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Zeman, Chloe J. *Effects of Therapy Dog Use on K-12 Students*

Abstract

A review of existing research literature concerning the use of therapy dogs in schools and the impact they have on students in kindergarten through 12th grade (K-12) was completed.

Research suggests that therapy dogs provide psychological and academic benefits for students.

Despite the existing evidence, many school districts remain hesitant to allow therapy dogs into schools often due to safety and liability concerns. The literature review concluded that therapy

dogs are an effective means to improved academic performance, enhance psychological

functioning, and have a positive effect on student behaviors. Teachers, staff, and school districts should consider strong advocacy efforts in support of using therapy dogs within school settings.

More empirical studies should be conducted to better understand the practicality of implementing therapy dogs within K-12 schools.

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Chapter I: Introduction

Almost all people who have owned a furry friend at some point in their life know that there is something about even the mere presence of a canine companion that brings about a sense of ease and happiness in humans. Dogs have been found to impact physiological measures in a positive manner by reducing heart rate, lowering blood pressure, and decreasing stress and anxiety according to Jalongo, Astorino, and Bomboy (2004). Therapy dogs are specially trained to provide affection and comfort to people and are used in a wide variety of settings. It is important to note the distinction between therapy dogs, service dogs, and emotional support dogs. The United States Dog Registry clarifies the purpose of each type of dog. The role of a service dogs is to help an individual perform tasks or functions that are limited by a disability. Emotional support dogs help people with emotional problems while also providing them with comfort and support. Finally, therapy dogs are trained to provide affection and comfort to individuals in settings such as hospitals, retirement homes, nursing homes, or schools (usdogregistry.org). For the purpose of this study, therapy dogs used in school settings will be the main topic of focus.

There are several formal and informal ways that humans interact with animals. Two of the most commonly used methods of interaction are referred to as Animal Assisted Therapy (AAT) and Animal Assisted Activities (AAA). While these methods have many similarities, it is also important to note their differences. According to Reed, Ferrer, and Villegas (2012), AAT is a program that incorporates specific therapy goals and individualized treatment plans. The client's progress is tracked and the visits are scheduled based on the needs of the individual. AAA consists of more casual activities with no particular schedule or goals, and the client's

progress is not recorded. Both AAT and AAA are effective methods that have shown success in various settings and for numerous individuals.

Delta Society is a well-known organization that certifies therapy dogs. They describe Animal-Assisted Therapy as:

Animal-assisted therapy utilizes the human/animal bond in goal-directed interventions as an integral part of the treatment process. Working animals and their handlers must be screened, trained and meet specific criteria. A credentialed therapist working within the scope of practice of his/her profession, sets therapeutic goals, guides the interaction between patient and animal, measures progress toward meeting therapy goals, and evaluates the process (Stuart-Russell, 1997, p. 1).

Over the last several years, educators and administrators have increasingly gained knowledge about the benefits that therapy dogs bring to students to help facilitate their learning. According to Friesen (2010), research over the past 30 years concluded that therapy dogs offer physiological, emotional, social, and physical support for children. Despite the evidence that therapy dogs are in fact beneficial for students, many administrators and educators remain hesitant to allow them into their schools. Some potential reasons for the lack of support for using therapy dogs in schools may include concerns that the benefits do not outweigh the risks, or perhaps a lack of knowledge and awareness of how exactly students could benefit from interacting with therapy dogs. The most common concerns include: allergies, fear of animals, sanitation concerns, safety issues, and cultural differences (Friesen, 2010). However, it is possible for these issues to be reduced or even eliminated if both the canine and the handler are properly trained and certified.

The provision of training lessons is another way these concerns could be reduced. Students, teachers, and staff members should be given age-appropriate instruction on desirable interaction with therapy dogs in their school. Dog bites are common among young children, but can be prevented by providing age appropriate education to students on the specific needs of the dog. “Learning how to interact with a dog in a quiet and gentle manner, when and how it is appropriate to approach a dog, learning how to play fair, and how the child should act if he or she is afraid of the dog are all important lessons for children to learn prior to introducing a dog into the school or therapeutic context” (Jalongo, as cited in Friesen, 2010, p. 263). Teaching students these lessons could help prevent potential problems when therapy dogs are used in the classroom setting. However, there are more things to consider before bringing them in the school setting. Selecting an animal that is of suitable temperament, fully vaccinated, regularly bathed and groomed and pre-treated with anti-allergen powder prior to classroom or therapy are all important considerations to reduce potential issues (Friesen, 2010).

Implementing therapy dogs into schools is beneficial for students of all ages and grade levels as well as varying levels of functioning. At the elementary level, children are often found to be struggling with issues in their home lives, trouble adapting to the school setting, or frustration that comes with delayed learning. As children get older and reach the middle school level, they may encounter added stresses of more complex peer relationships, pressure from social-comparison, puberty-related hormone changes, and time management challenges with the addition of extracurricular activities. As students enter high school, the struggles that come along with a fast-paced, busy life only seem to intensify (Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Mac Iver, 1993).

Recognizing loneliness and tension in the high school halls, Speech-Language Pathologist, Traci Ohlenkamp obtained approval for her therapy dog, Murphy, to become a regular visitor at the Minnesota high school where she was employed. Ohlenkamp reported, “It’s pretty amazing. I have some kids who are pretty low-functioning, but when I bring Murphy in they smile and move their hands to pet him. My fluency kids are more fluent when they speak with him, and my students with autism really seem to connect with him” (Rowden-Racette, 2012, p. 20). This is just one real-life example of how bringing a therapy dog into a school setting has a positive impact on the students in a school setting.

Dogs may be an effective companion in schools because of the unique evolutionary bond we share with them (O’Callaghan, 2013). Therapy dogs have shown benefits that include reduced anxiety, fear, and depression, as well as an improved overall quality of life (Jenkins, Laux, Ritchie, & Tucker-Gail, 2014). Therapy dogs help young students combat anxiety, depression, or other psychological factors that have a negative effect on their academic performance or general wellbeing.

Over the past several years, there’s been a substantial increase in the number of children who experience learning-related disabilities. According to the National Center for Education Statistics, in 2014-15 the number of children and youth aged 3-21 who received special education services was 6.6 million, or 13% of all public school students (U.S. Department of Education, National Center for Education Statistics, 2017). What’s even more alarming is that the 2016 Children’s Mental Health Report revealed that one in five school-aged children suffer from a mental health or learning disorder (“2016 Children’s Mental Health Report”, 2017). Children struggling with mental health and learning disorders are at risk for poor school and life outcomes, such as low literacy skills, unemployment, poverty, or even incarceration. There is an

urgent need to support children with mental health and learning disabilities, and therapy dog use in schools may provide students with the service they require.

Statement of the Problem

Research suggests that using therapy dogs in schools has a positive impact on children and learning. However, many administrators and school districts still remain hesitant to incorporate therapy dog practice. This hesitation may stem from lack of knowledge and awareness of dog therapy innovations, perceived safety and liability risks associated with dogs and children, or concerns of cleanliness and allergic reactions (Friesen, 2010). Therapy dog use in schools is an emerging practice, yet the extent of the educational benefits and effectiveness in the school setting remain unclear.

Purpose of the Study

The purpose of this literature review was to evaluate the effects of therapy dog use on student learning and behavior in K-12 grade school settings. A review of previous literature was completed during the spring of 2017. The literature that was gathered for this review was evaluated according to its quality of research and evidence in order to examine the effects and potential benefits of utilizing a therapy dog within a school setting. The literature was used to answer to the following question: Is therapy dog use an effective way to improve academic performance, psychological wellbeing, and behavioral concerns for K-12 grade students?

Assumptions and Limitations of the Study

The focus of this study was a review of the previously published literature, electronic and paper resources available through UW library system. It is assumed that the literature reviewed was based on accurate reporting and valid research techniques. As a relatively new subject matter some areas may have limited published research.

Definition of Terms

The following list defines the terms used in an operational manner.

Anxiety. Apprehensive uneasiness or nervousness usually over an impending or anticipated ill (Merriam-Webster, n.d.).

Autism Spectrum Disorder (ASD). A variable developmental disorder that appears by age three and is characterized by impairment of the ability to form normal social relationships, by impairment of the ability to communicate with others, and by repetitive behavior patterns (Merriam-Webster, n.d.).

Diastolic. A rhythmically recurrent expansion; the dilatation of the cavities of the heart during which they fill with blood (Merriam-Webster, n.d.).

Emotional Behavioral Disorder (EBD). Excesses, deficits, or disturbances of behavior that are caused by emotions (WI Department of Instruction, 2010).

Neurochemical. Chemical processes and phenomena related to the nervous system (Merriam-Webster, n.d.).

Physiological. Pertaining to the physical functions of the human body (Merriam-Webster, n.d.).

Systolic. A rhythmically recurrent contraction; the contraction of the heart by which the blood is pumped and the circulation kept up (Merriam-Webster, n.d.).

Chapter II: Literature Review

This chapter reviewed the current published literature on the use and benefits of therapy dogs with students in K-12 school settings. The areas of impact evaluated included academic effects, behavioral effects, and the effects on psychological and physiological functioning. As previously noted this area of study is relatively new and some topic areas may not as of yet been thoroughly researched. The three topics of academic effects, psychological and physiological factors, and behavioral effects covered in this evaluation provided an adequate body of research for an effective literature review.

Physiological and Psychological Factors

An area that has become increasingly more researched is the bond that humans share with their canine companions and the benefits that come with this bond. Although this is a newer topic of discussion for their use in schools, human-animal companionships date back thousands of years ago. According to Walsh (2009), there is archeological evidence from over 14,000 years ago that revealed that domestic wolves, ancestors of the dog, lived in settlements with humans and were valued for their intelligence, keen senses, and loyalty. Early dogs were often respected as guardians, guides, and equal hunting and fishing partners. Walsh also acknowledged the importance of companion animals in contemporary life and the physical and mental health benefits that they bring to humans. One of Walsh's most striking findings was that interactions with companion animals increase human neurochemicals associated with relaxation and bonding and even improve human immune system functioning. Companion animals were also found to facilitate the recovery of hospitalized children and improve depression in AIDS patients (Walsh, 2009). It is this bond between humans and animals that seemed to have such a positive impact on their physical and mental well-being, especially during AAT.

Another study found significant differences on the impact dogs have on humans when a bond has been established versus when no prior animal bond existed (Baun, Bergstrom, Langston, & Thoma, 1984). During the study, the blood pressure, heart rate, and respiratory rate were recorded when participants petted an unknown dog and recorded again when petting a dog with a previously established companion bond. The results indicated that there were significant changes over time in both blood pressure gradients: systolic, the peak pressure, and diastolic, the minimum pressure, were higher while petting the unknown dog and lower when petting the dog with an established companion bond.

Similarly, in an experimental study by Allen, Blascovich, and Mendes (2002) cardiovascular reactivity was examined among 240 married couples, half of whom owned a pet dog and half whom did not own a pet dog. The couples were randomly assigned to one of four social support conditions: alone, with pet (or with a friend for those that did not own a pet), with spouse, or with spouse and pet/friend. Mental arithmetic and cold pressor tests were completed on the participants. The cold pressor test was a cardiovascular test that was performed by immersing the hand of the participant into ice water and then measuring changes in blood pressure and heart rate. The results revealed that human subjects who were in the presence of a pet dog showed significantly smaller reactivity, i.e., lower blood pressure and lower heart rates, and a faster recovery rate when exposed to stressors compared to participants who were not in the presence of a dog.

Because dogs in general seem to be an enjoyable companion for many people, it is easy to question if humans are advocating for dog use in schools simply because they like them. However, research supported the physical benefits associated with using therapy dogs. In fact, the empirical evidence showed that the mere presence of our mellow canine companions tended

to reduce anxiety and stress levels. Physiological measures such as reduced heart rate, decreased blood pressure, and other observable and measurable signs of anxiety revealed that interacting with a dog moderated stress (Katcher, Friedmann, Beck & Lynch, as cited in Jalongo et al. 2004, p. 9). A study conducted in South Africa used blood analysis techniques before and after a positive dog interaction under two conditions: with the participant's pet dog and with an unfamiliar dog. The researcher concluded there was a reciprocal, positive, physiological basis for animal-assisted therapy (Odendaal, as cited in Jalongo et al., 2004, p. 9). The presence of a calm, attentive dog moderated stress responses more than the presence of an adult and even more than the presence of a supportive friend when children are reading aloud in school or having a routine medical examination (Jalongo et al., 2004). This showed that the presence of therapy dogs reduced stress rates of children in more than one setting, and even improved their daily functioning at school.

An interesting study examined the cardiovascular effects on humans when they were petting dogs (Vormbrock & Grossberg, 1988). Examiners compared the blood pressure of participants while they were touching a dog, talking to the dog, or engaging in human conversation. The results of this study indicated that the subjects' blood pressure levels were lowest when petting the dog, higher while talking to the dog, and highest while talking to the experimenter and engaging in human conversation. The results showed that merely touching a dog had a positive impact on an individual's physical health by lowering their blood pressure.

In other areas of mental health and psychological well-being, dogs have been known to decrease stress, anxiety, and depression in humans. A 2009 self-report study was conducted to explore the effect of a companion dog on the depression and anxiety levels of residents in a long-term care facility (leRoux & Kemp, 2009). The results of the study showed that having visits

from dogs helped decrease the resident's levels of depression and the residents reported that they were happy after the dog's visits.

An experimental study evaluated the effectiveness of AAT as a form of treatment for children who had experienced sexual abuse (Dietz, Davis, & Pennings, 2012). A total of 153 children between the age of 7 and 17 who were in group therapy at a Child Advocacy Center participated in this study. The study used three different interventions for three different groups: one group with no dogs, one group with dogs and no stories, and one group with both dogs and stories. The results indicated that children who received treatment with therapy dogs with and without stories showed significantly decreased trauma symptoms including anxiety, depression, anger, post-traumatic stress disorder, dissociation, and sexual concerns. Therapy dogs can help alleviate many of the psychological issues experienced by children exposed to trauma.

Children with a dog by their side were found to have significantly lower behavioral, emotional, and verbal distress when participating in mildly stressful activities, such as an elementary student presenting a project in front of the class (Friesen, 2010). These previous studies showed that there is evidence supporting the positive physiological impact that dogs have on humans. This knowledge used within a school has potential to reap valuable benefits for children by using therapy dogs to help regulate their physiological functions during their school day.

Academic Effects

The use of therapy dogs was examined in several different academic areas, with the most common in the area of reading. A single case design study conducted by Bassette and Taber-Doughty (2013) looked at the effects of a dog reading visitation program on academic engagement behavior in three elementary school students, each of whom had emotional and

behavioral disabilities. Children with emotional and behavioral disabilities (EBD) often struggle with behavioral problems during reading or other academic learning activities. It was found that a way to help alleviate those struggles was through dog reading programs in which therapy dogs are brought into the school setting and children read to and with the dogs. In this 2013 study, multiple probes were used to examine the impact of the dog reading program intervention to the on-task-reading aloud behaviors. Baseline data was obtained by having the students read aloud to themselves, and then compared it to the data obtained after the intervention of students reading aloud to therapy dogs. The results indicated that all three students experienced an increase in on-task behaviors during the intervention. They were even able to maintain these improvements over time. Students also reported that they found the dog reading program quite enjoyable.

An interesting program called “Tail Waggin’ Tutors” at the Lewiston (NJ) Public Library reported significant findings regarding dog reading programs. While it was recognized that there were concerns about bringing canine companions into public buildings like libraries and schools such as messes, accidents, allergies, or plain dislike for dogs, it was also noted that many librarians, teachers, and parents believe that the benefits that these dogs provide for children outweigh their potential issues (Siejka, 2016). Lewiston librarian, Ann Siejka confirmed the benefits of therapy dogs in reading programs by telling the story of one young child named Whit, who was just 7 years old when his parents brought him in to the library’s dog reading program. Whit’s parents reported that he did not enjoy reading in the slightest, and it was a daily struggle to get him to read the 20 minutes per evening as required by his teacher. After spending a few short weeks in the dog reading program at the public library, Whit began to love reading and he displayed increases in both reading fluency and confidence. His interest in and attitude towards reading had changed drastically and his parents reported that Whit began to read at home to

practice for the next time he was able to read to “his dog”. While this is largely anecdotal evidence, it’s relevance in this particular topic is considerable as other research evidence points to children’s enjoyment toward reading as critical to their literacy success.

Roberts, Jergens, and Burchinal (2005) found a high correlation between children’s perceived interest in reading and literacy. In addition another study also revealed that children show a slight decrease in their attitudes toward reading as early as their kindergarten year (Sperling & Head, 2002). These findings suggest the immense importance of a child’s enjoyment of and attitude toward reading in the acquisition of positive literacy outcomes. Dog reading programs have provided the evidence base that helps accomplish this goal.

An observational study in a school of young children examined the impact of a therapy dog in a classroom on challenging student behaviors (Kotrschal & Ortbauer, 2003), ultimately impacting overall learning. The expected outcome of this study was for the dog to impact the teaching situation, either by increasing or decreasing the pupil’s attention towards the teacher. In order to test this hypothesis, the experimenter videotaped an elementary classroom during standard teaching situations, and compared observations during an initial one-month control period with no dog to a one-month experimental period in which a dog was present in the classroom. Results indicated that the group of students became socially more homogeneous due to decreased behavioral extremes, such as aggressiveness and hyperactivity. Formerly withdrawn students became socially more integrated. Effects were found to be more pronounced in boys than in girls. The authors of this study concluded that the use of dogs in schools is an inexpensive and relatively easy method for counteracting child behavioral problems, for supporting social and cognitive development, and for improving teaching situations.

Additionally, the authors directly stated that the benefits of therapy dog use in schools far outweigh potential risks, such as the danger of injuries or hygiene.

Children and adolescents with EBD characteristically present both behavioral and achievement problems that interfere with their schooling (Epstein, Kinder, & Bursuck, 1989; Scruggs & Mastropieri, 1986; Walker, Colvin, & Ramsey, 1995; Walker & Severson, 2002, as cited in Nelson, Benner, Lane, & Smith 2004, p. 59). A cross-sectional study was conducted using a random sample of 155 K-12 public school students that were receiving special education services (Nelson et al., 2004). The results revealed that as a whole, students with EBD experienced large academic achievement deficits relative to a normative sample. Furthermore, the deficits the students experienced were broad in the sense that they were apparent across all subject matter areas. Given the poor prognosis for remediating academic deficits over time, it is imperative that the field of special education identify effective, feasible methods of teaching academics and remediating existing academic achievement deficits (Lane & Menzies, 2002; Walker & Severson, 2002, as cited in Nelson et al. 2004, p. 69). Therapy dogs help improve academic skills and combat potential achievement deficits.

Behavioral Effects

Therapy dogs help decrease unwanted behaviors such as violence, aggression, and other off-task behaviors, as well as help to produce desirable behaviors from students in classroom settings. As shown from the 2013 Bassette and Taber-Doughty study, therapy dogs helped increase on-task behaviors for children, especially children with EBD who struggled with reading activities. Like students with EBD, students with Autism Spectrum Disorder (ASD) also struggle with behavioral management. A single case design study was conducted to provide information on the potential use of therapy dogs to positively modulate the behavior of children

with ASD (Silva, Correia, Lima, Magalhães, & Sousa, 2011). The outcome of the study showed that in the presence of a dog, the child participant exhibited more frequent and longer durations of positive behaviors, such as smiling and positive physical contact. The participant also displayed less frequent and shorter durations of negative behaviors, such as aggressive manifestations. The conclusion drawn from this study was that dogs can be used to prime children with ASD for therapy, and could ultimately contribute toward a change for full acceptance of canine-assisted therapy programs in different settings.

A growing concern for school districts in the U.S. today is an increase in the prevalence of students with ASD and how to accommodate those children to ensure that they are given the tools they need to obtain a quality education. The Center of Disease Control and Prevention (CDC) estimated that 1 in 68 children in the U.S. have ASD. The gender prevalence is 1 in 42 boys and 1 in 189 girls (ASD, 2017). A study by Hall, Wright, and Mills (2016) looked at how having a relationship with a dog can impact a child with ASD and their family. The authors examined the impact of student-dog relationships on adaptability, social skills, and conflict management. Hall et al. pointed out that rigidity in behaviors and thought patterns are hallmark symptoms associated with autism. These thought patterns and behaviors not only impact the individual with ASD but may affect the entire family unit reducing their ability to partake in and enjoy various activities. Applying this impact to a school setting, it is clear to see how a student with autism may have difficulty regulating their behaviors which could negatively affect their overall learning experience. The results of this study indicated there was improvement in the children's adaptability and social skills when a dog was present. Children who showed the greatest improvement were older children who experienced a greater amount of parent involvement in their activities. Finally, the study identified that conflict management abilities

are most improved with dog presence for older children who have better language abilities and less severe disabilities. The general consensus of this study was that the greatest improvements were found in children with ASD between the ages of eight and ten (Hall et al., 2016).

Similarly, a study by Carlisle (2014) examined the social skills and attachment to dogs of children with ASD. More specifically, Carlisle looked at how the social skills and behaviors of children with ASD were impacted when they owned a dog. This was due to the fact that dog owners are likely to have a bond with their canine companion, which previous literature suggested as highly beneficial. The results of this study indicated that most children in the study with ASD reported being “attached” to their dogs which resulted in improved social skills such as peer interaction. The implication of these results may be highly valuable in the school setting, as children with ASD often have difficulties in social environments.

A longitudinal study by Anderson and Olson (2006) examined how a therapy dog’s presence in a self-contained classroom affected student’s emotional stability and overall learning. The classroom consisted of six children who were diagnosed with severe emotional disorders. This study took place over an eight week period where the children were observed in various settings, as well as interviewed along with their parents. Behavioral data were collected and recorded when students went into an emotional crisis. The results revealed that the presence of a dog in the classroom contributed to students’ overall emotional stability, improved their attitudes toward school, and facilitated student-learning outcomes of responsibility, respect, and empathy. The results of the study demonstrated that a dog’s presence in a classroom greatly assisted students with emotional disorders control their behaviors facilitating better learning outcomes overall.

An interesting area of research regarding therapy dog use in schools and behavior is the idea of teaching students to interpret dog behaviors in order to make the environment safer and reduce dog bites. Lakestani and Donaldson (2015) examined the effectiveness of a short educational intervention for preschool children regarding dog bite prevention. In this study, three- to five-year-old children were tested on their ability to answer questions pertaining to the emotional state of dogs before and after participating in an educational intervention about dog behavior. The results of the study indicated that the intervention was successful, and the children who were trained increased their ability to accurately interpret the emotional state of dogs. The study also determined if children were able to take what they had learned about interpreting dog behavior in the intervention and apply it to other dogs that they had not seen before. Researchers found that the children were able to generalize their learning to correctly report dog behavior in dogs outside of the training intervention setting.

Overall, research has shown that the use of therapy dogs in schools positively impacts student behavior. Therapy dogs assisted students with emotional behavioral disorders and ASD by helping them regulate their own behaviors to provide an environment more conducive to learning.

Chapter III: Summary, Critical Analysis, and Recommendation

This chapter includes an overall summary of the reviewed literature, a critical analysis of the information from the literature review, and provides considerations and recommendations for future research and practice of using therapy dogs in school settings.

Summary

There is a compelling need for an effective way to support students who battle mental health and other learning-related disabilities in the classroom setting. Dogs can positively impact human physiology by reducing heart rate, lowering blood pressure, and decreasing stress and anxiety (Jalongo et al., 2004). Recently, educators and administrators have become increasingly knowledgeable about the benefits that therapy dogs bring to students in school settings.

According to Friesen (2010), research over the past 30 years has established that therapy dogs offer physiological, emotional, social, and physical support for children.

Dogs may be an effective companion in schools because of the unique evolutionary bond we humans share with them (O'Callaghan, 2013). Forming a bond with dogs allows young students to combat anxiety, depression, or other psychological factors that have a negative effect on their academic performance and overall wellbeing. Significant differences were found between the impact dogs have on humans when a bond has been formed between a human and an animal versus no previous bond (Baun et al., 1984). A dog in the classroom that students can form a bond with may help them increase their social and academic skills and provide students with the support they require. Therapy dogs used in reading programs were found to have significant benefits for children with EBD by helping improve their reading skills (Bassette & Taber-Doughty, 2013). Therapy dogs have also helped improve adaptive skills, social skills, and conflict management in children who have ASD (Hall et al., 2016).

Finally, there are interesting implications regarding the impact of therapy dog use in schools on student behavior. Research has shown that in the presence of a dog, children exhibited more frequent and longer durations of positive behaviors, such as smiling and positive physical contact. Children also showed less frequent, shorter durations of negative behaviors, such as aggressive manifestations like verbal or physical violence (Silva et al., 2011). Although it was not reported on, research on teaching students at a young age about interpreting behaviors of their canine companion raises additional research questions. Could the behavior interpretation training be generalized to improve a child's awareness of their own behaviors and emotional states? A dog's presence in a classroom is a valuable asset to assist students with emotional disorders to help them control their behaviors and facilitate better learning outcomes overall.

Critical Analysis

A systemic review evaluated the quality of the evidence published on human-animal interaction in the area of children reading to dogs. Hall, Gee, and Mills (2016) used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to systematically assess literature on the effects of reading to dogs. The research obtained through anecdotal and correlational data methods suggested therapy dog interaction may lead to improved performance. However, the inference was made using less rigorous research methods, thus limiting the degree of confidence in which conclusions can be drawn. Because the research methods did not include appropriate control techniques, the relationship between dog reading programs and improved reading performance is supported as a correlational inference but does not imply causation.

Research showed ample evidence that the psychological and physiological benefits children gain from interaction with therapy dogs contribute to improvement in social skills and

overall wellbeing. Based on the anecdotal evidence and correlational data supporting therapy dog benefits for students, it was concluded that the use of therapy dogs in K-12 grade schools has potential to be valuable to an entire student population in a school setting.

Recommendations for Future Research

Future research recommendations in the area of therapy dog use in K-12 schools are for researchers to conduct studies with larger sample sizes and to include more diverse demographics in order to generalize findings to larger populations. Researchers should identify which, if any, populations of students (e.g. age, grade levels, and gender) obtain effective benefits from therapy dog interventions. It is recommended that researchers conduct longitudinal studies to determine if effects are different over extended periods of time, and whether or not the benefits continue over time. There is a clear need for more rigorous research methodologies in order to draw causal inferences about how human-animal interactions benefit children in academic areas.

Future research should also explore different methods of implementation for therapy dogs, as well as investigating effects on a wider variety of academic subjects. Much of the previous research has focused on reading programs; future research could be designed to look across all academic areas. More research is also needed to determine the effects on the student body as a whole, and even a school district as a whole rather than just specific intervention with targeted students. Finally, further research should be conducted to determine if certain breeds of dogs may be better suited for work as therapy dogs.

Recommendations for Practice

The current literature concerning therapy dogs and their benefits on students is significant enough to confidently recommend their use in schools. From a practical standpoint,

administrators should consider obtaining a certified therapy dog and handler for use within their district. The implementation of therapy dogs in schools is reasonably low maintenance due to the fact that once taught basic rules, therapy dogs can be handled by almost any personnel including school psychologists, speech and language pathologists, counselors, or intervention specialists. In addition, expenses associated with therapy dogs are relatively low cost.

Several important considerations must be addressed prior to implementing therapy dogs into a school. Schools need to provide student and staff training lessons on methods for teaching students how to appropriately interact with the therapy dogs. It is important to teach safety skills in order to reduce the risks associated with dog and children interactions. Breeds of dogs that are known for having a good temperament should also be taken into consideration to further reduce the risks.

There is an urgent need for students with learning-related disorders to access services within their school that provides them the assistance they desperately need. When it comes to using therapy dogs in K-12 schools, the research literature clearly demonstrates the benefits outweigh the risks. Certified therapy dogs in schools are a valuable resource that may enhance student learning and promote positive pro-social behavior. Therapy dog use in schools is an effective way to improve academic performance, psychological wellbeing, and address behavioral concerns for K-12 grade students.

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