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Anderson, Micah J. ***A Qualitative Review of Canine Assisted Reading Therapy***

Abstract

A qualitative review of existing research on the use of Animal Assisted Therapy (AAT) dogs as a means of reading intervention for struggling readers was conducted. Research suggests the physiological and psychological benefits, along with young students' motivation to read to a dog, would make implementing a reading therapy dog in a school setting beneficial. There is some evidence that supports the hypothesis that AAT dogs can have a positive effect on students' reading, but there is no study yet that directly correlates the two. More quality empirical studies are needed to better understand the relationship between AAT dogs and struggling readers.

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Chapter I: Introduction

Third grade is a pivotal year for young readers. This is the academic year when students typically transition from learning to read, to reading to learn. Evidence presented by Keith Stanovich (1986) supported what he calls the "Matthew Effect" to describe the course young struggling readers often take. Stanovich explained that readers who struggle while learning to read fall behind their typically reading counterparts. This gap between proficient and below average readers continues to widen without effective intervention, because once children begin reading to learn, reading is the primary means of learning new vocabulary. Children whom have proficient reading skills read more, which exposes them to new vocabulary, and allows for better comprehension of text and the acquisition of more vocabulary words (Nagy & Anderson, 1984). The acquisition of reading skills is cyclical, and each component builds off the other. If one component of the reading process is compromised, the whole reading process struggles. A longitudinal study by Cunningham and Stanovich (1997) found that a student's reading ability in first grade was a strong predictor of reading ability ten years later. Children with limited oral vocabulary tend to struggle across all subjects in school (Perfetti, Landi, & Oakhill, 2007), because so many aspects of education require reading. This means that there is a crucial three to four year window where students need to learn reading skills that will impact the rest of their educational careers and many aspects of life.

For struggling readers, feelings of frustration, embarrassment, and anxiety often accompany their reading deficits (Jalango & Hirsh, 2010). Research by John Zbornik (2001) described how children with reading difficulties bodies react both physically and cognitively to the anxiety of reading aloud. Physical manifestations include sweating, shaking or feeling faint, increased heart rate and rapid breathing, tension headaches, butterflies in the stomach or stomach

pain, which may cause vomiting. Cognitive manifestations include overwhelming dread, low self-esteem, feeling helpless, and expecting to be humiliated in front of adults or peers. Zbornik also explained that these cognitive and physical manifestations of anxiety interact with each other when the child is aware that they are shaking or becoming flushed in the face. These reactions can compound each other when the child becomes anxious about being anxious (Zbornik, cited in Jalongo & Hirsh, 2010).

Attribution styles can affect a student's self-efficacy towards reading (Shell, Colvin, & Bruning, 1995). Attribution style can also affect an individuals self esteem. A study by Watkins and Astilla (1980) found that students with higher self-esteem were more likely to attribute success to internal causes than students with low self-esteem. Self-efficacy can have an influence on a student's motivation. A study by Alivernini and Lucidi (2011) found that student's self-efficacy had a significant impact on both self-reported motivation and academic performance. A child's attribution style and self-efficacy may contribute to learned helplessness towards reading.

"Attribution theory deals with how the social perceiver uses information to arrive at causal explanations for events. It examines what information is gathered and how it is combined to form a causal judgment" (Fiske & Taylor, 1991, cited in McLeod, 2010). Essentially, attribution theory explains why and how ordinary people justify events the way they do. The two types of attribution are internal and external. Individuals who internally attribute events justify the outcome of the event as being influenced by internal qualities, like attitude and work ethic. Individuals who externally attribute events justify the outcome of events as being influenced by external factors, like their environment or situation they are in.

Learned helplessness occurs when an organism is forced to endure an unpleasant stimulus and becomes unable or unwilling to avoid the unpleasant stimulus because they have learned that they cannot control the situation (Encyclopaedia Britannica, 2016). If children have an external attribution style, and believe they are an inherently poor reader, they may come to believe there is nothing they can do to improve their reading skills.

Children struggle to read for a number of reasons. Some children require non-traditional methods of instruction to learn to read. With the Response to Intervention model for special education identification being predominantly used in most states, including Wisconsin, there is a need for more research and evidence based interventions.

The use of therapy dogs to assist with reading interventions is a relatively new and novel approach to address the issues of both anxiety and attribution. Studies have shown that children who read out loud to reading therapy dogs had larger reading skill improvements compared to those who did not read to a therapy dog (Newling, 2003; Smith, 2009). Dogs may be an effective intervention for reading because of the unique evolutionary bond we share with them (O'Callaghan, 2013), which facilitates a physical calming in humans when we interact with them (Vormbrock & Grossberg, 1988), that helps combat the anxiety symptoms that negatively effect the development of reading skills for some children.

Statement of the Problem

Reading challenges can result in significant impacts to children, including their learning, their self-esteem and even later life outcome, if left untreated. Animal Assisted Therapy (AAT) is an emerging approach to reading intervention, however it's status as an evidence based, effective practice is still under review.

Purpose of the Study

The purpose of this review is to examine the research to date on the use of therapy dogs with students in an educational classroom, specifically students who struggle with reading skills. The literature gathered will be evaluated based on the quality of its research and evidence, to evaluate the potential benefits of utilizing a therapy dog in the school setting, as well as to inform future research.

Assumptions and Limitations of the Study

The focus of this study will be on a comprehensive review of the published literature. It is assumed that evidence found in the peer-reviewed literature will be valid and reported ethically.

This study will be limited to the electronic and paper resources available through the UW system database.

Definition of Terms

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

Ancillary benefits. Additional or providing support to the primary objective (Merriam-Webster, 2016).

Cognitive assessment. The evaluation of an individuals general intellectual functioning and cognitive capabilities (Ortiz, Lella, & Canter, 2010).

Emotional behavioral disorder. Excesses, deficits, or disturbances of behavior that are caused by emotions (DPI WI, 2010).

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

Pro-social. Having a quality that is deemed socially desirable (Merriam-Webster, n.d.).

Reading intervention. A systematic action taken to improve a student's reading skills (Merriam-Webster, n.d.).

Response to intervention. A multi-tiered model of interventions that supports and identifies students with academic and behavioral needs (rtinetwork.org, n.d.)

Struggling reader. A student whose reading skills are below age or grade level based on national averages (DPI WI, 2013).

Chapter II: Literature Review

This literature review explores the unique interspecies bond between dogs and humans and the potential for positive physiological and psychological effects as a byproduct of this relationship. This review also examines the use of dogs in Animal Assisted Therapy (AAT), specifically in the area of reading therapy, and the ancillary benefits that the presence of a therapy dog in an educational classroom provide.

The Evolutionary Bond Between Humans and Dogs

The relationship between dogs and humans has been a long and mutually beneficial journey. The exact date that dogs first became domesticated to humans is contested, but estimates place the origin sometime between 18,000 and 32,000 years ago (Wayne & vonHoldt, 2012). According to Brian Hare, an Evolutionary Anthropologist at Duke University, the domestication of dogs to humans was with them not of them (cited in O'Callaghan, 2013). Hare stated that dogs descended from wolves that had pro-social traits that allowed them to be comfortable enough with humans to allow them to approach near a human and eat their food scraps; these wolves that exhibited human-friendly behavior mated and created offspring that had these human-friendly traits. The most social dogs created what Hare called "survival of the friendliest" (cited in O'Callaghan, 2013, p. 31).

These pro-social traits first exhibited in wild wolves were only the beginning of the social traits that modern dogs possess that contribute to the tight bond that humans and dogs now share. Thousands of years of social evolution has created social behaviors and intelligence in dogs that aid them in interacting and understanding humans at a deeper level than most other animal species. Hare explained:

> Dogs are the only species who have been identified to date that learn words in the same way as human children, by using inferences. The second things is they make use of human gestures at a similar level of flexibility as young infants (cited in O'Callaghan, 2013, p. 30).

Because dogs understand and interact with humans on a social level that other animals cannot, there is a growing body of research to support their potential to positively affect human's mental and physical health. A study that examined the effect of dogs on human cardiovascular health showed that petting a dog lowered the blood pressure of participants, and the heart rates of the participants were lowest when touching or talking to the dog (Vormbrock & Grossberg, 1988). Another study found a significant difference in the ability to lower a person's blood pressure between petting a dog in which a companion bond had been established compared to a dog where no bond had been established (Baun, Bergstrom, Langston, & Thoma, 1984). Other studies have shown that just being in the presence of a companion dog can also have physiological affects. A study by Allen, Blascovich, and Mendes (2002) showed that participants in the presence of a pet dog had significantly lower blood pressure and heart rates, significantly smaller reactivity, and faster recovery time when exposed to stressors than the participants not in the presence of a pet dog. In addition to the evidence supporting the positive physical effects dogs can have on humans, there is a fair amount of evidence showing the positive psychological effects dogs can have on people.

A study by Corson and Corson (1980) showed patients who were withdrawn and uncommunicative, after interacting with pets, including dogs, improved their self-respect, independence, and self confidence as well as engaged in more social interaction with other patients. Research has also examined the psychosocial effects different inanimate and animate

objects would have on a chronically ill population. Behaviors of verbalization, smiling, looking, opening eyes, and leaning forward were recorded. The most social behaviors occurred when a puppy was present. Negative behaviors of hostility and repetitive statements also decreased when the puppy was present (Robb, Boyd & Pristash, cited in Brodie & Biley, 1999). The previous studies show the positive physiological and psychological benefits of interacting with dogs for humans.

There are several formal and informal ways that humans and animals interact. Two of the most commonly used methods of human-animal interaction are Animal Assisted Activities (AAA) and Animal Assisted Therapy (AAT). These two methods can be similar, but it is also important to understand the differences between them.

The Delta Society, (a not-for-profit organization that promotes positive interaction between humans and animals and certifies therapy animals), defined animal Assisted Activities (AAA) as:

> providing motivational, educational, recreational, and/or therapeutic benefits to enhance quality of life. AAA's are delivered in a variety of environments by specifically trained professionals, and/or volunteers in association with animals that meet specific criteria. Key features include absence of specific treatment goals; volunteers and treatment providers are not required to take detailed notes; visit content is spontaneous (Kruger & Serpell, cited in Fine & Fine, 2011, p. 23).

An example of AAA would be a volunteer with a reading therapy dog coming to a local library to allow kids to read to the dog in an informal, casual setting.

The Delta Society defined Animal Assisted Therapy (AAT) by contrast, as:

> a goal directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialized expertise and within the scope of practice for his/her profession. Key features include specified goals and objectives for each individual and measured progress (Kruger & Serpell, cited in Fine & Fine, 2011, p. 23).

An example of AAT would be a school psychologist or reading specialist using a reading therapy dog for a structured number of sessions, for a designated amount of time, with specific goals developed for the child.

The most apparent difference between AAA and AAT is specificity of the sessions, the designated goals and objectives, and the expertise of the human handler of the therapy animal.

AAT Dogs and Reading Interventions

The use of standardized cognitive and academic assessments have made the ability to measure if a child has a deficit in reading easier, but the ability to measure why the child is struggling is still very difficult. "Nearly 80% of children identified with learning disabilities have reading disabilities" (Gildroy & Deshler, 2005, p. 1). There are multiple reasons a child may struggle to read. Some children struggle with alphabetic rules (knowing the sounds letters make), phonemic awareness (putting letter sounds together to make simple sounds, and then putting phonemes together to make words), poor vocabulary, which can then contribute to poor reading fluency (the rate at which a reader reads and then comprehends the passage). The slower a person reads the more cognitive resources they use, which makes it difficult to understand what they are reading. When a child is a struggling to achieve reading fluency, one important question to ask is whether the reading deficit is internal or external.

Research conducted by Finn et al. (2014) has provided evidence that for some children, their reading struggles are internal, caused by differences in brain activity in specific areas of the brain compared to fluent readers. For other readers, their struggles may be caused by external factors, for example, insufficient amount of practice reading or inadequate instruction. Whatever the cause of the deficit, once a child starts to struggle with reading, it can have a negative domino affect. For some students, the continual frustration of struggling to read can be compounded by anxiety. One definition of anxiety is, "a fear response to imagined or distant threats; a feeling of helplessness focused on future threats or threats to self-esteem" (Jalongo & Hirsh, 2010, p. 433). "Reading anxiety is a specific, situational phobia toward the act of reading that has physical and cognitive reactions. Physical reactions to anxiety include the release of adrenaline (''fight or flight reaction'')" (Zbornik, cited in Jalongo & Hirsh, 2010, p. 434). These neurochemicals can cause people to panic and/or shut down, and leaves little cognitive resources for decoding words for already struggling readers (Zbornik, cited in Jalongo & Hirsh, 2010). Struggling readers need direct, evidence based interventions to catch them back up to proficiency.

One evidence based strategy for improving reading skills is to have the student read out loud. A study done by Hale et al. (2007) showed that students who read passages out loud comprehended significantly more information than students who read the same passage silently. Another study by Shany and Biemiller (1995) provided evidence that struggling readers benefit from reading aloud with a skilled reader who corrects the struggling reader when they struggle with a word. Some struggling readers who could benefit from paired reading may actually be inversely affected due to reading anxiety issues previously addressed.

Because of the many obstacles struggling readers face in order to overcome their deficits, any evidence-based interventions need to be considered that may aid them in doing so. There is

a growing amount of evidence to support using reading therapy dogs to aid in the intervention process for struggling readers.

In a study to determine the validity and effectiveness of the Sit Stay Read reading program, researchers found that students who were in the experiment group (were a part of the Sit Stay Read program and read to dogs) gained twenty percent more words in oral reading fluency than the control group (Smith, 2009). Smith also found through interviews and surveys that the teachers of the students who participated in the study rated the program as favorable and effective. This is an important piece of the program because in order for it to be implemented and successful, it first has to be accepted by school administrators and classroom teachers.

Another program similar to Smith's was measured for effectiveness. Struggling readers read to therapy dogs once a week for twenty minutes. The students were then tested to measure reading comprehension each month. In this study the majority of the students improved two grade levels in reading skill in one school year (Newlin, 2003).

A similar study conducted by Julie Paradise (2007) using the C.A.R.E reading program found similar results as the previous studies. In this study students were paired with reading therapy dogs with a handler or had one-on-one instruction with a teacher. The children paired with the therapy dog and handler had statistically significant gains in reading skill than the students who were paired with a teacher.

A study by leRoux, Swartz, and Swart (2014) compared the effectiveness of reading therapy dogs with other therapy options. They used three experimental groups which included children reading to a dog with an adult, children reading to a teddy bear with an adult, and children reading to just an adult. The control group was children reading to themselves. This study sought to see if reading to a dog had more of an effect than reading to a friendly inanimate

object like a teddy bear, and concur with other studies that reading to a dog is more effective than reading to just an adult. Results revealed a significant positive difference for the children's reading rate and comprehension in the "dog group" compared to all other groups. The researchers suggested that the positive effects the dogs had on the children's reading skills could be attributed to the calming physiological effects that humans can experience when being in the presence of or petting a dog.

Ancillary Benefits of Therapy Dogs

There are a number of studies that provide evidence supporting the effective use of therapy dogs for reading interventions for struggling readers. Much of the data from these studies suggests the reason for the positive effect therapy dogs have on struggling readers is related to the physiological calming effects dogs have on people. Other studies have inadvertently or purposefully found other positive benefits therapy dogs can have on students or the classroom environment.

A study by Bassette and Taber-Doughty (2013) sought to evaluate the effects a therapy dog would have on a child with an emotional behavioral disorder, particularly related to academic engagement and on-task behavior. They used three individual case studies involving elementary aged children with a documented emotional behavioral disorder. The results of the study showed that all three students significantly improved their on-task behavior while reading to the dog and continued their rates of on-task behavior in the maintenance period after the study. An interview process revealed that all three students enjoyed reading much more when a dog was present. The interviews also revealed the use of therapy dogs to have high social validity amongst the student's teachers as well.

A similar study examined the effect of the presence of a dog in a self-contained classroom for students with severe emotional behavioral disorders. The results of this study indicated that the presence of a dog in this self-contained classroom contributed to students' overall emotional stability, improved their attitudes towards school, and facilitated students learning outcomes of responsibility, respect and empathy (Anderson & Olson, 2006).

Another study related to emotional behavior examined how effective the use of a dog during school-based social trainings would be. This study found that the presence of a dog during school-based social trainings increased the students' empathy and social behavior in a classroom setting (Tissen, Hergovich, & Spiel, 2007).

A similar study by Hergovich, Monshi, Semmlert, and Ziegimayer (2002) also studied the effect that a dog in a classroom would have on empathy. The results of their study found significant differences between the experiment group (dog in classroom) compared to the control group (no dog in classroom) on the ability for children to function independently and distinguish themselves as an independent person, which contributes to a person's ability to empathize with others. Interviews with the teachers as part of the study also revealed that the students in the dog in the classroom group exhibited higher social integration and were less aggressive compared with the students in the classroom without the dog.

An observational study of young school children examined the effects of having a dog in a classroom on the challenging student behaviors (Kotrschal & Ortbauer, 2003). This study did not hypothesize any expected outcomes. This particular study was unique due to the fact that most of the children in the classroom observed had recently immigrated and there was a noticeable language barrier amongst many of the students. The results of the study found that when the dog was present, the class as a whole became more homogenous, most likely due to a

decrease in extreme behaviors like aggressiveness and hyperactivity. Students who were typically withdrawn became more socially active, and the students paid more attention to their teacher. The positive social effects were also found to be more profound amongst the boys in the class.

Chapter III: Summary, Critical Analysis, & Recommendations

This chapter will include a summary of the literature review, a critical analysis of the information found in the literature review, and considerations for research and practice in the use of dogs to increase reading skills.

Summary

Dogs and humans have had a unique companion relationship for tens of thousands of years (Wayne & vonHoldt, 2012). Dogs and humans may have such a close relationship because dogs are able to understand human language at the level of a two-year-old child and are the only known animal to understand human gestures (O'Callaghan, 2013). These human-like traits dogs possess may contribute to the physiological and psychological health benefits that humans experience while in the presence of or interacting with a dog, such as lower heart rate and blood pressure (Allen, Blascovich, & Mendes, 2002; Vormbrock & Grossberg, 1988), and improved self respect, confidence, and social interaction (Brodie & Biley, 1999).

Some struggling readers find it difficult to practice reading because of the anxiety they experience (Zbornik, cited in Jalongo & Hirsh, 2010). The presence of AAT dogs while reading may contribute to lessening the anxiety symptoms of these children. A few studies have shown that children reading to dogs read more words and had better comprehension of what they read compared to the control group who did not read to dogs (leRoux, Swartz, & Swart, 2014; Paradise, 2007).

Studies have also shown the positive effects that the presence of a dog in a classroom can have on students with emotional behavioral disorders (Bassette & Taber-Doughty, 2013), school-based social training (Tissen, Hergovich, & Spiel, 2007), improved empathy, pro-social behavior

(Hergovich, Monshi, Semmlert, & Ziegimayer, 2002), and on-task behavior (Kotrschal & Ortbauer, 2003).

Critical Analysis

Hall, Gee, and Mills (2016) used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses to gather all literature that reported the effects of students reading to dogs. Using the Oxford Centre for Evidence Based Medicine levels of evidence to classify the quality of the evidence reported, Hall et al. found that the majority of studies utilized lower quality scientific research methods. Only seven of the studies could be considered to have adequate scientific research methods.

There is an ample amount of research that shows using dogs as a means of reading intervention can correlate to improving reading skills for children, but cannot definitively claim direct causation. Other research shows sufficient evidence that the physiological and psychological benefits children receive from dogs could contribute to improving a child's reading skills.

Based on the research of the general positive effects that dogs have on people, the correlational evidence for dogs specifically being used as a reading intervention therapy, and the numerous case studies, AAT dogs and the use of them to supplement reading interventions has the potential to be very beneficial to the entire student population in a school setting.

Recommendations for Future Research

As Hall et al. stated, more studies with high quality research and reporting methods, with larger samples and more diverse demographics are needed in order to generalize findings to the population. There is also a need for research to be specified to certain demographics. Future studies should examine if AAT dogs are more effective with certain populations of students, for

example different grades or gender differences. Future research should also examine AAT dogs with specific reading disabilities e.g., reading comprehension, reading fluency, or dyslexia. If research can determine that AAT dogs are more effective with certain demographics, limited resources can be used more efficiently. More research is also needed to examine the ancillary benefits that an AAT dog can have on a student body as a whole, rather than just reading interventions. A few small studies have shown behavioral and attention improvements with a dog present, but more is needed.

Variations of the AAT itself are also needed. Variables such as having a reading interventionist present or not, the most beneficial amount of time, and if different breeds of dog are more effective can also facilitate using resources more efficiently in schools that have thin margins within their budget.

Recommendations for Practice

School districts should consider acquiring the services of an AAT dog, or even implement a resident AAT dog within their districts. The research based evidence supporting the positive physical and cognitive effects dogs have on people is enough to recommend the practice, with the additional emerging research suggesting the effectiveness of AAT dogs as reading intervention supplements. AAT dogs can be handled by a number of different school personnel e.g., school psychologists, counselors, reading specialists, and speech and language pathologists, to name a few. AAT dogs can be pets when not at school, and the training process and expenses are relatively low allowing for the startup and maintenance of the AAT dogs to be minimal.

A few things a school district will have to consider before implementing an AAT dog is allergies amongst the school population. Hypoallergenic, or dogs with low dander should be

considered to minimize the chance of allergy problems. Breeds of dog that are known for having a good temperament should also be considered due to the fact that the dogs will most likely be working with a younger population.

The benefits of utilizing an AAT dog within a school district appear to greatly outweigh the negatives. The unique bond that humans share with dogs is a great resource that can improve the physical and cognitive health of the entire school district at a very cost effective price.

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