Rubin defined this structure as a responsive interview, emphasizing the relationship that is established as important because it leads to a more natural "give and take conversation" (p. 37). To maintain accurate information, I created and used an interview protocol (see Appendix C) to establish details of the interview (date, time, the location of the interview, name and code of the interviewee, clarification of the study goals, any time limits of the session, and the rationale for participant selection).

All of the interviews occurred in a location that was acceptable to both parties. I provided the participants with a letter of informed consent before the scheduled interview. In this letter, I reinforced that confidentiality of names and other identifying information would be maintained to protect the participants' identity. Before beginning

each interview, I collected the signed letter of informed consent. I also ensured that all participants understood their right to withdrawal from participation in the study at any time. Qualitative research does not rely on previously developed instruments (Creswell, 2014). Due to this, I developed descriptive, open-ended research questions that allowed the participants to candidly express their experiences, views, and thoughts on the subject matter. The first section of the Initial Interview Questions (Appendix D) addressed demographic information about the participant. The second set of questions addressed the main research questions, and each question had a set of subquestions. These subquestions were created to elicit more details on each of the research questions. According to Fusch and Ness (2015), interview questions need to be "structured to facilitate asking multiple participants the same questions for data saturation to occur" (p. 1409). My doctoral committee reviewed and approved all interview protocols and questions to ensure content validity. This safeguarded that the questions asked measured and produced the data sought based on the research questions.

Procedures for Recruitment, Participation, and Data Collection

To acquire participants for this study, I conducted a search using the New Jersey Department of Education (NJDOE, 2017) school directory. The search focused on public school districts within three specific New Jersey counties: Morris County, Union County, and Somerset County. From this search, I generated a list that included the school district name and the name, address, phone number, and email address of the district superintendent. From this list, I contacted four school district superintendents by email to ask for permission to conduct research in their districts by contacting teachers, CST

members, or administrators who used or had used AAI programs within their district. I provided each superintendent with a detailed explanation of this study along with the predetermined criteria that had to be met by participants (see Appendix A). I had to repeat this procedure and include an additional 52 school districts; this round covered 10 different counties within New Jersey plus schools because I did not receive enough approvals from the initial round of contact with superintendents. From this second inquiry, I received permission to conduct research from an additional two superintendents. In total, I received permission to conduct research and contact potential participants from three school districts.

Once I had secured email consent from the school districts and received full IRB approval to begin research, I sent 15 recruitment letters to teachers, CST members, and district administrators from the approved districts. From this list of potential participants, 11 responded. From this list of 11 individuals, I contacted each one by email or phone to set up an interview time. A total of 10 participants responded, and convenient times and interview locations were set. Each participant was provided a letter of consent to participate, which included the participant's rights, the purpose of the study, and potential risks and benefits of participation in the study. Each participant was provided a copy of the letter of consent, either electronically or by paper copy, once both parties had signed it. Each participant was also provided with a paper copy of the interview protocol (Appendix C). Interviews were conducted in a mutually agreed upon location. One face-to-face interview was conducted with each participant, and the interview lasted approximately 20 to 40 minutes. This range in interview times was a result of the

answers provided by the participants; some participants elaborated more than others. I obtained permission to record the interviews, and I audio recorded each one to ensure that all answers were transcribed correctly. I also took handwritten notes during the interviews. After each interview, I documented my reflexive notes about the interview. Participants were informed of the study's progress via email at the conclusion of all interview sessions. Upon completion of the study, I contacted each participant to ask how he or she would like the results of the study to be communicated (i.e., via email, face to face, by telephone). At this time, I also reminded each participant about the process for keeping and maintaining all data to protect confidentiality. All data collected, field notes, and audio recordings were transferred and stored on a password-protected flash drive. All hard copies of data and the password-protected flash drive will be kept in a safe for 5 years beyond the completion date of this study.

Data Analysis Plan

Upon the completion of each interview, the audio recording was transferred from the Sony voice recorder to my personal, password-protected computer as a voice file. After the transfer was complete, the recording was deleted from the Sony digital recorder. Since data analysis is an ongoing and a concurrent effort along with data collection, I documented my reflexive notes in a Microsoft Word document to prevent my misinterpreting or misunderstanding of the facts or meanings of the data (Palaganas, Sanchez, Molintas, & Caricativo, 2017). All handwritten notes and signed letters of consent were then placed into a folder and securely locked in my personal safe. I also

uploaded my reflexive notes into the NVivo program and linked each file to the correct participant file.

After I completed the documentation of my personal recollections, I repeatedly listened to each audio file and typed each participant's transcription verbatim into an individual Word document and Excel spreadsheet labeled with the participant's pseudonym. I chose to use Microsoft Word and Excel due to my familiarity and knowledge of its functionality. Using Excel allowed me to arrange, view, and sort information with ease. To record each answer, I inserted the transcribed information into the correct area on the Excel spreadsheet (e.g., question number, additional questions asked, and participant columns).

Once the interview was transcribed, participants were emailed the Microsoft Word summary of their interview to confirm and corroborate accuracy in their meaning and my interpretation of their words. According to Patton (2015), this process is referred to member checking. If a participant requested a change, I made all edits in the corresponding participant Word document and Excel spreadsheet. Once the member-checking process was complete, I merged all spreadsheets into one document.

To begin data analysis, I first moved all interview data into one Excel sheet. Using the Excel document of the transcribed interview data and field notes, I performed a manual first cycle open coding search to identify emerging concepts and patterns. I looked for words and phrases that participants used repeatedly during the interviews. The coding process is a transition between data collection and data analysis (Saldaña, 2016). According to Saldaña (2016), a *code* is "a word or phrase that symbolically assigns a

summative, essence-capturing or attribute for a portion of language-based or visual data" (p. 3).

Before I began to generate themes/concepts from the generated categories, I completed a second cycle of coding using the NVivo system, which is a qualitative data analysis software (QDAS) program. All participant Word documents were uploaded to NVivo and identified by participant number. Each uploaded document was considered a "file" in the NVivo program. All reflexive notes were saved under the "memo" section of the program. According to Woods, Paulus, Atkins, and Macklin (2016), a QDAS allows "validity, rigor, and trustworthiness to be more readily demonstrated" in a qualitative study (p. 598).

Nodes, which are keywords in the NVivo program, were generated based on interview data of from participant. Each node contained a collection of references that supported it. I created these references by highlighting words or phrases within the data and dropping it into the node file. I continued to generate nodes in NVivo during subsequent cycles of open coding to ensure I had touched upon the meaning of the data and making sure I did not overlook any possible data. The process of coding and recoding allows the reclassification and discovery of new, refined categories (Saldaña, 2016).

Next, I used axial coding to look for relationships among the data and organized the data into meaningful cluster categories. Continual examination and recoding of like terms and categories lead to emerging themes. The themes were inputted into the NVivo system as parent nodes. All the nodes (keywords) used to generate these themes were

moved to child nodes under the parent node (theme). This meant keywords were connected as subcategories to the overall theme within NVivo. Based on the interview data, themes were generated for each research question. The final themes that emerged from the data reflected and supported the research questions. The goal was to reach saturation of the data for each research question. Saturation was reached when all the research questions had been explored in detail and the data was redundant (Cleary, Horsfall, & Hayter, 2014). This process allowed me to code what I believed provided the best understanding of how teachers used therapy dogs in their classrooms to increase social communication skills, and the perceived benefits AAI provided to students with ASD.

I also ran a Query for word frequency on all the interview data. This query ran an analysis of repeated words from all the interview data, and how many times each word was used to describe AAI and social communication skills in children with ASD. Both interview data and researcher field notes regarding interviews were assessed in the NVivo program and included in the final study analysis. Research Question 1 generated three overall themes, Research Question 2 generated two overall themes, and Research Question 3 generated seven overall themes.

During the data analysis period, all discrepant data were addressed accordingly. Any data that appeared to be negative or did not support the patterns that emerged were not ignored or discarded. I continued to analyze the data to account for any discrepancy or found more data that supported it. These data were used as a new path of inquiry as it provided a different perspective to the phenomena under study. Analyzing data that does

not conform and comparing such data against the patterns that emerge help the researcher understand more complex relationship between the subjects being studied. It also helps the researcher to avoid "simplistic interpretation of the data" (Morrow, 2005, p. 260).

Trustworthiness (Qualitative and Mixed Methods)

The results of the data reflected the actual phenomenon under study rather than revealing "coincidental relationships, the biases of the researcher, or the limitations from a research instrument, strategy, or approach" (Burkholder et al., 2016, p. 103). Burkholder et al. (2016) defined trustworthiness as a term that is used in place of the quantitative term validity. To strengthen the trustworthiness of this study, I employed member checking, the use of thick descriptions, clarification of my bias as a researcher, and descriptions of the limitations of this study. According to Walden University (n.d.), there is a set of criteria a study must have to demonstrate trustworthiness. The criteria for this study are as follows.

Credibility

Yin (2016) stated one way to strengthen credibility is by accurately explaining the data collected, so the results reflect what was studied. The study findings need to be believable to the participants (Walden University, n.d.). I used member checking to support the credibility of this study by following the procedures stated in the data analysis plan. Prolonged contact with the participants through interviews, and member checking allowed me to establish a relationship with the participants. If needed, I would have added more participants until I believed the data was saturated. Data saturation occurs when no new or pertinent information arises to support the theory of the study (Ravitch &

Carl, 2016). I also used the NVivo program to make my analytical process more transparent (Woods, Paulus, Atkins, & Macklin, 2016). All of these procedures helped to strengthen the credibility of this study.

Transferability

Transferability is associated with external validity in quantitative studies (Ravitch & Carl, 2016). The conditions of the study need to be described in detail so that it can be recreated or generalized to other contexts while still producing similar findings (Ravitch & Carl, 2016). A researcher needs to provide thick descriptions of the data and the context of the study, thus allowing someone to transfer specific aspects of this study to be used in another (Ravitch & Carl, 2016). Thick descriptions refer to the detailed account of the participants or setting of the study (Creswell, 2014). I used thick, rich descriptions of how the participants created or incorporated AAI programs in their classrooms along with their thoughts on how AAI increased social communication skills in children with ASD. By connecting the methods of this study to attachment theory, the findings for using AAI programs can be extended to other populations of children with special needs.

Dependability

Dependability means the study must account for and document any naturally occurring phenomena (Walden University, n.d). Burkholder et al. (2016) discussed how dependability is difficult for qualitative research because "human behavior is never static" (p. 122). I provided rich, thick descriptions on school setting for each participant. Descriptions included detailed notes on the classroom setting, the number and make-up of students, the type of classroom, and specific information on the therapy dogs used in

each classroom (therapy organization, type of dog, handlers interactions, and student interaction). The interview transcripts and my field notes were used to triangulate the data and validate the findings. I guarantee all the steps taken in this study were documented and were transparent in description to provide an audit trail.

Confirmability

Confirmability requires the researcher to document any bias they may have (Walden University, n.d). For qualitative research, this holds true when the researcher openly declares the bias they bring to the study (Creswell, 2014). One way to mitigate confirmability is to clearly define a person's reflexivity processes (Ravitch & Carl, 2016). Thus, I clearly explained my interest and motivation for conducting this study and anyway my behavior may have influenced a participant. I also employed a peer reviewer to increase the credibility to this study. According to Creswell and Miller (2000), a "peer review is the review of the data and research procedure by someone who is familiar with research" (p. 129). Incorporating the process of a peer reviewer lent support and challenges a researcher in their assumptions and interpretation of the data (Creswell, 2014; Creswell & Miller, 2000). Using the NVivo QDAS program also aided in removing my bias from the data analysis. The NVivo program grouped the data into themes while providing direct quotes from the collected interview data to support each theme produced.

Ethical Procedures

No data was collected and no participants were contacted until I received full approval from Walden University's IRB. The Walden University IRB approval number

for this study is 08-02-18-0643642, and it expires on August 1st, 2019. Walden University's IRB committee ensures all research conducted through Walden University "complies with the university's ethical standards and the United States federal regulations" (Walden University, 2017, para. 1). According to Patton (2015), qualitative research "is personal" because the researcher conducting the study is considered the instrument of inquiry (p. 3). I was the sole instrument of inquiry used in this study for data collection and analysis**.**

Once my study received full approval, I begin seeking participants following the steps provided under the procedures for recruitment, participation, and data collection section of this study. First, I made contact with district superintendents asking for permission to conduct research and recruit participants within his or her district. Once I obtained district approval, and this approval was approved by Walden University's IRB, I contacted teachers, CST members, and district administration through email. All email correspondences were kept to record and document the procedure.

Once participants responded they were willing to participate, I scheduled an interview time that was convenient for both myself and the participant. Before each face-to-face interview I explained to the participant his or her rights, and presented a letter of consent to be signed by each participant. I also provided a copy of the research protocol to each participant during the interview. In my research protocol, I included the data collection methods, the analytic procedures that would be used, and how my findings would be disseminated. The participants that were recruited from the district I am employed did not work in the same building I work in. This ensured that the participants

did not feel pressured to participate because we were co-workers. I provided all documentation in the Appendices of this study.

During the data collection period of this study, I treated every participant with respect and guaranteed his or her identity and social status would be kept completely confidential. The well-being of each participant must be maintained and respected for the data to be ethically sound (Babbie, 2017; Smit Sibinga, 2018). Prolonged contact with participants was kept to a minimum to reduce any chance I inadvertently influenced them (Smit Sibinga, 2018). I was upfront and honest about my experiences, beliefs, and thoughts on animal-assisted therapy. I also informed all participants the process for keeping and maintaining all data confidential and how I would store data at the completion of this study. Once this study was complete, all data collected, field notes, and audio recordings were transferred and stored on a password-protected flash drive. All hard copies of data and the password protected flash drive will be kept in a safe for 5 years beyond the completion date of this study.

Summary

The population of children being diagnosed with ASD continues to increase. Parents, teachers, and school administrators need to consistently search for evidence-based practices and alternate teaching methods to meet the needs of this diverse population of children. As therapy dogs become more prevalent and with research demonstrating the potential positive benefits the animals provide to other settings and populations of individuals, schools need to consider this valuable service. Studying how teachers incorporated AAI programs for children with ASD helped to fill a gap in the

current literature, and demonstrated the positive impact and affects it had on the social communication skills of children with ASD.

An exploratory qualitative case design was the methodology used for this study. I sought to explore and understand the phenomenon studied. The study called for data to be collected through interviews of 10 participants. Participants were teachers, CST members, and district administration. All the participants needed to meet a set of predetermined criteria. The predetermined criterion included interviewing only teachers who currently used an AAI program within their classrooms or had used an AAI program in their classroom. CST members and district administration who had an AAI program within their building and supported this program were also considered a participant. A qualitative research approach was selected for this study to obtain participant views, procedures, and thoughts on how an AAI program can impact a classroom and more specifically children with ASD. Attachment theory and human-animal interaction theory were used to support any potential themes, patterns, or findings that may have resulted from the data that was collected. Lastly, I fully disclosed my experience, history, and beliefs that have motivated and provided interest in this study.

It is my hope that the findings from this study clearly demonstrated how special education teachers used AAI programs within their classrooms, and the positive impact using AAI has on social communication for children with ASD. The findings provided more evidence that AAI programs are a valid, cost-effective alternate teaching modality for teaching children with ASD. The findings also highlighted teachers who began his or

her AAI program. Highlighting this information provides other teachers a guide on how to implement a successful AAI program.

Chapter 4: Reflections and Conclusions

The purpose of this qualitative study was to explore, describe, and improve the understanding of how elementary teachers used dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. More specifically, I wanted to gain a better understanding of how certified therapy dogs affected social communication skills in children with ASD, and how the integration of the therapy dog AAI programs changed the way in which children interacted with their peers. Exploring how teachers used therapy dogs as a prompt for social communication helped fill a gap in the literature regarding the use of therapy dogs for children with ASD (Fine & Gee, 2017; Sroufe, 2017). This study provided information to promote and increase the use of therapy dogs in classrooms for children with ASD.

The methodology used in this study addressed the three research questions: (a) How do elementary teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD? (b) How do public school administration or child-study team members support AAI programs within special education programs? and (c) What do elementary teachers perceive to be the benefits of AAI in their classrooms for children with ASD?

The study's findings are presented in the following sections. Section 1 is a description of the participants' demographics. This section includes information on the participants' work history, knowledge of therapy animals, type of animal used (facility vs. therapy dog), and methods used for obtaining the AAI program. In Section 2, I explain the detailed process used to obtain participants, collect data, and conduct within-

and cross-case analysis procedures. Section 3 presents evidence of trustworthiness, which includes credibility, transferability, dependability, and confirmability for this study. Section 4 presents a within-case analysis of each participant. Themes representative of the data and how they related to the research questions are highlighted in this section. Section 5 presents a cross-case analysis of each participant. In this section, I describe similarities, discrepancies, and disparities, and I offer a general description of how elementary special education teachers used dog-based AAI programs in their classrooms and how these programs affected social communication skills for students with ASD.

Setting

All educators and CST members who were interviewed for this study worked in suburban public schools in three counties in New Jersey. Interviews were conducted in various settings, which included the participant's classroom, a private room in the school's library, and a conference room in the school. The participants' teaching experience ranged from 6 years to 33 years and is documented in the demographic section. Participants' experience with AAI also varied, as documented in the demographics section of this chapter.

Participant Demographics

Participant demographics are presented in Table 1. Pseudonyms were used to protect anonymity and the rights of participants, therapy animals, and research sites.

Table 1

Participant Demographics

Participant #	Total years teaching	Years at this school	Years as CST/ Admin	Teaching venue	Venue location	Age of children	Type of classroom	Type of therapy dog	Status of dog
P1	33	8	N/A	Public school	Suburban NJ	8	Self-contained	Golden retriever	Facility dog
P2	8	8	N/A	Public school	Suburban NJ	5-9	Self-contained	Golden retriever	Facility dog
P3	6	4	N/A	Public school	Suburban NJ	9-12	Self-contained	Golden doodle & golden retriever	Visiting therapy dogs
P4	20	12	N/A	Public school	Suburban NJ	5-9	Self-contained/ resource room	Golden retriever	Visiting therapy dogs
P5	-	11	11	Public school	Suburban NJ	K-12	All	Varied	Both
P6	10	10	N/A	Public school	Suburban NJ	5-7	Self-contained	Golden doodle & golden retriever	Visiting therapy dogs
P7	18	18	N/A	Public school	Suburban NJ	9-12	Inclusion class	Beagle	Facility dog
P8	6	2	N/A	Public school	Suburban NJ	9-12	Self-contained	Labrador & golden retriever	Visiting therapy dogs
P9	7	7	N/A	Public school	Suburban NJ	5-9	Self-contained	Golden retriever	Visiting therapy dog
P10	7	6	N/A	Public school	Suburban NJ	7-8	Inclusion class	Golden retriever	Facility dog

Participant 1 (P1)

P1 was a seasoned certified special education teacher who had taught for a total of 33 years, with 12 years of experience in a self-contained classroom for children with ASD. P1's knowledge of animal-assisted therapy began 8 years earlier, when the educator began teaching in the current school district. This educator did not have to begin an AAI program because there was an established AAI program at the elementary school. The educator's K/1 self-contained classroom was added to the program's rotation

schedule. The therapy dog used at this school was a 5-year-old female golden retriever who was certified through Therapy Dogs International. The therapy dog was owned by another staff member in the building and was considered a facility dog in this setting. The therapy dog attended school 3 to 4 days a week and had a schedule set up as to when she would visit each self-contained classroom.

Participant 2 (P2)

P2 was a seasoned special education teacher with 8 years of teaching experience, all within in a K-3 self-contained setting. This classroom contained a mixed population of students. Students had been diagnosed with autism, emotional/behavioral disorders, or multiple disabilities. This educator did not have to begin an AAI program because there was an established AAI program at the elementary school. P2's knowledge of AAT began with being approached by the principal of the school and being asked to incorporate an AAI program using the school's facility dog. P2 reported no prior knowledge of AAI before partaking in the current program. This school had a 5-year-old female golden retriever who was owned by a staff member. The dog was certified through Therapy Dogs International.

Participant 3 (P3)

P3 was a certified special education teacher with 6 years of experience teaching in a 4/5 self-contained classroom for children with ASD. P3's knowledge of AAT began when a new student joined her classroom. P3 reported that this student had an AAI program in the previous school, and this child's parents requested that the new school incorporate an AAT program into the child's classroom. This request led P3 to begin

research on AAT and ways to use therapy animals in the classroom. This educator did not have to start or organize a program; the CST member connected to P3's classroom reached out to a therapy organization and scheduled visits from a certified therapy dog. P3 reported that the school district already used therapy dogs in other buildings, so all policies and procedures were reported to already be in place. P3 reported having no knowledge on how the current AAI program in the school district was started. The visiting therapy dog organization that the school used was Creature Comfort Pet Therapy Organization. P3 reported that the CST member arranged for a therapy dog to visit the classroom two times per month for 40-minute sessions. The therapy dogs included a 5-year-old male golden doodle, a 5-year-old mixed-breed dog, and a 6-year-old male golden retriever. P3 had been participating in this AAI program for 4 years. Participation in this program led P3 to purchase a guinea pig for the classroom. P3 stated, "I saw how the dogs benefitted the students and wanted to incorporate an animal full time." The guinea pig had been a full-time resident in this educator's classroom for the past 2 years.

Participant 4 (P4)

P4 was a seasoned dual-certified teacher with 18 years of teaching experience who taught in a K/1 special education classroom. Students in this classroom had been diagnosed with autism, learning disabilities, or multiple disabilities. P4's knowledge of AAT began 8 years before, when another teacher introduced AAI to the district. This educator did not have knowledge of how the established program was started. This educator's classroom was added to the established program's rotation schedule. The

therapy dog used at this school was a 5-year-old female golden retriever who was certified through Therapy Dogs International. The therapy dog was owned by another staff member in the building and was considered a facility dog in this setting. The therapy dog attended school 3 to 4 days a week and had a schedule set up as to when she would visit each classroom. This was the second year that P4 had participated in the AAI program at the school.

Participant 5 (P5)

P5 was a seasoned, board-certified behavior analyst who served as a district CST. This CST member worked in a suburban public school in New Jersey. P5's knowledge of AAI began over 10 years before when P5 worked in a private school. P5 had no participation in establishing the AAI program in this district. However, P5 did support and oversee the visiting AAI programs used throughout the district. P5 reported that the district began using therapy dogs 6 years prior when another staff member approached the superintendent and created a program. P5 reported not knowing the details of how the program was started but did report that the district now had two facility dogs and three schools that used visiting therapy dogs. P5 stated,

> "I think that AAI programs are a really great addition to schools, it has been really helpful to the kids in the classroom as well as other kids that can come into the classroom and utilize the dog too. In our district, we have two dogs that come in with the teachers, and in our other schools we have therapy dogs that visit."

Participant 6 (P6)

P6 was a seasoned dual-certified teacher with 10 years of teaching experience. P4 transferred within her district 2 years ago to a K-2 self-contained classroom for children with ASD. This educator requested an AAI program for her classroom because "other self-contained classrooms in this district use therapy dogs, so I thought it would be beneficial for my students, especially at this age." This educator did not have experience with AAI programs and learned to use therapy dogs when a CST member for her classroom arranged the program. The CST member connected to P6's class arranged visitations from a therapy dog organization. This school used the Creature Comfort Pet Therapy Organization and arranged for a therapy dog to visit the classroom two times per month for 20-minute sessions. The therapy dogs included a 5-year-old female golden doodle, a 6-year-old male golden retriever, and a 4-year-old mixed-breed dog. This was the second year that this educator had participated in an AAI program. Participation in this program led P6 to purchase a rabbit for the classroom. P6 reported, "I wanted an animal full-time after seeing the benefits, so I acquired a rabbit for the classroom. He has a hutch that stays in the classroom, but some days I do take the rabbit home."

Participant 7 (P7)

P7 was a seasoned teacher with 18 years of experience. P7 had experience teaching in both fourth- and fifth-grade inclusive classrooms. This educator had wanted to start an AAI program in her classroom for several years. P7 first heard of using dogs in the classroom during an in-service. The superintendent was challenging teachers to "think outside the box" and mentioned using dogs in the classroom. Last year, P7 had

her dog certified as a therapy dog through the Creature Comfort Therapy dog organization. P7 received permission from the superintendent to incorporate the dog in the classroom. P7 then reached out to the building principal to discuss starting a program. There was another teacher in the district with a therapy dog, so P7 did not have to deal with any policy issues. The building principal was very supportive of this program. The principal created a dog-allergy-free classroom for this educator. The only request made of P7 was to limit the amount of time that the dog was in the hallways. This was for the dog's safety and to protect any student outside the class who might have an allergy or phobia involving dogs. The therapy dog in this classroom was a beagle, and P7 "naturally integrates him into whatever is going on in the schedule."

Participant 8 (P8)

P8 was a certified special education teacher who had been teaching for 6 years. This educator had taught in a 4/5 self-contained LLD classroom for the past 2 years. P8 first heard about AAI when she began in this district. The school she worked in had visiting therapy dogs in the building for other self-contained classrooms, and her newly developed class was added to the schedule. P8 did not have any involvement in organizing or scheduling the therapy dog sessions. A CST member in her school scheduled the visits. This school used the Creature Comfort Pet Therapy Organization and arranged for a therapy dog to visit the classroom two times per month for 40-minute sessions. The therapy dogs included a Labrador retriever and a golden retriever; she was unsure of the age of the dogs.

Participant 9 (P9)

P9 was a certified special education teacher who had been teaching for 7 years. This educator had taught in a K-3 self-contained LLD classroom for the past 4 years. P9 became involved in AAI when her classroom was moved to another elementary school in the district. This school had an established therapy dog program using a 4-year old golden retriever facility dog; the dog was owned by another teacher in the building. P9's classroom was added to the therapy dog's schedule. P9 reported that her classroom was again moved to another elementary school in the district this year and that there was no established AAI program at this school. P9 expressed a desire to incorporate visiting therapy dogs from an organization. P9 stated,

> "AAI programs are a great incentive for the students. I would love to see how one of my current students would react to the therapy dog. I truly believe it would be a great incentive in getting him to walk."

Participant 10 (P10)

P10 was a dual-certified teacher with 7 years of teaching experience. P10 taught in a second-grade inclusive classroom that included students with ASD. P10 first heard about AAI while working at her school. Another teacher started a program, and P10 was able to incorporate the dog into her class a few times per week. P10 did not have any experience in creating a program. P10 scheduled time with the therapy dog through the dog's handler. P10 decided to integrate a therapy dog into the curriculum because "I thought a therapy dog would be a great way to build a classroom community. The dog would be there to support the students' social, emotional, and academic growth." The

therapy dog used at this school was a 5-year-old female golden retriever who was certified through Therapy Dogs International.

Data Collection

I initially contacted four superintendents across three different counties in NJ for permission to conduct research in their district. From this initial list, only one school district responded with approval. I then conducted a second search and sent out an additional 52 requests to superintendents; this round covered 10 different counties in NJ. From this second inquiry, I received permission to conduct research from an additional two superintendents. From here, I emailed 15 recruitment letters to teachers, CST members, and district administrators. From this list of potential participants, 11 responded. Using this list of 11 individuals, I contacted each one by email or phone to set up an interview time. A total of 10 participants responded, and convenient times and interview places were set. Each participant was provided a letter of consent to participate, which included the participant's rights, the purpose of the study, and potential risks and benefits of participation in the study. Each participant was provided a copy of the letter of consent, either electronically or by paper copy, once both parties had signed it. Each participant was also provided with a paper copy of the interview protocol (Appendix C).

The data for this study were collected from 10 participants who partook in a semistructured interview. Each participant chose the location for the interview, and each interview ranged in duration from 20 to 40 minutes. This time difference was a result of the answers provided by the participants; some participants elaborated more than others.

I audio recorded each interview and took handwritten notes. Afterward, I documented my reflexive notes about each interview. For each interview, I followed the interview questions that had been designed for each of the research questions (Appendix D). When needed, I asked clarifying questions and follow-up questions.

Data Analysis

Upon the completion of each interview, the audio recording was transferred from the Sony voice recorder to my personal, password-protected computer as a voice file. After the transfer was complete, the recording was deleted from the Sony digital recorder. Since data analysis was an ongoing and a concurrent effort along with data collection, I documented my reflexive notes in a Microsoft Word document to prevent misinterpreting or misunderstanding facts or meanings of data (Palaganas, Sanchez, Molintas, & Caricativo, 2017). All handwritten notes and signed letters of consent were then placed into a folder and securely locked in my personal safe. I also uploaded my reflexive notes into the NVivo program and linked each file to the correct participant file.

After I completed the documentation of my personal recollections, I repeatedly listened to each audio file and typed each participant's transcription verbatim into an individual Word document and Excel spreadsheet labeled with the participant's pseudonym. I chose to use Microsoft Word and Excel due to my familiarity and knowledge of its functionality. Using Excel allowed me to arrange, view, and sort information with ease. To record each answer, I inserted the transcribed information into the correct area on the Excel spreadsheet (e.g., question number, additional questions asked, and participant columns).

Once the interview was transcribed, I emailed a copy of the Word document to the participant to review for accuracy. All participants were emailed the Microsoft Word summary of his or her interview to confirm and corroborate accuracy in their meaning and my interpretation of their words. According to Patton (2015), this process is referred to as member checking. If a participant requested a change, I made all edits in the corresponding participant Word document and Excel spreadsheet. Once the member-checking process was completed, I merged all spreadsheets into one document.

To begin data analysis, I first moved all the interview data into one Excel sheet. Using the Excel document of the transcribed interview data and field notes, I performed a manual first cycle open coding search to identify emerging concepts and patterns. I looked for words and phrases that participants repeatedly used during the interviews. The coding process was a transition between data collection and data analysis (Saldaña, 2016). According to Saldaña (2016), a code is "a word or phrase that symbolically assigns a summative, essence-capturing or attribute for a portion of language-based or visual data" (p. 3).

Before I began to generate themes/concepts from the generated categories, I completed the second cycle of coding using the NVivo system. All participant Word documents were uploaded to NVivo and identified by participant numbers. Each uploaded document was considered a "file" in the NVivo program. All reflexive notes were saved under the "memo" section of the program. According to Woods et al. (2016), a QDAS allows "validity, rigor, and trustworthiness to be more readily demonstrated" in a qualitative study (p. 598).

Nodes, which are keywords in the NVivo program, were generated based on interview data of from participant. Each node contains a collection of references that support it. I created references by highlighting words or phrases within the data and dropping it into the node file. I continued to generate nodes in NVivo during subsequent cycles of open coding to ensure I had touched upon the meaning of the data and making sure I did not overlook any possible data. The process of coding and recoding allows the reclassification and discovery of new, refined categories (Saldaña, 2016).

Next, I used axial coding to look for relationships among the data and organized the data into meaningful cluster categories. Continual examination and recoding of like terms and categories lead to emerging themes. The themes were inputted into the NVivo system as parent nodes. All the nodes (keywords) used to generate these themes were moved to child nodes under the parent node (theme). This meant keywords were connected as subcategories to the overall theme within NVivo. Based on the interview data, themes were generated for each research question. The final themes that emerged from the data reflected and supported the research questions. The goal was to reach saturation of the data for each research question. Saturation was reached when all the research questions had been explored in detail, and the data was redundant (Cleary, Horsfall, & Hayter, 2014). This process allowed me to code what I believed provided the best understanding of how teachers used therapy dogs in their classrooms to increase social communication skills, and the perceived benefits AAI provided.

I also ran a Query for word frequency on all the interview data. This query ran an analysis of repeated words from all the interview data, and how many times each word

was used to describe AAI and social communication skills in children with ASD. Both interview data and researcher field notes regarding interviews were assessed in the NVivo program and included in the final study analysis. Research Question 1 generated three overall themes, Research Question 2 generated two overall themes, and Research Question 3 generated seven overall themes.

During the data analysis period, all discrepant data were addressed accordingly. Any data that appeared to be negative or did not support the patterns that emerged were not ignored or discarded. I continued to analyze the data to account for any discrepancy or found more data that supported it. These data were used as a new path of inquiry as it provided a different perspective on the phenomena under study. Analyzing data that does not conform and comparing such data against the patterns that emerge help me to understand more complex relationship between the subjects being studied. It also helped to avoid "simplistic interpretation of the data" (Morrow, 2005, p. 260).

Results

Table 2 lists the Nodes that were generated to determine the emerging themes for Research Question 1.

Table 2

Nodes Used to Determine Emerging Themes

RQ1 *How do elementary teachers use dog-based AAI in their classrooms to prompt social communication skills for children with ASD?*		
Therapy dogs increase social communication skills in students	Therapy dogs increase social approach behaviors in students	Therapy dogs enhance the curriculum for teachers
Communication	Eye contact	Lessons around the therapy dog
Confident & comfortable	Social approach behaviors	Therapy dog is integrated into the curriculum
Creates opportunities	Joint attention	Acceptance
Initial communication		
Learn to advocate		
Non-verbal communication		
Stimulus/ prompt		

Research Question 1

Research Question 1 of this study was How do elementary special education teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD? This research question was addressed using data from responses provided by participants for interview subquestions 6-18. The following three themes emerged from the data for Research Question 1.

Therapy dogs increase social communication skills in students. The first node generated in NVivo for this theme was communication. Participants all reported an increase in overall social communication skills. P1 stated that the therapy dog "enhances

communication in many ways and increases in social communication are just one benefit resulting from AAI." P2 stated, "I have seen increases in social communication, even after the therapy dog left because the students would process it even more and talk about how excited they were." The third node created in NVivo that was supported in the data by all participants under this theme was confident and comfortable. Many participants reported their students had an increase in confidence to communicate, and that having the therapy dog present allowed the students to be more comfortable in communicating with peers. P1 reported, "having a trained therapy dog in the classroom makes the child feel more comfortable and more confident. They are much more willing to communicate when they feel confident." P4 reported, "as far as confidence and comfort level, the ability to communicate with others is much easier and at a higher level when the therapy dog is present." P8 stated, "without a doubt, the students are definitely more confident with the dog's presence."

Another node created in NVivo that supported this theme was creates opportunities. Seven out of the 10 participants believed that the therapy dog created opportunities for students to work on and increase social communication skills. Mey (2017) reported children with ASD have difficulty making friends due to difficulty "relating to different people, things and events" (p. 29). P8 conveyed that the therapy dog "allows the students something to talk about, and it gives the students something to relate to, and something to relate to other people." P5 discussed how the therapy dog "creates more conversations for kids that are less verbal."

The fourth node created in NVivo was initial exchanges, and it focused on how the therapy dog increased initial communicative exchanges for students. P3 talked about how starting an initial conversation was the hardest part for her students; she stated the therapy dog "allows the students to have a starter to use in conversations with peers." P4 reiterated this by stating "the therapy dog provides the introduction to a conversation with other people." P10 discussed how "all the kids wanted to be around the dog, you really saw them coming out of their shells and talking to each other." P1 stated, "the students were much more willing to communicate with the dog present."

A node labeled learning to advocate was also created in NVivo for this theme. Advocacy included advocating for oneself or for the dog. Able, Sreckovic, Schultz, Garwood, and Sherman (2015) stated teachers reported self-advocacy skills are needed as a social support for students with ASD. A part of social communication skills is the ability to advocate and speak up for oneself. P4 reported that the students began to advocate for themselves, and P10 reported the students "advocated for the dog when other students did not follow the rules." P5 also said "at times students gave feedback to other students if they were not treating the animal correctly or not following the rules. The dog helped to work on their assertiveness, and I did see this spill over to other areas."

Additionally, an increase in reading and observing nonverbal communication skills was also noted to increase in students with ASD. The node nonverbal communication was created for this data. P1 said the students "have an uncanny ability to read the dogs behavior, and they are completely in-tune with the animal." P3 discussed how the therapy dog was an aid to help teach students to observe, understand,

and respond to nonverbal communication skills. P3 expressed how the therapy dog "allowed the kids to better read other people's nonverbal cues and actions." This statement was supported by P5's response that "many of our kids find it challenging to interpret nonverbal communication, so the therapy animal is really helpful with teaching this skill."

One of the most supporting nodes created in NVivo for Research Question 1 was stimulus/prompt. How therapy dogs act as a stimulus or prompt for social communication in students with ASD was contained in this node. P1 stated, "I do not have to do much to use the dog as a prompt," and both P1 & P6 stated, "it was a natural occurrence." P1 also reported,

> "due to the dog being a prompt for peer interactions, I arranged with the handler to have the dog attend homeroom with my students in their general education class. The students had to introduce the dog to their peers. We practiced before going but on those days my kids shined."

P2 followed this sediment by stating,

> "I do feel the dog is a stimulus for communication, and not just on the days she is here. The students also seek out the handler on days the dog is not present, and ask unprompted questions about the dog."

P3 reported, "I really did not have to do anything to create situations where the dog is the prompt. It occurs naturally, the animal automatically prompts the students as a conversation piece." P4 referred to the dog as a "cue on what to talk about. I think

without the dog some individuals are not comfortable enough to start a conversation or to add to a conversation."

P5 spoke about the handler and the dog. P5 expressed there was "an increase in unprompted, spontaneous speech, especially when the animal is present. It not only extends to the dog but also to the person with the dog and the other kids in the therapy session." P7 stated the "presence of the dog during the time it is there tends to emote different things from the children." P9 went on to say,

> "the dog can be a stimulus in several ways. In terms of expressive speech, to prompt an interaction, talking about the dog, and by interacting with the dog. My students are not reading yet, but I also feel it would be a great stimulus for reading."

Therapy dogs increase social approach behaviors in students. One category under this theme was increase in eye contact. The data for this category displayed fourteen references to an increase in eye contact. References came from all ten participants. Jefferies, Crosland, and Miltenberger (2016) identified inadequate eye contact as a common impairment in students with ASD, and it is a needed skill for interpreting and understanding social cues. P10 discussed how "the more time a student spent with the therapy dog, the better their eye contact became." P2 said, "eye contact also increased after the therapy dog was in the room." P3 stated the increase in eye contact is partially attributed to the fact the students can "get down on the dog's level, nose to nose." P5 followed this sentiment and added, "a lot of our kids don't have good eye contact but are insistent in making eye contact with the dog, sometimes we actually

have to tell them to back up because they are right in the animals face." P7 conveyed how she used the therapy dog as an example for eye contact, "make sure when you approach Tucker you look at him so he knows what you want." P7 said she used the therapy dog as an example to "teach this difficult skill to the students in an appealing way." P7 also used the therapy dog as a "springboard to remind students to make eye contact when speaking."

The second category under this theme was social approach behaviors. Children with ASD have deficits in navigating social interactions and struggle to engage peers in conversations. In school, these deficits in social approach behaviors may lead to behavior problems, low academic performance, and difficulty making and maintaining friends (O'Haire, McKenzie, Beck, & Slaughter, 2015). Four participants from this study specifically cited that the therapy dog created situations that increased social approach behaviors. P2 said, "everyone wants to be around the dog, so more kids approach my students when the dog is present." P2 also stated, "my students are more willing to approach others when the dog travels with them in the hallways or to their general education classroom." P4 stated, "the therapy dog provides a segway for students to approach and communicate with others, the dog makes everyone more comfortable." P8 commented on when the students are together with the therapy dog "students are more willing to start a social interaction with others."

Joint attention was another important category under this theme. Murza, Schwartz, Hahs-Vaughn, and Nye (2016) reported deficits in joint attention as a core social communication deficit in children with ASD (p. 236). Data collected for this study

revealed educators felt the therapy dog does increase joint attention skills in children with ASD. P1 and P2 both specified an "increase in joint attention" particularly and especially "with the dog." P6 stated joint attention increased "between the kids and the dog as well as between the kids." P8 thought that joint attention "increased with some students more than others."

Therapy dogs enhance curriculum for teachers. This theme was generated by the data collected on how teachers utilized AAI programs in their classrooms, and how the curriculum can enhance social communication skills in children with ASD. The majority of the participants taught lessons about the therapy dog before the dog began in the classroom. Some of the teachers interviewed started with a lesson that discussed appropriate behaviors that were needed when the therapy dog was present in the classroom. P1 said, "I reviewed appropriate behaviors before the dog entered the classroom." Similarly P3 said, "in the beginning I discussed behaviors needed around the animal and what could scare the animal," and P8 stated, "the beginning lessons centered on the dog and behaviors needed for when the dog was present." P7, who has a facility dog, created a slide show presentation to discuss the rules that were needed to protect the animal, and this presentation was also sent home to the parents.

The second category under this theme was therapy dog integrated into the curriculum. P1 reported that the therapy dog was "integrated into everything that was scheduled, and teaching did not stop, the therapy dog joined in, and nothing was hindered as far as instruction goes." P2, P3, P4 and P6 also reported the therapy dog "integrates into what (activities) we are doing." P8 discussed having the students read with the dog,

she stated the "students chose a book at their reading level and read aloud to the dog." Lenihan et al. (2016) stated that the "presence of animals in the classroom improve and sustain focus and also improve attitudes toward school" (p. 253). Integrating the therapy dog into the classroom also increases student motivation to learn. The teachers also reported, "using the therapy dog as a model is another way to tie the lesson to something the students can relate to."

The last category under this theme was acceptance. This category discussed how the students accepted the therapy dog into their classroom, lessons, and daily routines. P1 stated, "the students seem to believe that she is a part of everything we do. They accept the therapy animal as part of the everyday regular schedule." P7 reported the students "have come to accept him as part of our class." P10 thought the therapy dog "would be a great way to build a classroom community, and to have someone there that supports social, emotional, and academic skills for my students."

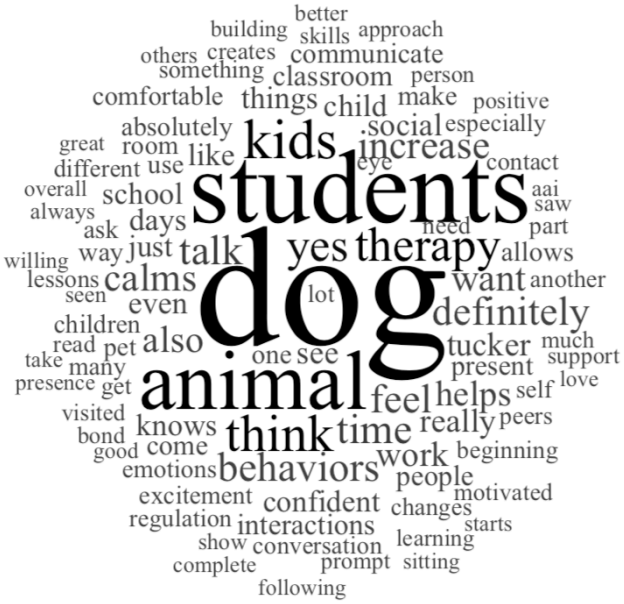

Figure 1. NVivo word cloud for Research Question 1. Accumulative phrases and words from research interview for Research Question 1.

Research Question 2

The second research question of this study was How do public administrators or child-study team members support AAI programs within special education programs? Research Question 2 was addressed through participant responses to interview subquestions 19-24. Table 3 lists the Nodes that were generated to determine the emerging themes for Research Question 2. The following themes emerged from the data for Question 2.

Table 3

Nodes Used to Determine Emerging Themes

RQ2	*How do public school administrators or child-study team members support AAI programs within special education programs?*
Creating safety precautions for students and dogs	Overall support towards AAI programs
Precautions	Administration support
Rules	Policy changes
Allergies	Procedures

Creating safety precautions for students and dogs. All of the participants reported implementing some type of safety precaution with the therapy dogs. Every participant stated the students were required to wash his or her hands after petting the dog or after the therapy dog left the classroom. The only difference was with P7 who had a facility dog in the classroom all day. P7 noted the students are required to wash his or her hands before leaving the classroom. The reason for students being required to wash their hands was to reduce any potential allergens from spreading to other classrooms or students. P1 stated, "we have all students wash their hands after the therapy dog left. This helped to reduce any allergens for students in other classrooms." P8 similarly stated, "all students had to wash their hands after the dog left. This was to help reduce spreading any allergens."

One participant spoke about rules regarding how many students could approach the therapy dog at one time. P2 conferred, "students are told only three students may be petting the therapy dog at the same time, this is for the safety of the dog." P2 and P9 also expressed the students needed to ask the handler permission before petting the dog. P2

said, “they (the students) must ask permission first,” and P9 said, “we had the students ask permission before petting the dog.” Both P2 and P9 reported having a facility dog at their school, and this rule would help the handler know who was touching the dog.

Another safety precaution that was reported by P3 was “I removed students to another area of the classroom if their behavior was unsafe to be around the animal.” P7 has a facility dog in the classroom all day. P7 reported having to formulate rules protecting the dog as they go. P7 reported,

> “today we had a young boy get super excited as the dog walked by his desk, the boy put his hand down to pet him not realizing he had a sharp pencil in his hand. He didn’t hurt the dog, but I stopped and spoke to the students about our hands being free when we pet the dog. This will go up on the board for rules around Tucker.”

P7 also discussed where she takes the therapy dog during the day to relieve himself, “I also use the backdoor and have a spot he can go and relieve himself where students don’t have access.” This safety precaution reduces any zoonosis from being transferred to the students.

Overall support to AAI programs in schools. The following information was a result of the participant’s responses and one participant who was a CST member. I contacted additional CST members and district administrators. However, I did not hear back from any of the potential participants to participate in this study. For the participants who reported having visiting therapy dogs, P3, P4, P6, P8, and P9, all reported that a CST member set up the AAI program and scheduled all the visits with the

therapy dog organization. Even P5, who was a CST member, reported another CST member scheduled the visits; " another CST member took care of arranging this, I did not reach out. I supported the programs and observe certain classrooms for behavior purposes."

The first node in NVivo under this theme was administration support. P10, P7, P8, and P9 all reported having principal support for the AAI program. P10 said, "my principal was a big supporter to having our therapy dog in school," likewise P7 said, "our principal has been very supportive of having the therapy dog in school." P8 noted her principal was supportive "but did not have much interaction with the therapy dog." P10 also reported her principal, along with the teacher who owned the therapy dog, "did a great job at explaining our therapy dog to the parent community. The parents were just as excited meeting the dog as their kids were." P7 stressed that her administrator continuously "reassures me that she wants this therapy in her school and will help make it work." This participant reported her principal actively helps her and the students gaining access to the therapy dog. P7 stated, "she even took time out of her day to bring a student from another class who earned time with the therapy dog."

The second node in NVivo under this theme was policy change. Only one participant was somewhat aware of any policy changes required by the school district to allow therapy dogs into school. P7 discussed it began many years ago with a parent who was advocating for a service dog for their child at the high school. She said she knew the district at first refused, but the parent continued to fight and eventually won. P7 stated, "I am not really sure about the process of meetings to change the policy, but I do know the

district now allows certified service and therapy dogs into all their schools." P7 also reported the new superintendent is extremely supportive of AAI programs and spoke about teachers "thinking outside the box to provide alternate therapies or teaching methods to their students, he specifically mentioned using dogs."

The third node used in NVivo under this theme was procedures. This node referred to any changes made during the day to allow the therapy dogs in schools. The participants who had facility dogs at their schools reported data for this node. The participants who had visiting therapy dogs did not report any changes to procedures. P7 reported, "the biggest requirement from my principal was to reduce the amount of time the dog spent in the hallways." P7 noted the hallways in her school were long, narrow, and crowded with having over 700 students in the building. P7 stated, "this procedure change came into effect because my principal sent out a survey to all incoming fourth graders." The principal was trying to gage how many incoming students had allergies to dogs and who had a phobia/fear of dogs. According to P7, this information allowed the principal to "create my classroom dog allergy free and free of any dog phobias." It also identified which students had a fear of dogs, which prompted the change to reduce the amount of time the therapy dog would be in the hallways.

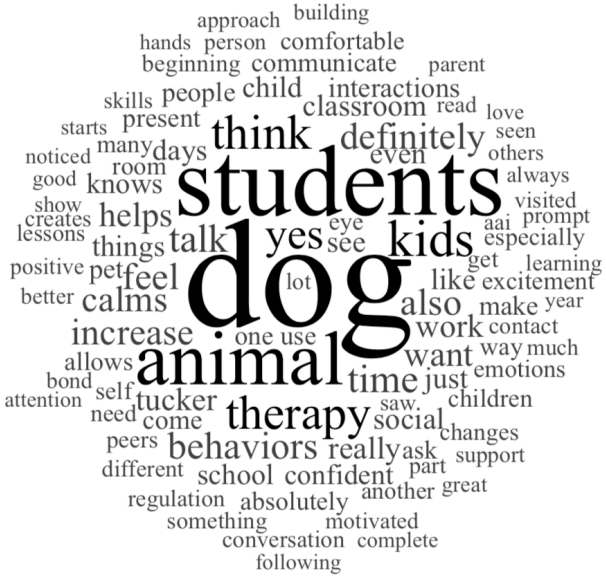

Figure 2. NVivo word cloud for Research Question 2. Accumulative phrases and words from research interview for Research Question 2.

Research Question 3

The third research question of this study was What do elementary teachers perceive to be the benefits of having an AAI program in their classrooms for children with ASD? Research Question 3 was addressed through responses to interview subquestions 25-34. Table 4 lists the Nodes that were generated to determine the emerging theme for Research Question 3. The following themes emerged from the data for Question 3.

Table 4

Nodes Used to Determine Emerging Themes

RQ3	*What do elementary teachers perceive are the benefits of having an AAI program in their classrooms for children with ASD?*					
Therapy dogs serve as a motivational incentive for behavior	Therapy dogs are non-judgmental companions for students	Therapy dogs help to develop self-worth and advocacy skills	Therapy dogs evoke a calm presence / atmosphere	Therapy dogs increase empathy in students	Therapy dogs serve as a secure base to allow students to explore and try new things	AAI is a viable therapy for students with disabilities
Behavior change	Non-judgmental	Self-worth	Calm	Empathy towards dog	Attachment /Bond	Alternate therapy
Motivation	No barriers	Observant behaviors	Atmosphere /overall feeling	Empathy towards others	Confident & comfort	Provide support to child
Self-regulation		Learn to advocate		Acceptance/ Community	Secure Base	Valuable tool
		Protective Nature			Willingness to explore	
					Difficulties with bond	

Therapy dogs serve as a motivational incentive for behavior change. The first node created in NVivo to support this theme was behavior change. Nine out of the 10 participants noted behavior changes in their students. P1 stated,

> "absolutely I have noticed changes in behavior. I do think the type of change is dependent upon the child, dependent on the environment in which they are working, and what they are doing. But, there is definitely an improvement in all those areas."

P2 said, "yes, we saw the most changes in behavior. I even tailored a behavior chart to be dog-themed because the student came to love everything about the dog." P3

expressed, " overall, I think it helps with both ends of the behavior spectrum, and I think it provides a starting point for all the students depending on their abilities." P4 reported, "behaviors with and with out the can be a night and day difference. I have seen a child upset and when the dog walks in their behavior changes, it sort of like a self-distraction." P5, who is a CST member, shared "the animals have also been reinforcers for several kids in our schools. They have the ability to access the animal as a part of the positive behavioral support plans." P7 also shared an example of the influence the therapy dog has on several students. P7 reported, "I have a student who is always moody, gets in a lot of fights with friends, and is often sad. Having the therapy dog in the room has begun to change all of that." P8 discussed how "for students that may have demonstrated behaviors, I rarely see any behaviors on the days the dogs visit. This includes before the dogs arrive and after they have left." P10 reported, "I do think the changes were a combination of all (social, emotional, & behavioral). Behaviorally, definitely yes, but socially and emotionally I say there was a 100% change. That was huge."

The second node created in NVivo to support this theme was motivation. Again, nine out of the 10 participants noted motivation as in factor in behavior change. P1 discussed how "the dog itself is a motivator for the students. They want to be with the dog, so they will get their work completed quicker, especially on the days they know the dog is in school." P2 stated, "hand down yes, motivation is a key factor with AAI. The therapy dog has been highly motivating for all my students." P3 referred to the dog as a "motivational tool" for students with more severe behaviors. P5 called the dog "our number one reinforcer for so many of our kids, working on behaviors to see and spend

time with the therapy dog." Likewise, P6 said, "he (the dog) is a reinforcer for a lot of things." P9 thought, "AAI is used as a motivator. It is always a great incentive for them (the students) since we didn't have access all the time." Lastly, P10 stated, "the therapy dog was a great motivator for behavior changes."

The next node developed in NVivo under this theme was self-regulation of behavior. Many of the participants spoke about the importance of self-regulation and how the therapy dog reinforced this skill. P2 spoke about

> "when a child can regulate their behavior, they are more willing to talk to others and take risks. I see the therapy dog prompting changes in behavior and self-regulation. Not only do the students regulate their behavior when the dog is present, but they have begun to do so when the dog is not in the room."

P3 continued with this concept and stated, "self-regulation does extend to the days the animal is not present because the student knows they must maintain their behaviors in order to spend time with the animal when it visits." P10 also noted to seeing self-regulation on the days the therapy dog came into her classroom, "I really saw this on the days the dog was in. You would think it would stop when the dog left, but it didn't, the students maintained their behaviors the entire day."

Three of the participants discussed how self-regulation is harder for younger students. P1 stated, "I definitely see the kids attempting to regulate their behaviors. It is harder for the younger students to maintain but they do begin to demonstrate this skill with the therapy dog." P4 also mentioned, "I have seen long-term self-regulation with the older kids, but I don't know if I see it as much in the younger ones." Similarly, P6

expressed, “I do not see long-term self-regulation carry over to other parts of the day for the younger students. I think they need more exposure to the therapy dog for that to happen.”

Therapy dogs are nonjudgmental companions for students. The first node created in NVivo to support this theme was nonjudgmental. P1 called AAI “the perfect opportunity to incorporate a nonjudgmental tool.” P3 also referred to AAI as a means to help students because “the animals don’t judge.” P7 felt “the students just feel like the animals get them, it’s a nonjudging environment.” P2 discussed how “students do not worry about what the dog is thinking about them. They (the students) do not feel judged and can be themselves without having to worry what the thinks about them.” P3 tied this idea into social communication, “the therapy animal is not judging them, and so they feel more comfortable talking to the animal. This helps them build that conversation piece.”

The next node developed in NVivo to support this theme was no barriers. P1 conveyed, “there seems to be no barrier between the animal and the student. As opposed to often there are barriers more from the adults to the children that the adults put up that the children recognize.” P7 shared, “the students don’t even have to communicate by talking about anything, its all feeling and touching with the dog. At this age kids are kinesthetic learners, and the dog fits all the learning modalities.”

Therapy dogs help to develop self-worth and advocacy skills in students. The first node created in NVivo to support this theme was self-worth. Seven out of the 10 participants touched on increases of self-worth in their students using AAI. P1 stated, “I think the children do have an increase in self-worth, mainly because they are more

confident with the dog present." P4 also tied confidence with an increase in self-worth. P4 stated, "again, it goes back to confidence. The kids feel they can do more, are more successful with the dog's presence. This allows them to be proud and do more." P2 discussed "seeing a big difference in how students feel about themselves." P2 reported, "this started slowly, but as more time was spent with the dog, the more positive self-talk was displayed by the students." P8 talked about a student who liked to make things for the dog because "it reminded her how she felt during the visit with the dog. Students are proud of what they are doing, and this increases self-worth." P5 responded, "I think there is an increase in self-worth. The kids are given a lot of positive reinforcement when the animal is present…I definitely think this elevated mood continues after the session and effects their positive self-image."

The second node created in NVivo to support this theme was observant behaviors. This node supported the idea the therapy dog increased observant behaviors in students with ASD. P3 discussed how the students are

> "more observant and ask where the animal is if she is not in the room, so I think it makes them more attentive to their surroundings, which they are not always the most attentive to. I have also noticed the students becoming more observant of another person's listening behaviors, and they now pick up on when someone is not interested or not listening to them."

P7 mentioned several examples of this observant behavior. P7 stated,

> "all the students watch and acknowledge the dog's behaviors, they also watch how I interact with the dog. One day I went over and began petting the dog, the

> students observed how he calmed and how calm I was. They all made comments on it."

The last two nodes created under this theme were learn to advocate and protective nature. P10 talked about how the students "advocated for the dog when other students did not follow the rules." P10 also relayed how the student's

> "ability to discuss their feelings with me increased. It started when I would prompt them to share what they were feeling with the dog. They were all comfortable telling the dog what was wrong. This evolved to the students being more open to communicating with me."

P4 shared how one student learned to "advocate for the dog first then it moved to advocating for herself." P5 reported, "at times the students will give feedback to other students if they are not treating the dog correctly and things like that. AAI does work on their assertiveness." P1 tied this advocating into a protective nature. P1 reported, "I see the kids becoming protective of the dog, wanting to make sure she is safe. They speak up for the dog."

Therapy dogs evoke a calm presence/atmosphere. The first node created in NVivo to support this theme was calm, and it generated over 32 references on how the therapy dog evoked a calm presence in the classroom. P1 stated,

> "the children are more present, more available, and a lot more calm and open to instruction when the therapy dog is present or right after she has been in our room. If they are more calm and more willing to work, there will be less behaviors."

P10 discussed how "the calming aspect is a big part of AAT. The therapy dog calms all those emotions." P2 had a similar view, "the therapy dog brought a calming presence immediately upon stepping into the room, which allowed the children to pause, allowing the kids who are very impulsive or hyperactive to calm." P3 reported, "for a child with more significant behaviors, the animal is a calming presence, and for kids who don't know how to say what they are feeling, it (the therapy dog) provides a calming presence." P4 stated, "the dog evokes calmness and a relaxing atmosphere. It not only calming for the student petting the dog but for whole classrooms." P5 discussed how it affected students in all the AAI programs in the district. P5 stated, "what I have seen in our programs is that it really helps kids calm down in the moment." P7 remarked how "things seem kinder and calmer in general. Some of the students will enter back into our room and immediately seek out the dog to speak to and pet him. This calms them and gets them ready to work." P7 also reported having the dog present increased instructional time, "even though I have built in more transition time, in the long run, I have gained instructional time because the kids are more focused, calm, and aware of what is happening." P6 relayed, "the students realize they need to have a calm body, like sitting in one space so that the animal will approach."

The last node created under this theme was atmosphere/overall feeling. This node had references to the overall atmosphere and feeling in the classroom during AAI session. P7 stated, "they all enjoy the vibe he (the therapy dog) creates. I don't think I can even describe it, it's just a vibe that happens, and it's overall just so good for us." P8 reported having "an uplifting atmosphere. There was a positive energy, the dog made the students

feel good and improved their moods. I wish the dogs were here more." P9 similarly reported, "there was a definite level of excitement that was in the room." Lastly, P5 said, "it created an overall feeling in the classrooms."

Therapy dogs increase empathy skills in students. The first node created in NVivo to support this theme was empathy towards the dog. This node generated the most reference to support that a therapy dog increases empathy in students with ASD. P4 stated, "definitely the dog creates a loving relationship, and the kids view the dog as their friend. They want to do things for the dog." P6 reported, "they are also very ware of what the animal is doing. They will protect the animal and tell others what needs to be done to make the animal feel safe." P3 felt "some students are more empathic to the animal than they are to people." P5 went on to discuss how working with the therapy dog "teaches them how to treat other living things, how to take care of them, meeting their needs because the students learn how to recognize if the animal is uncomfortable." P5 also thought "it's much easier for the kids to relate to the dog than to people when talking about empathy." P8 had similar views and stated, "I saw it in several students who would talk about the dog's emotions and what to do to make the dog feel happy." P10 reported a "definitely empathy increased in child to dog. On the days the dog was not in school the students commented and expressed they would miss her." P9 discussed how the dog was used as an example to why the students shouldn't do something. P9 said, "I described how the dog would feel if the students did behavior x, this made an impact, and I saw an increase in empathy, there was definitely carry over there."

Empathy towards others was the second node created in NVivo for this theme. P7 reported using the therapy dog "builds empathy in a very subtle and organic way." P10 noted, "empathy towards another child came later after time was spent with the dog." P4 regarded this experience differently. P4 saw "empathy more from others towards my students. I noticed other peers were kinder to the individual working with the dog. They wanted to know about the dog and displayed more patience and understanding."

The last node created to support this theme was acceptance/community. P10 spoke in length about how the therapy dog became

> "a part of the student's lives to help show respect. We had this community building in our classroom where all kids were kind and accepting of difference, and I really believe the therapy dog was a huge part of making this happen."

P10 went on to say, "so many kids began to look at other friends, not just what was on the outside or how they acted, but what was on the inside as a person. We were all one group." P10 also reported how this empathy carried over the following year. P10 stated, "even when they moved on, the students remembered her (the therapy dog) and would teach other students in the hallways how they needed to act towards the dog but even with each other."

Therapy dogs serve as a secure base to allow students to explore and try new things. This was one of the strongest themes that emerged from the data supporting the benefits of using therapy dogs for students with ASD. This theme also tied into the conceptual framework of this study, and how attachment theory supports AAI for students with ASD. Zents et al. (2017) discussed how "the field of AAT provides

evidence of attachment theory" (p. 84). Bowlby (1988) stated a major component of the attachment theory "is maintaining a secure base," this base allows the child "to explore the world and return knowing they are safe" (p. 25). The first node generated under this theme was attachment/bond. Nine out of the 10 participants commented on the bond formed between the therapy dog and their students. P1 reported, "several of the students formed strong bonds with the dog. They built a real bond of trust with the animal for whatever reason they were not able to form with the adults." P2 said,

> "several of the students formed strong bonds with the dog. They even went home and talked about the dog. Some of the students have therapy dog pictures at their house and their parent's talk about the dog to help calm the student at home."

P2 went on to report "the dog helps to build these bonds between the students." P4 stated,

> "I have even seen bonds from with kids who are not directly working with the dogs. So many of our students were drawn to our facility dog and wanted a relationship with her. The bond it creates is so strong."

P5 who observed several different AAI programs in the district reported, "all of the students formed a bond. I don't think there is any student who did not form a bond with the animals." P7 commented on how the therapy dog has also formed a bond. P7 stated, "he has also formed a bond. There are several students that the dog gravitates to. These same students seek the dog out; it's like they are co-dependent."

Confident and comfort was the second node created under this theme. P1 reported, "I feel the students are more confident. I have seen some students show their

work to the dog; they are proud of what they have done. This confidence has started to spread to other areas in the child's life." P2 stated, "the therapy dog brings about acceptance, and this leads to increased confidence." P7 discussed how the students "really know they have a live animal in the room," and "I think knowing they are being soothed by that knowledge they feel empowered. They have the power, and feel I can come to school and do things." P10 stated, "the dog brought students together; made them feel comfortable." P10 also noted that when the therapy dog was in the room for reading or math, it was observed, "their (the students) anxiety over the activity would completely decrease. They would pet her, talk to her, and even read to her, this caused them to feel better about themselves." Lastly, P3 reported, "the animal(s) have definitely caused the students to be more confident in themselves."

Secure base and willingness to explore were the next two nodes that were created for this theme. These keywords compliment and support attachment theory therefore, both nodes will be discussed together. Under secure base P1 said, "I think it is possible for the animal to create a secure base for the child." The next statement from P1 supported this idea, but I felt it supported willingness to explore even more. P1 stated, "they (the students) are more willing to take risks because of this." P2 also reported, "the students also show a willingness to try new skills if the dog is in the room. I think it prompts the students to explore new things." P4 said, "the kids are more secure, more confident, and more willing to explore and try new things." P3 commented, "I definitely think AAI can create a secure base", and for willingness to explore stated, "I think they are more confident and willing to try new things." P5 "definitely thinks AAI can create a

secure base. Some of the questions the kids ask or say are definitely a higher-level of language and attachment, things we don't see with other people. It then generalizes to people." P7 gave an example of this secure base stating "one little girl who has many siblings and dogs at homes loves having him here, it's an extension of her family, and she feels safe."

The next node, difficulties with bond, was created due to a discrepancy in the data. A few of the participants that had visiting therapy dogs spoke about difficulties in having this bond. P9 noted, "they (therapy dog organization) are not always consistent in coming." P5 discussed one hard part of visiting therapy dogs is "the same animal is not always available the following year when the student moves to a different room, or when a different animal comes unexpectedly." Another issue noted by P5 was when the therapy organization cancels. P5 stated, "the kids really look forward to the therapy sessions, the bigger problem is when the dog doesn't come, and they get very upset." P5 discussed how some district teachers dealt with this issue by acquiring a class pet. P5 said,

> "we actually started to get other animals in the district because of this. One classroom now has a guinea pig, and another has a rabbit. These animals have also been positive. Students work for time with these animals as well."

AAI is a viable therapy for children with disabilities. This was the last theme created for Research Question 3. The first node generated was alternate therapy. P1 felt, "absolutely AAI is a viable, alternate therapy. I think some of the students respond better to the therapy dog than some of the adults they had the opportunity to work with." P2

stated, “I think it’s a fantastic therapy for all special education classrooms, but especially for the self-contained rooms.” P4 said, “without a doubt, yes AAT is a great therapy option.” P5 discussed how “our district uses AAI for students in the special education placements as well as with students in general education.” P5 went on to report, “AAT has been really helpful to the kids in the classrooms, as well as other kids that can come into the classroom and utilize the dog.”

The second node generated under this theme and supported by the data was provide support to child. P1 felt, “without a doubt the dog provides a significant amount of support to the students.” P2 also reported the therapy dog provided support and added, “in all ways, the dog allows the students to be themselves and the students always want to show the dog what they have learned.” P6 felt the amount of support depended on how the child felt about the animal because “some students are more naturally drawn to animals than others.” P8 stated, “this support allowed the students to complete tasks that are more difficult.” Finally, P10 said, “the therapy dog became so beneficial and truly apart of our classroom, you knew it was going to be a good day when the dog was there.”

The third node generated under this theme was valuable tool. P5 reported, “everything has been so positive towards AAI in our district. I think that AAI programs are a really great addition to schools.” P7 stated, “I think 100% AAI programs are valuable tools. I do think you need the right animal for a school. It has to have the right demeanor and be able to respond to loud noises.” P8 responded, “AAT is a very valuable therapy.” P9 felt, “there is great value in AAI programs. It is a great tool that can be used in so many ways.” P10 ended the data in this node by stating,

> "I think AAT is so beneficial and does so many things, more than I can even talk about. The dog makes everyone happy, even the teachers because we all have bad days. She (the therapy dog) knew my voice, some days I would walk into the building, and she (the therapy dog) would hear me, she would come to the door and great me in the hallway. This totally changed how I was feeling."

More therapy dogs was the last node generated under this theme. This node was added due to all the responses about wanting a dog full-time or obtaining a therapy dog full-time. P1 and P2 both stated, "I want a therapy dog in my room full-time." P2 further stated, "I think it would make such a difference." P8 wished "the dogs were present more often." P9 spoke about gaining access to another AAT program. Her classroom was moved this year to another elementary school within the district. This new elementary school does not have an AAI program. P9 stated,

> "I lost access to the visiting therapy dogs. It is something I would like to be brought back. I have a student this year that I know would benefit tremendously from having a dog in the room. It would be such a motivating tool to get him to walk."

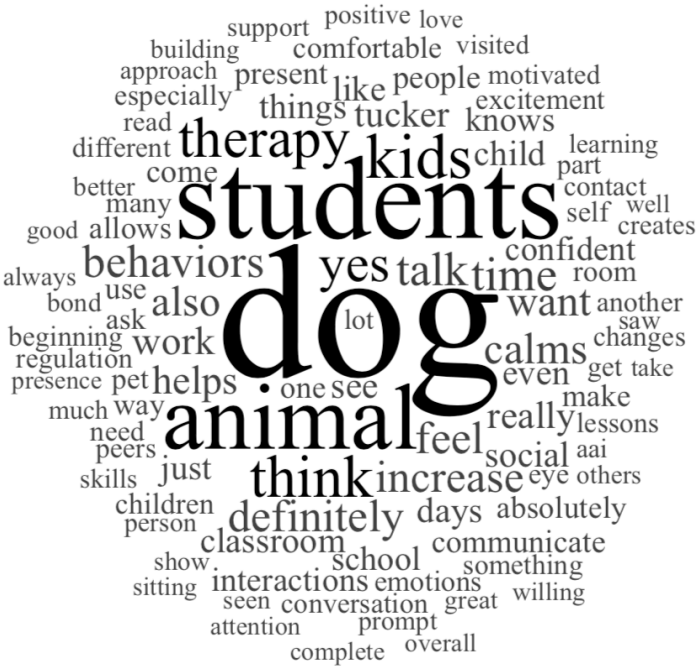

Figure 3. NVivo word cloud for Research Question 3. Accumulative phrases and words from research interview for Research Question 3.

Evidence of Trustworthiness

Qualitative research is steeped in subjectivity. Burkholder et al. (2016) defined trustworthiness as a term that is used in place of the quantitative term validity. To strengthen the trustworthiness of this study, I employed member checking, the use of thick descriptions, clarification of my bias as a researcher, and a detailed description of the limitations of this study. I also used the NVivo software program and, according to Kaafer, Roper & Sinha (2015), this program improves transparency and trustworthiness in qualitative studies. According to Walden University (n.d.), there is a set of criteria a study must have to demonstrate trustworthiness. The criteria for this study are as follows.

Credibility

According to Creswell (2014), a researcher needs to employ at least two validation strategies to accurately document meaning from the data obtained and to strengthen credibility. Within this study, I was the only person responsible for collecting and analyzing data. Thus, the study validity was increased by the use of an audio recorder for all participant interviews. I also wrote detailed field notes that described all important aspects of each interview and my thoughts during the interview sessions. Member checking was used throughout this study to confirm data accuracy. Participants were active members by confirming my transcribed summary of his or her interview as well as my interpretations of the findings. Prolonged contact was established with the participants through interviews and member checking. This allowed me to establish a relationship with the participants. These procedures helped to strengthen the credibility of this study.

Transferability

Transferability is associated with external validity in quantitative studies (Ravitch & Carl, 2016). To address transferability, I explained in detail the conditions of the study so that it can be recreated or generalized to other contexts to create similar findings (Ravitch & Carl, 2016). I provided thick descriptions of the data and the context of the study, thus allowing someone to transfer specific aspects of this study to be used in another (Ravitch & Carl, 2016). Thick descriptions refer to the detailed account of the participants and setting of the study (Creswell, 2014). I also used thick, rich descriptions to describe if the participants created AAI programs, and if they did not, how the

programs were started. Also included are thick descriptions on how teachers incorporated AAI programs in their classrooms along with their thoughts on how AAI increased social communication in children with ASD. By connecting the methods of this study to attachment theory, the findings for using AAI programs may extend to other populations of children with special needs.

Dependability

According to Walden University (n.d.), dependability means the study must account for and document any naturally occurring phenomena. Burkholder et al. (2016) discussed how dependability is difficult for qualitative research because "human behavior is never static" (p. 122). I provided rich, thick descriptions on each interview I conducted. This included detailed notes on the type of classroom, the make-up of students, and specific information on the therapy dogs used in each classroom (therapy organization, type of dog, handlers interactions, student interaction). The interview transcripts and my field notes were used to triangulate the data and validate the findings. I documented all the steps taken in this study to ensure transparency; I also saved all email correspondences to provide an audit trail.

Confirmability

Confirmability requires the researcher to document any bias they may have (Walden University, n.d). For qualitative research, this holds true when the researcher openly declares the bias they bring to the study (Creswell, 2014). One way I mitigated confirmability was to clearly define my reflexivity processes (Ravitch & Carl, 2016). Thus, I made sure to clearly explain my interest and motivation for conducting this study

and ensured my behavior did not influence any participants. Using the NVivo QDAS program also aided in removing any potential bias from the data analysis process. The NVivo program grouped the data into themes while providing direct quotes from the collected interview data to support each theme produced.

Summary

The purpose of this chapter was to present the results of the study and to provide a detailed data analysis based on the research questions. The data collected from the participants reflected a wide range of perceptions on how AAI increased social communication for children with ASD, and on the perceived benefits of using AAI programs. While there was a range of experience in using AAI programs, the participants displayed a consensus on the benefits AAI programs award to students with ASD. Chapter 5 presents an interpretation of the analysis of the participant's responses to each interview question. Conclusions are provided and summarized on how AAI programs increase social communication skills in children with ASD, and the educator's perceptions of the benefits of AAI programs.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative study was to explore, describe, and improve the understanding of how elementary teachers used dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. More specifically, I wanted to gain a better understanding of how certified therapy dogs affected social communication skills in children with ASD, and how the integration of the therapy dog AAI programs changed the way in which children interacted with their peers. The research questions were addressed through data collected from educators and were inductively analyzed using the NVivo program to generate nodes and themes across all cases. The findings confirmed that (a) a therapy dog is a natural prompt for social communication, (b) AAI do increase social communication skills in children with ASD, (c) a therapy dog does serve as a motivational incentive for behavior change, (d) CST members and district administration of the three districts did support the use of therapy dogs in school, and (e) there are numerous ways in which AAI programs are beneficial to children with ASD in the school setting.

This chapter is arranged in sections based on the study's findings. Section 1 addresses my interpretation of the findings. Included in this section is how the emerging themes are associated with attachment theory and HAI theory. Section 2 addresses the limitations to the study that emerged throughout the completion of the study. Section 3 provides recommendations for further research. Section 4 describes the implications for positive social change and recommendations for future practice. Section 5 provides the study's conclusion.

Interpretation of the Findings

The findings of this study focused on how elementary teachers in three counties in New Jersey used AAI to increase social communication skills in children with ASD, the support received from CST members or district administration, and what the teachers perceived as the benefits derived from AAI programs. This study was influenced by attachment theory and HAI theory.

From the individual, face-to-face interview data, I identified various themes for each research question with subcategories and nodes in the NVivo system, which supported the themes. The following interpretation of these data is based on an analysis of the evidence collected during these interviews. The findings are compared to the literature review found in Chapter 2 to investigate the findings of this study in relation to current research.

Research Question 1

The first research question of this study—How do elementary teachers use dog-based animal-assisted interventions in their classrooms to prompt social communication skills?—generated three overarching themes. The themes generated for this question were the following: therapy dogs increase social communication skills in students, therapy dogs increase social approach behaviors, and therapy dogs enhance the curriculum for teachers.

More and more children with ASD are being educated in public schools alongside their nondisabled peers, and deficits in social language and communication skills can limit and exclude children with ASD from interacting with peers (Locke et al., 2016;

Qualls & Corbett, 2017). Locke et al. (2016) reported that children with ASD struggle with social skills and social situations when compared to their nondisabled peers. One reason for this is that children with ASD are often not the initiators of social interactions with peers (Becker et al., 2017; Locke et al., 2016; O'Haire, McKenzie, et al., 2015). Hart and Yamamoto (2017) reported that a dog could serve as an opening stimulus for social interactions. Mey (2017) discussed how therapy dogs "provide a conduit of social interactions to children with autism" (p. 32). The data collected from the interviews clearly demonstrated that the dog was a stimulus for communication in children with ASD. All of the educators interviewed agreed the dog was a "naturally occurring stimulus," and they did not need to create situations where the dog was used as a prompt for social interactions. According to the data, the students with ASD also demonstrated an increase in unprompted, spontaneous speech, both toward the therapy dog and to others.

Secondly, the data confirmed an increase in social approach behaviors when the therapy dog was present. All of the educators felt that the dog created *more opportunities* for the students with ASD to converse with their peers. Creating more opportunities allowed students with ASD to socially connect more often with their peers. Doing so when the therapy dog was present also reduced the stress of the social interaction because the dog provided a topic of conversation and a physical distraction to ease the anxiety of the situation. According to O'Haire, McKenzie, et al. (2015), children with ASD experience higher levels of social anxiety than their peers do. This high rate of social anxiety can cause difficulties in navigating the social aspects of a classroom. According

to the data, having the therapy dog present during social interactions helped to reduce this social anxiety.

Sparapani et al. (2016) reported that children with ASD need to be actively engaged in learning for a minimum of 25 hours each week. This can help to reduce problem behaviors, increase communication skills, and promote an overall increase in academic success (Sparapani et al., 2016). Many of the educators reported that the dog enhanced the curriculum. Nine of the 10 participants created lessons around the therapy dog as well as integrated the therapy dog into everyday lessons. The data showed that the therapy dog was also used in fun and innovative ways to teach, model, and remind the students of difficult behaviors such as making eye contact. The data collected also provided evidence that the students accepted the therapy dog into their classroom, lessons, and daily routines. The data established that the teachers incorporated lessons and opportunities for children with ASD to practice all aspects of social communication skills in nonstressful and motivating ways. According to Zents et al. (2017), therapy dogs increase independence in problem-solving skills, which is needed for academic success.

Research Question 2

The second research question in this study—How do public school administrators or child-study team members support AAI programs within special education programs?—generated two overarching themes. The themes generated for this question were creating safety precautions for students and dogs and overall support toward AAI programs.

The United States has no "official" system or "set of rules" for bringing animals into educational settings (Linder et al., 2017; Meints et al., 2017). Having a dog in an educational setting brings forth certain risks, procedures, and safety concerns that should be considered for the AAI program to be in educational settings. One recommendation is that all students are introduced to and educated on how to "read" a dog's body language because the students will have physical contact with the animal. The data demonstrated that the teachers did complete this task. All educators taught safety lessons before the animal entered the classroom. Some teachers also discussed appropriate behaviors needed for the animal to be in the classroom, ensuring the safety of the animal as well as the students (Meints et al., 2017).

Another precaution that needs to be taken to ensure the safety of all students is making sure that all phobias, allergies, and zoonosis are addressed (Linder et al., 2017; Meints et al., 2017). The data demonstrated that all educators had a hand-washing protocol in place. Another school designated a secluded area that students had no contact with as an area in which the facility dog could relieve itself without the worry of transmitting zoonosis. Bert et al. (2016) discussed how implementation of a hygiene protocol reduces the risk of zoonosis. The data also documented how one principal dealt with allergies and phobia involving dogs in order to support the use of an AAI program. This administrator created a survey for all incoming students altering the parents to the therapy dog. This survey asked all parents to alert the school of any dog-related allergies or phobias. This administrator then created a dog-allergy-free classroom. Any students

who were identified as having a phobic response to dogs were placed in classrooms away from where the facility dog would stay.

Administrative support is essential to the success of AAI programs in educational settings. Zents et al. (2017) discussed how important it is to have administrative support when creating and implementing AAI programs. Administrators can help change or create policies and procedures, as well as assist with parents when needed (Zents et al., 2017). The data confirmed that all of the educators who took part in this study had the support of their district administration. It was noted that one principal actively helped the students outside the AAI program to gain access to the therapy dog, and one superintendent encouraged the use of dogs in the classroom and challenged his teachers to think "outside the box" to help students. The data corresponding to this research question identified that procedure changes made by the administration only occurred in the schools that had facility therapy dogs. The schools that had visiting therapy dogs did not report that any procedure changes occurred.

Research Question 3

The third research question in this study—What do elementary teachers perceive as the benefits of AAI in their classrooms for children with ASD?—generated seven overarching themes. The themes generated for this question were the following: therapy dogs serve as a motivational incentive for behavior change, therapy dogs are nonjudgmental companions for students, therapy dogs help to develop self-worth and advocacy skills, therapy dogs evoke a calm presence/atmosphere, therapy dogs increase

empathy in students, therapy dogs serve as a secure base to allow students to explore and try new things, and AAI is a viable therapy for students with disabilities.

Stavropoulos and Carver (2014) postulated that a child's motivation to learn is highly motivated by social cues and social praise. However, children with ASD have difficulties in maintaining attention with a social partner (Sparapani et al., 2016). Students with ASD have a lack of intrinsic motivation, which means that these students have a lack of social motivation. According to Ryan and Deci (2000), intrinsic motivation is the "inherent tendency to seek out novelty and challenges, to extend one's capacities, to explore, and to learn" (p. 70). Thus, many teachers use extrinsic means to motivate a child with ASD to learn a difficult task (Stavropoulos & Carver, 2014). However, when the extrinsic motivators are not present, the drive to complete difficult social tasks decreases (Stavropoulos & Carver, 2014). The data demonstrated the various therapy dogs did serve as a motivational incentive for behavior changes. It was also noted that motivation is a key aspect of AAI programs, and the therapy dog was referred to as a *motivation tool* for social, emotional, and behavioral changes in students with ASD.

Gee, Griffin, and McCardle (2017) discussed the "importance of animals in children's lives" and how educators need to incorporate animals to help engage students' interest and attention (p. 2). All of the data from the educators identified an increase in attention to task when the therapy dog was present, and this attention to task continued throughout the day. The data also indicated that the therapy dog was believed to be a *nonjudgmental tool* by all the participants. It was also established that students did not

feel judged by the therapy dog and could be themselves around the dog without having to worry about what the dog thought. According to Zents et al. (2017), therapy dogs are an avenue for students to relay their feelings to a "nonjudgmental ear" (p. 83). The data showed that this nonjudgmental feeling from the therapy dog helped the students perform difficult tasks by increasing their confidence level. The positive interactions that a child can have with a therapy dog offer a rewarding experience and reinforce behaviors (Levinson, 1970). A child's view and how he or she feels about other people can be determined by how he or she interacts with a therapy dog (Levinson, 1970).

According to Shani (2017), contact with animals comforts, calms, and results in a general feeling of well-being. The data strongly supported the idea that therapy dogs evoked a calm presence and atmosphere in all classrooms. The data also demonstrated that therapy dogs elicited a calming effect on students' behaviors and on their ability to communicate with others. The data showed that the presence of the therapy dog gave students with ASD confidence to try new or difficult tasks. The data also demonstrated that this calming behavior increased social communication for students with ASD, not only with the animal, but also with peers. Levinson (1988) reported that tactile stimulation proved by a dog is needed for developing and learning to cope. Zents et al. (2017) furthered this by stating that a therapy dog creates a "mode of communication" and increases the feeling of safety for students (p. 83).

Gee, Griffin, and McCardle (2017) stated that many educators use animals to teach developmental and social-emotional skills such as developing empathy and taking responsibility. The findings from the data for Research Question 3 showed an increase in

empathy, especially toward the dog. The students began to attend to the needs of the animal, and they wanted to do things for the therapy dog. Beetz (2013) studied the effects of having a dog present in an elementary school setting over a long period of time, with findings supporting an increase in empathy. The educators in this study spoke at length about how the therapy dog became part of the students' lives and aided in teaching the students to show respect. The therapy dog also had a large part in building a classroom community where all kids were kind and accepting of differences. The increase in empathy toward the dog did eventually transfer to others. This resulted in students being kinder to other students. A strong attachment to others is also related to developing empathy and prosocial behaviors (Hawkins et al., 2017).

The therapy dog serving as a secure base to allow students to explore and try new things was one of the strongest themes that emerged from the data supporting the benefits of using therapy dogs for students with ASD. A core belief of attachment theory is that attachment allows a child to form a sense of security during stressful situations by seeking closeness and support from someone or some animal the child trusts (Teague et al., 2017). The data collected demonstrated that all the students formed a bond with the animal and that this bond helped to create relationships with other students and adults. This secure base also made the students feel that they could do more and feel more successful when the dog was present. This increase in confidence allowed the students to try more difficult tasks because they had the support of the therapy dog.

Social Communication, Attachment Theory, and HAI

According to Zilcha-Mano et al. (2011), interactions that students have with an attachment figure that offers support during difficult times can foster and strengthen the sense of attachment. In turn, this stronger sense of attachment can contribute to higher levels of self-worth and emotional/behavioral regulation. Bowlby (1988) stated that memorable interactions with others could change individuals' internal working models, which means that dogs can be viewed as attachment figures. Payne (2017) defined an attachment bond as "a close, emotional relationship between two individuals" (p. 72). The data from this study demonstrated that all of the students created strong bonds with the therapy dog, and this human-animal bond that was created did meet the four prerequisites for a true attachment bond. One educator even commented on the bond that the therapy dog made with a student. This aspect ties into HAI theory, which states that the human-dog relationship is bidirectional; the human relies on the dog just as much as the dog relies on the human (Payne et al., 2015). The human and the dog both feel the physiological and emotional benefits of the HAB (Beetz, 2017; Payne et al., 2015)

This bond that was formed between the students and the various therapy dogs also provided a secure base for the students with ASD. The educators' data showed that this bond allowed the students to be more willing to explore and try new things. Hawkins et al. (2017) suggested that a secure base allows children to gain comfort and confidence. Levinson (1988) and Shani (2017) both postulated that an animal is a more natural choice for attachment than an inanimate object and can produce a wider range of behaviors in an individual. Zents et al. (2017) discussed how a therapy dog might act as a "security-

enhancing attachment figure" to allow students to explore (p. 84). The data demonstrated that this secure base not only increased confidence, but also influenced behavior changes and self-regulation of behaviors. This bond also created empathy in students toward the dog. The data showed that the students wanted to do things for the dog and became protective of the dog.

AAI and Human-Animal Interaction Theory

Human-animal interaction theory also supports the bond that was formed between the students and the therapy dog. Gee, Griffin, and McCardle (2017) discussed how this bond affects social growth by fostering interactions with the animal and with others. This bond also increases academic growth by increasing motivation to complete activities or attend to activities (Gee, Griffin, and McCardle, 2017). The data from this study established a connection between the therapy dog and an increase in attention to tasks and lessons. The data attested that the therapy dog also prompted students to complete work more quickly, demonstrating the dog served as a motivational incentive for completing work. HAI is thought to be associated with effective learning because it activates a student's attention to learn. The information that will be learned becomes meaningful with an animal present, and it is considered an interactive activity (Rajan et al., 2017). This idea is supported by the data; it reported the therapy dog made the students *more present, more available, and more open* to instruction.

HAI is also associated with the ability to self-regulate (Kaufmann et al., 2015; Rajan et al., 2017). It is noted that having mastery of self-regulation skills early in development has an impact on school success later in life (Beets et al., 2015). The data

from this study indicated that students began to regulate their behavior when the therapy dog was in the classroom. The data also showed that older students continued to regulate their behavior on the days the therapy dog visited, as well on days the dog was not present. Teachers did indicate that self-regulation in younger students was more difficult, and this skill was strengthened over time by having sustained interactions with the therapy dog.

To communicate with an animal, students must be aware of the animal's nonverbal communication. This means the students must observe, understand, and be able to read nonverbal communication. Conclusions from this study revealed that dogs make their "behavioral intentions" more easily understandable, and since children with ASD are thought to have sensory-based thinking, it is easier for them to relate to and understand this nonverbal form of communication (Grandin et al., 2015, p. 227).

Limitations of the Study

Researcher Bias

The first limitation addressed in this study was researcher bias. According to Ravitch and Carl (2016), the purpose of qualitative research is to better understand how participants perceive, experience, and think about a particular topic. For this study, I wanted to explore, describe, and improve the understanding of how elementary teachers used dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. I also wanted to understand what teacher's perceive to be the benefits of having an AAI program in their classrooms. For this reason, I must declare and address all biases one may bring to the study.

My passion for therapy dogs and for individuals with ASD drove this study. My interest in this topic stemmed from my personal history with AAT, and from my experience of teaching children with ASD for 20 years. I first learned about and became a part of an AAT program more than 10 years ago. At the time I was teaching in a K-2 self-contained classroom for children with ASD. At the time I had little knowledge of the benefits in using animals to assist students in learning. Over the past 10 years, I began to research and learn more about AAI. In 2015, I enrolled in the University of Denver's animal and human health certification program. Through this program I learned about and how to create AAI programs. This certification program strengthened my personal belief that animals can assist children in learning and in maintaining their behaviors. However, as a special education teacher, I advocate for using evidence-based practices. This led to my interest in finding evidence that AAI is a promising and beneficial therapy for children with ASD. I acknowledge and explain my history and connection to AAI and children with ASD, so that my personal bias does not become an ethical issue.

Scope of the Project

Another limitation was the scope of the study. The initial round of requests sent to the school districts only produced one approval. This required a second round of 52 requests that were sent to an additional pool of superintendents. From both of the request rounds, only a small number of schools agreed to allow research to be conducted in their districts. Thankfully, I was able to recruit nine certified teachers and one CST member to participate in this study (n=10).

Elements Outside Researcher's Control

The following are elements that were outside of my control and presented additional limitations for this study. The type of classrooms that the participants worked in were different, meaning the teachers taught in different types of classrooms (self-contained, resource room, inclusive settings). However, all participants had students with ASD in their classrooms and all used AAI programs. The last limitation out of my control was the status of the therapy dog at each location. Five of the participants worked with a visiting therapy dog organization, three participants had a facility dog in the school that the classroom had access to, one had a full-time facility dog in their classroom all-day, and the last participant worked with both a facility dog and a visiting therapy dog organization.

Recommendations

Further understanding of how dog-based AAI programs are incorporated into classrooms could allow this nonexpensive therapy to be used in more classrooms for children with ASD. The most significant aspect of this study was the documentation that therapy dogs were a naturally occurring stimulus that increases social communication skills in students with ASD. The recommendations for further research on how all educators use dog-based AAI programs in their classrooms to prompt social communication skills for students could have a widespread influence. The findings of this study revealed that therapy dogs were a stimulus for and increase social communication skills in children with ASD. The study also revealed several benefits AAI programs offer to special education classrooms, specifically children with ASD.

Examples of the benefits discussed were improvements the therapy dog had on behaviors, self-regulation of behaviors, and development of empathy skills. This study also supported and provided a deeper understanding of how attachment relationships and the human-animal bond affected students in a school setting.

For this reason, I recommend future research be conducted to understand how therapy dogs can influence all students. This research could allow for professional application that is supported by evidence that AAI programs can be an alternate teaching intervention and strategy to support teaching students. Identifying this additional intervention offers teachers and administration an alternate method for teaching and reinforcing social, emotional and academic growth.

All the dogs used in this study were therapy dogs. However, some of the therapy dogs were owned by a teacher or staff member and attended school daily or several times a week. This dog was considered a facility dog as it served one school. The other therapy dogs used came from a therapy dog organization and visited on a rotation schedule. The majority of the participants stated they wanted a full-time therapy dog in their classroom. Another topic I hope future research focuses on is the difference a full-time facility therapy dog makes verses a visiting therapy dog on social, emotional, and academic growth in children. Exploring the different impact between the two types of therapy dogs could produce useful findings for school administrators. Future research could also explore how the amount of time the same dog spends at a school strengthens or effects the bond created between student and animal. Another potential study could focus on how AAI increases/produces higher levels of intrinsic motivation for students

with disabilities. All of these recommendations would benefit students with ASD and allow stronger AAI programs to be developed in school settings.

Implications

This study's findings serve to bring about positive social change at the local level through insight into the utilization of therapy dogs for students with ASD. Utilization included not only documentation that it increased social communication skills, but that the use of a therapy dog brought about behavioral, social, and emotional changes in students as well.

The educators who were participants in this study also shared what they perceived to be the benefits of using a dog-based AAI program in public school settings. The benefits shared not only improved the lives of the students with ASD but the general school population as well. The benefits of using AAI as a viable alternate therapy for children with disabilities may provide other educators in the field with a starting point to facilitate an AAI in their educational setting, or to improve their program. The benefits could also provide school administration with additional procedures that could be incorporated to ensure the safety of the entire school population and the safety of the therapy dog, especially if the dog was a facility dog. By fully understanding how educators and district administration utilize and support AAI programs in school settings could influence more districts to use this viable therapy to support the academic, social, emotional and behavioral growth of students.

Conclusion

AAI programs are used throughout a variety of settings and with a variety of individuals. Research has demonstrated positive connections and benefits between therapy animals and patients in hospitals, psychiatric wards, pediatric hospitals, hospice, and nursing homes (Hubrecht et al., 2016; Kirnan et al., 2016). AAI programs are beginning to be utilized more often in educational settings to treat a variety of conditions and disorders (Gee et al., 2015). The dog's ability to reduce stress and elicit an emotional response in children makes AAI in classrooms settings an ideal supplemental intervention (Vanfleet et al., 2015). The data from this study supports using AAI programs for children with ASD in a classroom setting. The results also demonstrated the therapy dog can act as a stimulus to social interactions as well as increase the number of social interactions a student participates in. The data also established how critical the teacher's role is in implementing AAI programs that target social communication skills. The teacher needs to enhance the curriculum and incorporate the therapy dog into all aspects of a student's day. Positive social change is created when individual lives are touched and impacted in a beneficial way or when the results benefit society. Through the results of this study, it is my hope that positive social change can occur through implementation of more AAI programs in educational settings, not just for students with ASD but also for the whole school community.

References

Able, H., Sreckovic, M. A., Schultz, T. R., Garwood, J. D., & Sherman, J. (2015). Views from the trenches: Teacher and student supports needed for full inclusion of students with ASD. *Teacher Education and Special Education, 38*(1), 44-57. doi:10.1177/0888406414558096

Abrahamson, K., Cai, Y., Richards, E., Cline, K., & O'Haire, M. E. (2016). Perceptions of a hospital-based animal-assisted intervention program: A exploratory study. *Complementary Therapies in Clinical Practice, 25,* 150-154. doi:10.1016/j.ctcp.2016.10.003

Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation*. New York, NY: Routledge.

Allison, M., & Ramaswamy, M. (2017). Adapting animal-assisted therapy trials to prison-based animal programs. *Public Health Nursing, 33*(5), 472-480. doi:10.1111/phn.12276

American Pet Products Manufacturers Association. (2017). 2017-2018 national pet ownership survey. Greenwich, CT: Author. Retrieved from http://americanpetproducts.org/Uploads/MemServices/GPE2017_NPOS_Seminar.pdf

American Psychiatric Association. (2017). What is autism? Retrieved from https://www.psychiatry.org/patients-families/autism/what-is-autism-spectrum-disorder

Anagnosto, E., Jones, N., Huerta, M., Halladay, A. K., Wang, P., Scahill, L., … Dawson, G. (2015). Measuring social communication behaviors as a treatment endpoint in individuals with autism spectrum disorder. *Autism, 19*(5), 622-636. doi:10.1177/1362361314542955

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*(2), 272-281.

Asaro-Saddler, K., Arcidiacono, M. B., & Morris Deyoe, M. (2017). Instructional practice for students with autism spectrum and related disorders: Exploring the teachings of writing in two self-contained classrooms. *Reading & Writing Quarterly, 33*(2), 171-186. doi:10.1080/10573569.2016.1145561

Babbie, E. (2017). *Basics of social research* (7th ed.). Boston, MA: Cengage Learning.

Bandura, A. (1971). Social learning theory. Retrieved from http://www.esludwig.com /uploads/2/6/1/0/26105457/bandura_sociallearningtheory.pdf

Barker, S. B., Barker, R. T., McCain, N. L., & Schubert, C. M. (2016). A randomized cross-over exploratory study of the effect of visiting therapy dogs on college student stress before final exams. *Anthrozoös, 29*(1), 35-46. doi:10.1080/08927936.2015.1069988

Becker, J. L., Rogers, E. C., & Burrows, B. (2017). Animal-assisted social skills training for children with autism spectrum disorders. *Anthrozoös, 30*(2), 307-326. doi:10.1080/08927936.2017.1311055

Beetz, A. (2013). Socio-emotional correlates of a school-dog-teacher-team in the

classroom. *Frontiers in Psychology, 4*, 1-7. doi:10.3389/fpsyg.2013.00886

Beetz, A. M. (2017). Theories and possible processes of action in animal assisted interventions. *Applied Developmental Science, 21*(2), 139-149. doi:10.1080/10888691.2016.1262263

Bert, F., Gualano, M. R., Camussi, E., Pieve, G., Voglino, G., & Siliquini, R. (2016). Animal assisted intervention: A systematic review of benefits and risks. *European Journal of Integrative Medicine, 8,* 695-706. doi:10.1016/j.eujim.2016.05.005

Bettini, E., Kimerling, J., Park, Y., & Murphy, K. M. (2015). Responsibilities and instructional time: Relationships identified by teachers in self-contained classes for students with emotional and behavioral disabilities. *Preventing School Failure, 59*(3), 121-128. doi:10.1080/1045988x.2013.859561

Biba, U. (2017). The science behind the cute: How does animal assisted therapy work? *TuftScope, 16*(2), 40-42.

Borgi, M., Loliva, D., Cerino, S., Chiarotti, F., Venerosi, A., Bramini, M., … Cirulli, F. (2016). Effectiveness of a standardized equine-assisted therapy program for children with autism spectrum disorder. *Journal of Autism and Developmental Disabilities, 46*(1), 1-9. doi:10.1007/s10803-015-2530-6

Bowlby, J. (1969). *Attachment*. New York, NY: Basic Books.

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development.* New York, NY: Basic Books.

Brelsford, V. L., Meints, K., Gee, N. R., & Pfeffer, K. (2017). Animal-assisted interventions in the classroom: A systematic review. *International Journal of*

Environmental Research and Public Health, 17(7), 669-702. doi:10.3390/ijerph14070669

Burkholder, G. J., Cox, K. A., & Crawford, L. M. (2016). *The scholar-practitioner's guide to research design.* Baltimore, MD: Laureate Publishing.

Busch, C., Tucha, L., Talarovicova, A., Fuermaier, A. B. M., Lewis-Evans, B., & Tucha, O. (2016). Animal-assisted interventions for children with ADHD: A theoretical review and consideration of future research directions. *Psychological Reports, 118*(1), 292-331. doi:10.1177/0033294115626633

Byström, K. M., & Lundqvist, C. A. (2015). The meaning of companion animals for children and adolescents with autism: The parents' perspective. *Anthrozoös, 28*(2), 263-275. doi:10.1080/08927936.2015.11435401

Carlisle, G. (2015). The social skills and attachment to dogs of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 45,* 1137-1145. doi:10.1007/s10803-014-2267-7

Cascia, J., & Barr, J. J. (2016). Associations among vocabulary, executive function skills and empathy in individuals with autism spectrum disorder. *Journal of Applied Research in Intellectual Disabilities, 30*(4), 627-637. doi:10.1111/jar.12257

Centers for Disease Control and Prevention (2016). CDC estimates 1 in 68 school-aged children have autism: No change from previous estimate. Retrieved from https://www.cdc.gov/media/releases/2016/p0331-children-autism.html

Cleary, M., Horsfall, J., & Hayter, M. (2014). Data collection and sampling in qualitative research: Does size matter? *Journal of Advanced Nursing, 70*(3), 473-475.

doi:10.1111/jan.12163

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th Ed.). Thousand Oaks, CA: SAGE Publications.

Creswell, J. & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice, 39*(3), 124-130.

Davis, T., Scalzo, R., Butler, E., Farah, Y. N., Perez, S., Mainor, K.,…Coviello, L. (2015). Animal-assisted interventions for children with autism spectrum disorder: A systematic review. *Education and Training in Autism and Developmental Disabilities, 50*(3), 316-329. doi:10.1080/00094056.2012.662124

Dev, P., & Haynes, L. (2015). Teacher perspectives on suitable learning environments for students with disabilities: What have we learned from inclusion, resource, and self-contained classrooms. *The International Journal of Interdisciplinary Social Sciences, 9,* 53-64.

Division for Early Childhood. (2014). *DEC recommended practices in early intervention/early childhood special education 2014*. Retrieved from http://www.dec-sped.org/recommendedpractices

Eber, J., & Oh, H. (2017). A review of animal-assisted interventions in long-term care facilities. *Activities, Adaptations & Aging, 41*(2), 107-128. doi:10.1080/01924788.2017.1306380

Fine, A. H. (2015). Incorporating animal-assisted interventions into psychotherapy: Guidelines and suggestions for therapist. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted*

interventions, (pp. 141-155). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00011-0

Fine, A. H. & Beck, A. M. (2015). Understanding our kinship with animals: Input for health care professionals interested in the human-animal bond. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 3-10). San Diego, CA: Academic Press.

Fine, A. H., Tedeschi, P., & Elvove, E. (2015). Forward thinking: The evolving field of human-animal interactions. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 21-35). San Diego, CA: Academic Press.

Fine, A. H., & Gee, N. G. (2017). How animals help children learn. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 3-11). New York, NY: Routledge.

Foreman, A. M., Glenn, M. K., Meade, B. J., & Wirth, O. (2017). Dogs in the workplace: A review of the benefits and potential challenges. *International Journal of Environmental Research and Public Health, 14*(5), 498-519. doi:10.3390/ijerph14050498

Fujisawa, H., Kumasaka, T., Masu, H., & Kataoka, M. (2016). Changes in mood among 4th year elementary school students when interacting with dogs and considerations: The need for animals in elementary education. *International Medical Journal, 23*(6), 633-635.

Funahashi, A., Gruebler, A., Aoki, T., Kadone, H., & Suzuki, K. (2014). Brief Report: The smiles of a child with autism spectrum disorder during an animal-assisted activity may facilitate social positive behaviors: Quantitative analysis with smile-detecting interface. *Journal of Autism and Developmental Disorders, 44*(3), 685-693. doi:10.1007/s10803-013-1898-4

Fung, S., & Leung, A. S. (2014). Pilot study investigating the role of therapy dogs in facilitating social interaction among children with autism. *Journal of Contemporary Psychotherapy*, *44*(4), 253-262. doi:10.1007/s10879-014-9274-z

Fung, S. C. (2015). Increasing the social communication of a boy with autism using animal-assisted play therapy: A case report. *Advances, 29*(3), 27-31.

Fung, S. C. (2017a). Canine-assisted reading programs for children with special educational needs: A rationale and recommendations for the use of dogs in assisting learning. *Educational Review, 69*(4), 435-450. doi:10.1080/00131911.2016.1228611

Fung, S. C. (2017b). An observational study on canine-assisted play therapy for children with autism: Move towards the phrase of manualization and protocol development. *Global Journal of Health Science, 9*(7), 67-86. doi:10.5539/gjhs.v9n7p67

Fusch, P. I. and Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20*(9), 1408-1416. Retrieved from http://www.nova.edu/ssss/QR/QR20/9/fusch1.pdf

Gee, N. G., Fine, A. H., & Schuck, S. (2015). Animals in educational settings: Research

and practice. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 141-155). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00014-6

Gee, N. R., Griffin, J. A., & McCardle, P. (2017). Human-animal interaction research in school settings: Current Knowledge and Future Directions. *AREA Open, 3*(3), 1-9. doi: 10.1177/2332858417724346

Gee, N. G., Rawlings, J. M., O'Haire, M. E., Bennett, P. C., Snellgrove, D., & Peralta, J. M. (2017). Caring for classroom pets. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 197-211). New York, NY: Routledge.

Goddard, A., & Gilmer, M. (2015). The role and impact of animals with pediatric patients. *Pediatric Nursing, 41*(2), 65-71.

Grandgeorge, M., Degrez, C., Alavi, A. & Lemonnier, E. (2016). Face processing of animal and human static stimuli by children with autism spectrum disorder: A pilot study. *Human-Animal Interaction Bulletin, 4*(2), 39-53.

Grandin, T., Fine, A. H., O'Haire, M. E., Carlisle, G. & Bowers, C. M. (2015). The roles of animals for individuals with autism spectrum disorder. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 225-236). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00016-x

Guest, G., Bunce, A. & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59-82. doi:

10.1177/1525822x05279903

Gus, L., Rose, J., & Gilbert, L. (2015). Emotion coaching: A universal strategy for supporting and promoting sustainable emotional and behavioural well-being. *Educational & Child Psychology, 32*(1), 31-41.

Hallyburton, A., & Hinton, J. (2017). Canine-assisted therapies in autism: A systematic review of published studies relevant to recreational therapy. *Therapeutic Recreation Journal, 51(*2), 127-142. doi:10.18666/trj-2017-v51-i2-7969

Harris, K., & Sholtis, S. (2016). Companion angels on a leash: Welcoming service dogs into classroom communities for children with autism. *Childhood Education, 92*(4), 263-275. doi:10.1080/00094056.2016.1208003

Hart, L. A., & Yamamoto, M. (2015). Recruiting psychosocial health effects of animals for families and communities: Transition to practice. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-*

Hart, L. A., & Yamamoto, M. (2017). Dogs as helping partners and companions for humans. In J. Serpell (2nd. Ed.), *The domestic dog: Its evolution, behavior, and interactions with people,* (pp. 247-270). New York, NY: Cambridge University Press. doi:10.1017/9781139161800.013

Hawkins, R. D., Williams, J. M., & Scottish Society for the Prevention of Cruelty to Animals (2017). Childhood attachment to pets: Associations between pet attachment, attitudes to animals, compassion and humane behavior. *International Journal of Environmental Research and Public Health, 14*(5), 490-505. doi:10.3390/ijerph14050490

Hediger, K., & Beetz, A. (2015). The role of human-animal interaction in education. In J. Zinsstag, E. Schelling, D. Waltner-Toews, M. Whittaker, & M. Tanner (Eds.), *One health: The theory and practice of integrated health approaches,* (pp. 73-84). Wallingford, UK: CABI Publishing.

Hediger, K., Gee, N. R., & Griffin, J. A. (2017). Do animals in the classroom improve learning, attention, or other aspects of cognition? In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 56-68). New York, NY: Routledge.

Hergovich, A., Monshi, B., Semmler, G. & Zieglmayer, V. (2002). The effects of the presence of a dog in the classroom. *Anthrozoös, 15*(1), 37-50. doi:10.2752/089279302786992775

High, A. C. & Scharp, K. M. (2015). Examining family communication patterns and seeking social support direct and indirect effects through ability. *Human Communication Research, 41*(4), 459-479. doi: 10.1111/hcre.12061

Holt, S., Johnson, R. A., Yaglom, H. D., & Brenner, C. (2015). Animal-assisted activity with older adult retirement facility residents: The PAWSitive visits program. *Activities, Adaptations & Aging, 39*(4), 267-279. doi:10.1080/01924788.2015.1089696

Hubrecht, R., Wickens, S., & Kirkwood, J. (2016). The welfare of dogs in human care. In J. Serpell (2nd. Ed.), *The domestic dog: Its evolution, behavior, and interactions with people,* (pp. 271-299). New York, NY: Cambridge University Press.

doi:10.1017/9781139161800.014

Huss, R. J., & Fine, A. H. (2017). Legal and policy issues for classroom animals. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 27-37). San Diego, CA: Academic Press.

Intermountain Therapy Animals (n. d.). Reading education assistance dogs. Retrieved from: http://www.therapyanimals.org/Read_Team_Steps.html

Jalongo, M.R. (2015). An attachment perspective on the child-dog bond: Interdisciplinary and international research findings. *Early Childhood Education Journal, 43*(5)*,* 395-405. doi:10.1007/s10643-015-0687-4

Jalongo, M. R., & McDevitt, T. (2015). Therapy dogs in academic libraries: A way to foster student engagement and mitigate self-reported stress during finals. *Public Service Quarterly, 11*(4), 254-269. doi:10.1080/15228959.2015.1084904

Jefferies, T., Crosland, K., and Miltenberger, R. (2016). Evaluating a tablet application and differential reinforcement to increase eye contact in children with autism. *Journal of Applied Behavior Analysis, 49*(1), 182-187. doi: 10.1002/jaba.262

Jegatheesan, B. (2014). International Association of Human-Animal Interaction Organizations (IAHAIO) definitions for animal assisted intervention and guidelines for wellness of animals involved [White paper]. Retrieved May 18, 2018, from http://iahaio.org/wp/wp-content/uploads/2017/05/iahaio-white-paper-final-nov-24-2014.pdf

Journal of the American Veterinary Medical Association (JAVM) (1998). Statement from the committee on the human-animal bond. *Journal of the American Veterinary Medical Association, 212*(11), 1675.

Kaefer, F., Roper, J., & Sinha, P. (2015). A software-assisted qualitative content analysis of news articles: Example and reflections. *Forum: Qualitative Social Research, 16*(2), Art 8. ISSN 1438-5627

Kamps, D., Theiman-Bourque, K., Heitzman-Powell, L., Schwartz, I., Rosenburg, N., Mason, R., & Cox, S. (2015). A comprehensive peer network intervention to improve communication of children with autism spectrum disorders: A randomized trial in kindergarten and first grade. *Journal of Autism and Developmental Disorder, 45*(6), 1809-1824. doi: 0.1007/s10803-014-2340-2

Kaufmann, M. E., Beetz, A., Kinoshita, M., & Ross, S. (2015). Enhancing special education environments with animal-assisted therapy at Green Chimneys: Opportunities and practical considerations. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 211-224). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00015-8

Kirnan, J., Siminerio, S., & Wong, Z. (2016). The impact of a therapy dog program on children's reading skills and attitudes toward reading. *Early Childhood Education Journal, 44*(6), 637-651. doi:10.1007/s10643-015-0747-9

Kita, Y., Gunji, A., Sakuma, R., Goto T., Okumura, Y., & Inagaki, M. (2017). Training attention to the other's need improves helping behaviors in children with autism

spectrum disorder: A behavioral analysis using a two-dimensional motion capture system. *Frontiers in Education, 2,* 1-7. doi:10.3389/feduc.2017.00050

Kloep, M. L., Hunter, R. H., & Kertz, S. J. (2017). Examining the effects of a novel training program and use of psychiatric service dogs for military-related PTSD and associated symptoms. *American Journal of Orthopsychiatry, 87*(4), 425-433. doi:10.1037/ort0000254

Kotrschal, K., & Ortbauer, B. (2003). Behavioral effects of the presence of a dog in a classroom. *Anthrozoös, 16*(2), 147-159. doi:10.2752/089279303786992170

Krause-Parello, C. A., Sarni, S., & Padden, E. (2016). Military veterans and canine assistance for post-traumatic stress disorder: A narrative review of the literature. *Nurse Education Today, 47*, 43-50. doi:10.1016/j.nedt.2016.04.020

Lai Mui Lee, F. Yeung, A. S., Tracey D., & Barker, K. (2015). Inclusion of children with special needs in early childhood education. *Topics in Early Childhood Special Education, 35*(2), 79-88. doi:10.1177/0271121414566014

Lane, J. D., Gast, D. L., Shepley, C. & Ledford, J. R. (2015). Including social opportunities during small group instruction of preschool children with social-communication delays. *Journal of Early Intervention, 37*(1), 3-22. doi:10.1177/1053815115588828

Latella, D., & Abrams, B. N. (2015). The role of the equine in animal-assisted interactions. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 115-137). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00010-9

Lenihan, D., McCobb, E., Diurba, A., Linder, D., & Freeman, L. (2016). Measuring the effects of reading assistance dogs on reading ability and attitudes in elementary school children. *Journal of Research in Childhood Education, 30*(2), 252-259. doi:10.1080/02568543.2016.1143896

Levinson, B. M. (1962). The dog as "co-therapist." *Mental Hygiene, 46*, 59-65.

Levinson, B. M. (1969). *Pet-oriented child psychotherapy*. Springfield, IL: Charles C. Thomas Publisher.

Levinson, B. (1970). Pets, child development, and mental illness. *Journal of the American Veterinary Medical Association, 157*(11), 1759-1766.

Levinson, B. M. (1972). *Pets and human development*. Springfield, IL: Thomas Publisher.

Levinson, B. (1997). *Pet-oriented child psychotherapy* (2nd ed.). Springfield: Charles C. Thomas.

Levinson, E. M., Vogt, M., Barker, W. F., Jalongo, M. R., & Van Zandt, P. (2017). Effects of reading with adult tutor/therapy dog teams on elementary students' reading achievement and attitudes. *Society & Animals, 25*, 38-56. doi:10.1163/15685306-12341427

Linder, D. E., Siebens, H. C., Mueller, M. K., Gibbs, D. M., Freeman, L. M. (2017). Animal-assisted interventions: A national survey of health and safety policies in hospitals, eldercare facilities, and therapy animal organizations. *American Journal of Infection Control, 45*(8), 883-887. doi:10.1016/j.ajic.2017.04.287

Locke, J., Shih, W., Kretzmann, M., & Kasari, C. (2016). Examining playground engagement between elementary school children with and without autism spectrum disorder. *Autism, 20*(6), 653-662. doi:10.1177/1362361315599468

MacMullen-Freeman, L., Locke, J., Rotheram-Fuller, E., & Mandell, D. (2017). Brief Report: Examining executive functioning and social functioning in elementary-aged children with autism. *Journal of Autism and Developmental Disorders, 47*(6), 1890-1895. doi:10.1007/s10803-017-3079-3

Maharaj, N. (2016). Companion animals and vulnerable youth: Promoting engagement between youth and professional service providers. *Journal of Loss and Trauma, 21*(4), 335-343. doi:10.1080/15325024.2015.1084857

Maharaj, N., Kazanjiam, A., & Haney, C. J. (2016). The human-canine bond: A sacred relationship. *Journal of Spirituality, 18*(1), 76-89. doi:10.1080/19349637.2015.1047922

McCullough, A., Ruehrdanz, A., Jenkins, M. A., Gilmer, M. J., Olson, J., Pawar, A., Holley, L….O'Haire, M. (2017). Measuring the effects of an animal-assisted intervention for pediatric oncology patients and their parents: A multisite randomized controlled trial. *Journal of Pediatric Oncology Nursing, 00*(0), 1-19. doi:10.1177/1043454217748586

McGrath, K. F., & Van Bergen, P. (2015). Who, when, why and to what end? Students at risk of negative student-teacher relationships and their outcomes. *Educational Research Review, 14*, 1-17. doi:10.1016/j.edurev.2014.12.001

McKenny, E. L., Stachniak, C., Albright, J., Jewell, J. D., & Dorencz, J. M. (2016). Defining success for students with autism spectrum disorder: Social academic behavior in secondary general education settings. *Education and Training in Autism and Developmental Disorders, 51*(3), 318-327.

Meints, K., Brelsford, V., Gee, N. G., & Fine, A. H. (2017). Animals in education settings: Safety for all. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 3-11). New York, NY: Routledge.

Melson, G. F., & Fine, A. H. (2015). Animals in the lives of children. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 179-194). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00013-4

Mey, S. C. (2017). Animal assisted therapy for children with autism. *International Journal of Child development and Mental Health, 5*(1), 29-43.

Miklósi, Á., & Topál, J. (2013). What does it take to become 'best friend'? Evolutionary changes in canine social competence. *Trends in Cognitive Sciences, 17*(6), 287-294. doi:10.1016/j.tics.2013.04.005

Morrow, S. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology, 52*(2), 250-260. doi:10.1037/0022-0167.52.2.250

Morse, J. M. (2000). Determining Sample Size. *Qualitative Heath Research, 10*(1), 3-5. doi:10.1177/104973200129118183

Mueller, M. (2014). Is human-animal interaction (HAI) linked to positive youth development? Initial answers. *Applied Developmental Science, 18*(1), 5-16. doi:10.1080/10888691.2014.864205

Murza, K. A., Schwartz, J. B., Hahs-Vaughn, D. L., & Nye, C. (2016). Joint attention interventions for children with autism spectrum disorder: A systematic review and meta-analysis. *International Journal of Language and Communication Disorder, 51*(3), 236-251. doi:10.1111/1460-6984.12212

O'Haire, M. E., McKenzie, S. J., McCune, S., & Slaughter, V. (2013). Effects of animal-assisted activities with guinea pigs in the primary school classroom. *Anthrozoös, 26*(3), 445-458. doi:10.2752/175303713x13697429463835

O'Haire, M. E., Guérin, M. A., Kirkham, A. C., & Daigle, C. L. (2015). Animal-assisted intervention for autism spectrum disorder. *HabriCentral*, 1-8.

O'Haire, M. E., McKenzie, S. J., Beck, A. M., & Slaughter, V. (2015). Animals may act as social buffers: Skin conductance arousal in children with autism spectrum disorder in a social context. *Developmental Psychobiology*, *57*(5), 584-595. doi:10.1002/dev.21310

O'Haire, M. E., & Gabriels, R. L. (2017). The impact of animals in classrooms assisting students with autism and other developmental disorders. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 83-97). New York, NY: Routledge.

Owada, K., Kojma, M., Yassin, W., Kawakubo, Y., Kuwabara, H., Kano, Y., & Yamasue, H. (2018). Computer-analyzed facial expressions as a surrogate marker for autism spectrum social core symptoms. *PLOS ONE, 13*(1), e0190442. doi:10.1371/journal.pone.0190442

Palaganas, E. C., Sanchez, M. C., Molintas, M. P., & Caricativo, R. D. (2017). Reflexivity in qualitative research: A journey of learning. *The Qualitative Report, 22*(2), 426-438. Retrieved from: Retrieved from http://nsuworks.nova.edu/tqr/vol22/iss2/5

Palestrini, C., Calcaterra, V., Cannas, S., Talamonti, Z., Papotti, F., Buttram, D., & Pelizzo, G. (2017). Stress level evaluation in a dog during animal-assisted therapy in pediatric surgery. *Journal of Veterinary Behavior, 14,* 44-49. doi:10.1016/j.jveb.2016.09.003

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.

Payne, E., Bennett, P., & McGreevy, P. (2015). Current perspectives on attachment and bonding in the dog-human dyad. *Psychology Research and Behavior Management*, 71-79. doi:10.2147/prbm.s74972

Pendry, P., Carr, A. M., & Vandagriff, J. L. (2017). Does animal presence or interaction impact social and classroom behaviors conducive to student educational success? In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 41-55). New York, NY: Routledge

Pet Partners (n. d.). Terminology. Retrieved on November 30, 2017 from https://petpartners.org/learn/terminology/

Pope, W. S., Hunt, C., & Ellison, K. (2016). Animal assisted therapy for elderly residents of a skilled nursing facility. *Journal of Nursing Education and Practice, 6*(9), 56-62. doi:10.5430/jnep.v6n9p56

Preuß, D., Schoofs, D., Schlotz, W., & Wolf, O. T. (2010). The stressed student: Influence of written examinations and oral presentations on salivary concentrations in university students. *Stress, 13*(3), 221-229. doi:10.3109/10253890903277579

Professional Association of Therapeutic Horsemanship International (PATH) (2018). About PATH INTL. Retrieved from https://www.pathintl.org

Purdue University College of Veterinary Medicine (2017). What is human-animal interaction? Retrieved from https://vet.purdue.edu/chab/ohaire/HAI.php

Qualls, L. R., & Corbett, B. A. (2017). Examining the relationship between social communication on the ADOS and real-world reciprocal social communication in children with ASD. *Research in Autism Spectrum Disorders, 33*, 1-9. doi:10.1016/j.rasd.2016.10.003

Quinn, B. L., & Peters, A. (2017). Strategies to reduce nursing student test anxiety: A literature review. *Journal of Nursing Education, 56*(3), 145-151. doi:10.3928/01484834-20170222-05

Rajan, V., Gee, N. G., Michnick-Golinkoff, R., & Hirsh-Pasek, K. (2017). Children's play, self-regulation, and human-animal interaction in early childhood learning. In

N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 124-137). New York, NY: Routledge.

Ravitch, S. M., & Carl, N. M. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. Thousand Oaks, CA: Sage Publications.

Rehn, T., & Keeling, L. J. (2016). Measuring dog-owner relationships: Crossing boundaries between animal behavior and human psychology. *Applied Animal Behaviour Science, 183*, 1-9. doi:10.1016/j.applanim.2016.07.003

Reisner, I. (2016). The learning dog: A discussion of training methods. In J. Serpell (2nd. Ed.), *The domestic dog: Its evolution, behavior, and interactions with people,* (pp. 210-226). New York, NY: Cambridge University Press. doi:10.1017/9781139161800.011

Rosenbloom, R., Mason, R. A., Wills, H. P., & Mason, B. A. (2016). Technology delivered self-monitoring application to promote successful inclusion of elementary student with autism. *Assistive Technology, 28*(1), 9-16. doi:10.1080/10400435.2015.1059384

Rosenburg, N., Congdon, M., & Schwartz, I. (2015). Use of say-do correspondence training to increase generalization of social interaction skills at recess for children with autism spectrum disorder. *Education and Training in Autism and Developmental Disabilities, 50*(2), 213-222.

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* (3rd Ed.). Thousand Oaks, CA: Sage Publications.

Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55*(1), 68-78. doi:10.1037//0003-066x.55.1.68

Sable, P. (2013). The pet connection: An attachment perspective. *Clinical Social Work Journal, 41*(1), 93-99. doi:10.1007/s10615-012-0405-2

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Schreibman, L., Dawson, G., Stahmer, A. C., Landa, R., Roger, S. J., McGee, G. G….Halladay, A. (2015). Naturalistic developmental behavioral interventions: Empirically validated treatments for autism spectrum disorder. *Journal of Autism and Developmental Disorders, 45*(8), 2411-2428. doi:10.1007/s10803-015-2407-8

Schuck, S., Emmerson, N., Fine, A.H., & Lakes, K. (2015). Canine-assisted therapy for children with ADHD: Preliminary findings from the positive assertive cooperative kids study. *Journal of Attention Disorders, 19*(2), 125-137. doi:10.1177/1087054713502080

Schuck, S., & Fine, A.H. (2017). School-based animal-assisted interventions for children with deficits in executive function. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. 69-82). San Diego, CA: Academic Press.

Serpell, J. A. (2015). Animal-assisted interventions in historical perspective. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and*

guidelines for animal-assisted interventions, (pp. 11-19). San Diego, CA: Academic Press.

Shani, L. (2017). Animal-assisted dyadic therapy: A therapy model promoting development of the reflective function in the parent-child bond. *Clinical Child Psychology and Psychiatry, 22*(1), 46-58. doi:10.1177/1359104516672506

Shepherd, K. G., Fowler, S., McCormick, J., Wilson, C. L., & Morgan, D. (2016). The search for role clarity: Challenges and implications for special education teacher preparation. *Teacher Education Division of the Council for Exceptional Children, 39*(2), 83-97. doi:10.1177/0888406416637904

Smit Sibinga, C. Th. (ed) (2018). *Ensuring Research integrity and the ethical management of data*. Hershey, PA: IGI Global.

Smith, B. P., & Dale, A. A. (2016). Integrating animals in the classroom: The attitudes and experiences of Australian school teachers toward animal-assisted interventions for children with autism spectrum disorder. *Pet Behaviour Science, 1*, 13-22. doi:10.21071/pbs.v0i1.3994

Sorin, R., Brooks, T., & Lloyd, J. (2015). The impact of the classroom canines program on children's reading, social and emotional skills, and motivation to attend school. *The International Journal of Literacies, 22*(2), 23-35.

Sparapani, N., Morgan, L., Reinhardt, V. P., Schatschneider, C., & Wetherby, A. M. (2016). Evaluation of classroom active engagement in elementary students with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 46*(3), 782-796. doi:10.1007/s10803-015-2615-2

Sroufe, G. E. (2017). Familiar yet different: Human-animal interaction and education research. In N. R. Gee, A. H. Fine, & P. McCardle (Eds.), *How animals help students learn: Research and practice for educators and mental-health professionals,* (pp. ix-xiv). New York, NY: Routledge.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

State of New Jersey Department of Education (NJDOE) (2017). New Jersey School Directory. Retrieved from https://homeroom5.doe.state.nj.us/directory/

Stavropoulos, K. M. & Carver, L. J. (2014). Reward anticipation and processing of social versus nonsocial stimuli in children with and without autism spectrum disorders. *The Journal of Child Psychology and Psychiatry, 55*(12), 1398-1408. doi:10.1111/jcpp.12270

Stevenson, K., Jarred, S., Hinchliffe, V., & Roberts, K. (2015). Can a dog be used as a motivator to develop social interaction and engagement with teachers for students with autism? *Support for Learning, 30*(4), 341-363. doi:10.1111/1467-9604.12105

Teague, S. J., Gray, K. M., Tonge, B. J., & Newman, L. K. (2017). Attachment in children with autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders, 35*, 35-50. doi:10.1016/j.rasd.2016.12.002

Therapy Dogs International (TDI) (2017a). Retrieved from http://www.tdi-dog.org/HowToJoin.aspx?Page=Information+Pack

Therapy Dogs International (TDI) (2017b). Tail waggin tutors. Retrieved from http://www.tdi-dog.org/OurPrograms.aspx?Page=Children+Reading+to+Dogs

United States Department of Justice, Civil Rights Division. (2015). Frequently asked questions about service animals and the ADA. Retrieved from https://www.ada.gov/regs2010/service_animal_qa.html

U.S. Department of Health and Human Services, National Institute of Mental Health. (2017). Autism Spectrum Disorder. Retrieved from https://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd/index.shtml

Vancraeyveldt, C., Verschueren, K., Van Craeyevelt, S., Wouters, S., & Colpin, H. (2015). Teacher reported effects of the playing-2-gether intervention on child externalizing problem behavior. *Educational Psychology, 35*(4), 466-483. doi:10.1080/01443410.2013.860218

VanFleet, R., Fine, A. H., O'Callaghan, D., Mackintosh, T., & Gimeno, J. (2015). Application of animal-assisted interventions in professional settings: An overview of alternatives. In A. H. Fine (4th. Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions,* (pp. 156-177). San Diego, CA: Academic Press. doi:10.1016/b978-0-12-801292-5.00012

Walden University (n.d.) PDF on Trustworthiness. Retrieved from https://class.waldenu.edu/bbcswebdav/institution/USW1/201710_27/XX_RSCH/RSCH_8110/artifacts/USW1_RSCH_8110_Week08_trustworthiness.pdf

Walden University: Center for Research Quality (2017). Institutional review board for ethical standards in research. Retrieved from http://academicguides.waldenu.edu/researchcenter/orec

Whalon, K. J., Conroy, M. A., Martinez, J. R., & Werch, B. L. (2015). School-based peer-related social competence interventions for children with autism spectrum disorder: A meta-analysis and descriptive review of single case research design studies. *Journal of Autism and Developmental Disorders, 45*(6), 1513-1531. doi:10.1007/s10803-015-2373-1

Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S.,…Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorder, 45*(7), 1951-1966. doi:10.1007/s10803-014-2351-z

Woods, M., Paulus, T., Atkins, D. P., & Macklin, R. (2016). Advancing qualitative research using qualitative data analysis software (QDAS)? Reviewing potential versus practice in published studies using ATLAS.ti and NVivo, 1994-2013. *Social Science Computer Review, 34*(5), 597-617. doi:10.1177/0894439315596311

Wright, L. A., & McCathern, R. B. (2012). Utilizing social stories to increase prosocial behavior and reduce problem behavior in young children with autism. *Child Development Research*, *13*, 1-13. doi:10.1155/2012/357291

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th Ed.). Thousands Oaks, CA: SAGE Publications.

Yin, R. K. (2016). *Qualitative research from start to finish* (2nd Ed.). New York, NY: The Guilford Press.

Zilcha-Mano, S., Mikulincer, M., & Shaver, P. R. (2011). Pet in the therapy room: An attachment perspective on animal-assisted therapy. *Attachment & Human Development, 13*(6), 541-561. doi:10.1080/14616734.2011.608987

Zents, C. E., Fisk, A. K., & Lauback, C. W. (2017). Paws for intervention: Perceptions about the use of dogs in schools. *Journal of Creativity in Mental Health, 12*(1), 82-98. doi:10.1080/15401383.2016.1189371

Appendix A: Letter to Superintendents of New Jersey Public Schools

Dear Superintendent [Name]

I am writing to inform you about a research study I will be conducting on "Using Animal-Assisted Interventions to Increase Communication Skills in Children with Autism." I am requesting your permission to recruit teachers, child study team members, or district administrators to participate in this study. Specifically, I am seeking teachers who use or have utilized an animal-assisted intervention program within their classrooms, or child study team members/district administrators who support said programs.

The purpose of this study is to explore, describe, and improve the understanding of how elementary teachers use dog-based AAI programs in their classrooms to prompt social communication skills for students with ASD. More specifically, I aim to gain a better understanding of how certified therapy dogs can affect social communication skills in children with ASD, and how the integration of a therapy dog AAI program can change the way children interact with their peers. The study will potentially answer the following questions: (a) How do elementary teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD? (b) How do public school administrators or child-study team members support AAI programs within special education programs? (c) What do elementary teachers perceive are the benefits of AAI in their classrooms for children with ASD?

The criteria that will deem an educator a potential candidate for participation are (a) the teacher uses or has utilized an animal-assisted therapy program in their classroom; (b) a child study team member or district administrator that supports or oversees an AAI program; (c) and the potential participants agree to participate in this study. If you are interested in learning more about this study or are granting permission to continue the recruitment process in your school district, please reply to this email by September 15, 2018. The Walden University IRB approval number for this study is 08-02-18-0643642, and it expires on August 1, 2019.

I will sign any form you may need and follow all district protocols set in place on running a research study in your district. Your participation is completely voluntary. Thank you for your time and consideration, and I look forward to hearing from you soon.

Jennifer Friedrich, M.Ed.
Doctoral Student at Walden University
jennifer.friedrich@waldenu.edu

Appendix B: Recruitment Letter

Dear: [Educator, Child Study Member, or District Supervisor]

My name is Jennifer Friedrich, and I am a doctoral student in the education department at Walden University. I am writing to invite you to participate in a study I will be conducting on "Using Animal-Assisted Interventions to Increase Communication Skills in Children with Autism."

The purpose of this study is to explore, describe, and improve the understanding of how elementary teachers incorporate animal-assisted intervention (AAI) programs into their classrooms, and how therapy animals prompt social communication skills for students with autism. More specifically, I aim to gain a better understanding of how therapy animals can affect social communication skills in children with autism, and how the integration of an AAI program can change the way children interact with their peers. You are eligible to participate in this study because you currently have an AAI program in your classroom or have utilized an AAI program in the past.

If you are interested in learning more about the study with the potential to participate, please reply to this email by September 27, 2018. The Walden University IRB approval number for this study is 08-02-18-0643642, and it expires on August 1, 2019.

Your participation is completely voluntary. It is your decision whether or not you would like to participate in this study. I thank you for your time and consideration, and I look forward to hearing from you soon.

Jennifer Friedrich, M.Ed.
Doctoral Student at Walden University
jennifer.friedrich@waldenu.edu

Appendix C: Interview Protocol

Date:
Location:
Time of Interview:
Interviewer:
Interviewee:
Position of Interviewee:

Introductory Protocol

Thank you for agreeing to participate in this study on how educators use therapy dogs to increase social communication skills for children with autism. To ensure accurate note taking, I would like your permission to digitally record our conversation. I will also be taking handwritten notes to document important aspects of our conversation and to highlight any areas I may need additional clarification on. I also want to stress that your participation is completely voluntary and you are free to withdraw from this study at any point in time without any consequences to you or your school district. I will first explain the Informed Consent for Participation in Research Activities form and ask that you sign it. As designated in this informed consent form, only myself and individuals who are directly related to the study will have access to what is recorded. I want to ensure you that all information will remain confidential.

This interview should not last more than an hour. During this time I will ask questions about your teaching history and how you became involved or learned about animal-assisted therapy. I will also ask questions about how you incorporate the therapy animal into your classroom and how you perceive this therapy impacts your students. If we are unable to complete the interview in 1 hour, I may ask you to schedule another

interview at a later date or if you would prefer to complete the interview at this time. Once the study is complete, I will set up a meeting time, in person or over the phone, to provide you with a copy of the information you provided, the study's findings, and how the results will be disseminated.

Appendix D: Initial Interview Questions

Demographic Questions

1. How many years have you been teaching?
2. How many years have you taught in a self-contained classroom?
3. How many school districts have you worked in?
4. Do you teach in a multi-grade classroom? What grade levels?
5. When and how did you hear about animal-assisted therapy?

Research Question 1

How do elementary teachers use dog-based animal-assisted interventions (therapy or activities) in their classrooms to prompt social communication skills for children with ASD?

Subquestions:

6. What made you decide to integrate a therapy animal into your curriculum?
7. What has been the react of the students regarding the therapy animal being in the classroom?
8. Did you arrange the curriculum to include the use of a therapy animal or does the animal integrate into whatever activity is scheduled?
9. Does teaching stop while the therapy animal is present or does the animal join academic lesson OR does the therapy animal integrate into the academic lessons?
10. Do the students have an opportunity to have 1:1 time with the animal?
11. In what ways do you feel the therapy dog enhances social communication skills in your students? Have you observed any increases in social communication skills?

12. Do you feel the therapy animal increases initial communicative exchanges with peers? How?
13. What are your thoughts about a therapy dog being a stimulus for social interactions?
14. Do you notice some of the students are more willing to give eye contact to the animal than the adults?
15. Do you the students exhibit improved relationships with others?
16. Do/did you see in increase in empathy after AAI began?
17. In your opinion, did any of the students form a bond with the animal?
18. Knowing that the animal did create a bond; do you feel the animal also can create a secure base for the child, allowing the students the ability to "explore" more or complete difficult tasks when the animal was present?

Research Question 2

How do public school administrators or child-study team members support AAI programs within special education programs?

Subquestions:

19. What was the process that you went through to incorporate a therapy animal into your classroom?
20. Are there any requirements or procedures your school implements to allow the therapy animal in school?
21. Did your district require parent approval for the students in your classroom to participate?
22. Did the district have to change any policies to allow therapy animals in school?

23. In your opinion, how does/did the building administrator feel about or support AAI?

24. Are any safety precautions taken during or after the AAT sessions?

Research Question 3:

What do elementary teachers perceive are the benefits of AAI in their classrooms for children with ASD?

Subquestions:

25. Have you noticed changes in student behavior since you began using therapy animals in your classroom? How?

26. What areas have you seen the most change in the children? Social, emotional, behavioral?

27. Do/Did you see an increase in motivation when the animal is present?

28. Do/Did you see an increase in joint attention?

29. Do/Did you see an increase peer interactions?

30. Do/Did you see in attention to lessons? Peers?

31. Have you seen any changes in task completion in students?

32. Do you notice the students regulating their emotions and reactions when the therapy animal is present? If so, does this self-regulation extend to days the animal is not present?

33. Do you notice the students are more confident when the animal is present?

34. Do you feel students have an increase in self-worth after working with the therapy dog?

35. Do you feel AAT is a viable, alternate therapy for children with disabilities?