

Rowan University

Rowan Digital Works

Theses and Dissertations

5-21-2019

The effectiveness of animal-assisted therapy on the anxiety and school attendance of students with disabilities

Lisa M. Klink
Rowan University

Follow this and additional works at: <https://rdw.rowan.edu/etd>



Part of the [Special Education and Teaching Commons](#)

Recommended Citation

Klink, Lisa M., "The effectiveness of animal-assisted therapy on the anxiety and school attendance of students with disabilities" (2019). *Theses and Dissertations*. 2669.
<https://rdw.rowan.edu/etd/2669>

This Thesis is brought to you for free and open access by Rowan Digital Works. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of Rowan Digital Works. For more information, please contact graduateresearch@rowan.edu.

**THE EFFECTIVENESS OF ANIMAL-ASSISTED THERAPY ON THE ANXIETY
AND SCHOOL ATTENDANCE OF STUDENTS WITH DISABILITIES**

by

Lisa M. Klink

A Thesis

Submitted to the
Department of Interdisciplinary and Inclusive Education
College of Education
In partial fulfillment of the requirement
For the degree of
Master of Arts in Special Education
at
Rowan University
May 13, 2019

Thesis Chair: Amy Accardo, Ed.D.

© 2019 Lisa M. Klink

Dedication

This thesis is dedicated to Thor, my first Seeing Eye®¹ puppy, and all service dogs who through their love bring us companionship, faithfulness, and joy. Thor, being your first human mother has been a very special and unforgettable part of my life. I will always love you. Go for the guide dog harness!

¹ Seeing Eye® is a registered trademark for guide dogs of The Seeing Eye, Inc., and is its registered service mark for training dogs as guides and instructing visually impaired individuals in their use and care.

Acknowledgements

I would like to acknowledge my husband, Steven Klink, for his commitment to my dreams and always welcoming just one more dog in the house. I promise to never give you up nor let you down.

I would like to acknowledge Dr. Amy Accardo for her unwavering commitment, patience, and support in my researching and writing of this thesis.

Abstract

Lisa M. Klink

THE EFFECTIVENESS OF ANIMAL-ASSISTED THERAPY ON THE ANXIETY AND SCHOOL ATTENDANCE OF STUDENTS WITH DISABILITIES 2018-2019

Dr. Amy Accardo, Ed.D.
Master of Arts in Special Education

The purpose of this study was to investigate the effects of animal-assisted therapy on the anxiety and school attendance of students with disabilities in a middle school language and learning disabled classroom. A single subject design with ABAB phases was utilized. Students participated in animal-assisted therapy during the beginning of their science class period. The anxiety levels of student participants were assessed through the use of Ottawa-Georgia scales for stress across all baseline and intervention phases. Student attendance was tracked using a student roster attendance sheet during each day of the phases. In addition, students complete a Likert scale survey regarding their satisfaction with the use of animal-assisted therapy in the classroom. The results from this study suggest that student participation in animal-assisted therapy decreased student anxiety levels while increasing student attendance. Also, student participants indicated strong satisfaction with the use of animal-assisted therapy in the classroom.

Table of Contents

Abstract	v
List of Figures	ix
List of Tables	x
Chapter 1: Introduction	1
Statement of the Problem	2
Significance of the Study	3
Purpose of the Study	3
Research Questions	4
Hypothesis	4
Key Terms	4
Chapter 2: Review of the Literature	5
Anxiety and Students with Disabilities	5
AAT for Students with Anxiety at School	7
AAT for Students with Low Motivation and Poor Attendance at School	9
Student and Staff Satisfaction with Participation in AAT	11
Conclusions	13
Chapter 3: Methodology	16
Setting	16
School	16
Classroom	16
Participants	17
Students	17

Table of Contents (continued)

Teacher	23
Materials	23
Measurable Materials	24
Ottawa-Georgia Mood Scale for Stress	24
Class Roster Attendance Sheet	25
Likert Scale Survey	26
Research Design	27
Procedures	27
Measurement Procedures	29
Ottawa-Georgia Mood Scale for Stress	29
Class Roster Attendance Sheet	29
Likert Scale Survey	29
Data Analysis	29
Chapter 4: Results	31
Student Anxiety Levels	31
Student School Attendance	43
Likert Scale Survey Results	45
Chapter 5: Discussion	48
Findings	48
Limitations	50
Implications and Recommendations	50
Conclusions	52

Table of Contents (continued)

References	53
------------------	----

List of Figures

Figure	Page
Figure 1. Ottawa-Georgia mood scale for stress	24
Figure 2. Class roster attendance sheet	25
Figure 3. Likert scale survey	26
Figure 4. Student A anxiety levels	33
Figure 5. Student B anxiety levels	34
Figure 6. Student C anxiety levels	35
Figure 7. Student D anxiety levels	36
Figure 8. Student E anxiety levels	37
Figure 9. Student F anxiety levels	38
Figure 10. Student G anxiety levels	39
Figure 11. Student H anxiety levels	40
Figure 12. Student I anxiety levels	41
Figure 13. Student J anxiety levels	42

List of Tables

Table	Page
Table 1. General Information on Students	18
Table 2. Student Anxiety Levels	32
Table 3. Student Attendance	43
Table 4. Likert Scale Survey Percentage Results	46

Chapter 1

Introduction

The relationship between both humans and animals is one which dates back to ancient times, whereas humans began to realize the natural bond they share with animals themselves (Levinson, 1978). There is clear evidence throughout our known history that animals and humans have cohabitated together. This special bond has been revealed through examples of archaeologists finding humans buried with their pet dogs from the B.C. era to finding paintings and statues from ancient Egypt displaying house cats as sacred beings (Hajar, 2015). Having an animal as a pet is a therapeutic experience for humans and often leads to a self-understanding of our role in the universe (Levinson, 1978). Furthermore, humans choose to have pets to ease loneliness while adding joy and unconditional love to their lives and to the members of their family (Hajar, 2015).

One means of connecting humans and animals together is through a pet therapy experience referred to as animal-assisted therapy (AAT). In AAT, a trained animal (usually a dog) that is obedient to its handler and can stay calm when being petted, is used to bring comfort to children and adults alike (Marcus, 2013). Dogs that are involved in AAT usually visit hospitals, psychiatric facilities, or schools to provide stress relief and calmness to those who pet and play with them (Marcus, 2013). The age groups that seem to benefit the most from this experience are young children, elderly adults, and military veterans (Amerine & Hubbard, 2016). Additionally, when it comes to young children, AAT is used to bring comfort and focus to those with disabilities including attention deficit disorder (ADD), anxiety, depression, post-traumatic stress disorder (PTSD) and oppositional disorders (Amerine & Hubbard, 2016).

Statement of the Problem

There are issues a child with disabilities may face within the classroom, in terms of their mental health and wellness. It is estimated that in the United States alone, approximately one out of every four students (25%) in the elementary through high school grades will develop a mental health issue that will first emerge during childhood (Merikangas et al., 2010). Furthermore, approximately 32% of those children diagnosed with a mental disorder have been identified as having an anxiety or panic disorder (Merikangas et al., 2010). There are two risk factors that seem to weigh heavily on the anxious child's mind: societal pressures and social media (Glover & Fritsch, 2018; Moran, 2016). Today, children are sensitive to the pressures they feel from their parents to perform extremely well in school as well as the socioeconomic status they come from as a family (Moran, 2016). Children are also more involved in social media; therefore, there is a greater feeling of anxiety to fit in and act like their peers at school (Glover & Fritsch, 2018).

Another way anxiety manifests itself in children is through poor school attendance. Children may become school phobic, meaning they refuse to or avoid attending school due to overwhelming stress (Tyrrell, 2005). It is reported that about 5% of elementary, middle, and high school students in the United States suffer from school phobia and miss prolonged periods of school (Tyrrell, 2005). For most students who are school phobic, there is a centralized fear or stressor in the school environment that is making them feel this way (Kirby, 2018). In most cases, students have reported that the feeling of being judged by other students as well as immense academic pressure prevents them from feeling safe and motivated to attend school (Kirby, 2018).

Anxiety and school phobia can lead students to view school with a worrisome and poor outlook. With the levels of mental disorder diagnosis in children steadily rising over the past fifty years, it is clear that alternative resources to meet the specific demands of these children in schools is needed (Merikangas et al., 2010). In choosing a resource such as AAT, students can gain a sense of connectedness to the classroom through the trust of a dog (Beetz, 2013). Additionally, the use of a dog in the classroom can act as a reward and motivator for students to reach positive behavioral goals (Beetz, 2013).

Significance of the Study

Many students with disabilities struggle with anxiety and fearfulness in the classroom. Those students with disabilities that are also diagnosed with emotional disorders need unique and innovative methods that will help them to become an empowered, self-determined, and socially aware individual (Kogan, Granger, Fitchett, Helmer, & Young, 1999). This study aims to examine the effect of AAT on student anxiety levels as well as their motivation to attend school. However, there is little research pointing specifically to middle school students, their anxiety and attendance record, and the effects of AAT with this age group. Therefore, this study will build upon the prior research recommended by Kogan et al. (1999) regarding AAT and student anxiety, while also providing an investigation of AAT on frequent and consistent school attendance in the middle school environment.

Purpose of the Study

The purpose of this study is to examine the use of AAT in a middle school learning and language disabled (LLD) classroom to see the effects it has on (a) the levels of anxiety in students with disabilities and (b) their school attendance. The aim of this

study is to support students in their positive mental and emotional well-being as well as being their motivation to attend school in a consistent manner.

Research Questions

Research questions investigated in this study follow:

1. Will AAT decrease the level of anxiety of middle school students with disabilities in the LLD classroom?
2. Will AAT increase school attendance of middle school students with disabilities in the LLD classroom?
3. Are middle school students with disabilities in the LLD classroom satisfied with the use of AAT?

Hypothesis

I hypothesize that anxiety levels of middle school students with disabilities in the learning and language disabled classroom will decrease through use of animal-assisted therapy.

I hypothesize that school attendance of middle school students with disabilities in the learning and language disabled classroom will increase through use of animal-assisted therapy.

I hypothesize that middle school students with disabilities in the learning and language disabled classroom will be satisfied with the use of animal-assisted therapy.

Key Terms

For purposes of this study, pet therapy or *AAT* shall be defined as “a goal-directed intervention that utilizes the human-animal bond as an integral part of the treatment process” (Kogan et al., 1999, p. 106).

Chapter 2

Review of the Literature

For students with learning disabilities, the school environment can be an overwhelming and stressful place, both academically and socially. Unfortunately, this stress can lead to discomfort in the classroom, a decline in confidence and academic performance, and the possible development of school phobia (Tyrrell, 2005). Being that many students with disabilities also have a high prevalence of being diagnosed with a comorbid psychiatric disorder (Green, Berkovits, & Baker, 2015), there is a great need for emotional intervention to support these students in their schooling. One example of a strong therapeutic intervention is using AAT (Animal-Assisted Therapy), where students can be exposed to a dog in the classroom, which will provide them with comfort and companionship (Kogan et al., 1999). It also offers a unique human-animal connection for students that allows them to feel comfortable with themselves, as they do not have to worry about being judged by a dog as they would with their peers (Friesen, 2010).

This chapter provides a review of the research related to the anxiety levels of students with disabilities while in school as well as the use of AAT, a strategy that may decrease student anxiety in the classroom and increase student motivation to attend school.

Anxiety and Students with Disabilities

According to the American Psychiatric Association (APA) (2013), students with disabilities include those in the diagnosis category of neurodevelopmental, neurocognitive, mental, conduct, personality, and trauma or stressor-related disorders. Under the mental disorder category are anxiety disorders, where anxiety is defined as the

“anticipation of future threat” (APA, 2013). Students with anxiety commonly feel the need to escape and avoid situations due to their increased fear of perceived danger nearby (APA, 2013). However, students with disabilities in the other categories may also feel the stress of anxiety as they struggle to keep up with the demands of academic work and socialization (Moran, 2016). Common symptoms of anxiety in students with disabilities include: excessive worry and fear, avoidance of certain places and situations, sleeplessness, panic, and inability to concentrate (APA, 2013).

In a study conducted by Green et al. (2015), students with an intellectual disability were monitored for anxiety levels as compared to their typically developed peers. A total of 190 children were involved in the study from ages three to nine, including 74 with intellectual disabilities and 116 that were identified as “typically developing.” The measures of anxiety for the study were a collection of parent interviews, the Child Behavior Checklist (CBCL), the Stanford-Binet IV (SB-IV), the VABS II, and the Diagnostic Interview Schedule for Children (DISC) IV. The results from the data suggest that students with intellectual disabilities were two to three times more likely to be at risk for anxiety disorders than their typically developing peers (Green et al., 2015). These results suggest that students with intellectual disabilities could directly benefit from early intervention and services with anxiety prevention goals (Green et al., 2015).

Similarly, Li and Morris (2007) conducted a study on fears and anxiety levels of young children and adolescents with learning disabilities. The sample size consisted of 200 students in the first through twelfth grade who identified as having learning disabilities and/or mild intellectual disability. Student data was collected through

administering the Fear Survey Schedule for Children – Revised FSSC-R and the Revised Children’s Manifest Anxiety Scale (RCMAS). The results of the study found that children in the younger age group, from seven to ten, reported significant fear of criticism and failure as well as increased anxiety compared to their peers with learning disabilities in the fourteen through eighteen age range (Li & Morris, 2007). The data collected in this study suggests that students begin to feel the most anxiety in their pre-teenage years, most likely due to them beginning to realize they are different academically and socially, and fear judgment from their teachers and peers (Li & Morris, 2007).

AAT for Students with Anxiety at School

One strategy that can be used to lower anxiety in students with disabilities is AAT, in which a child is able to pet a dog in the classroom, with the dog potentially comforting the child (Kogan et al., 1999). The physical and mental benefits of the AAT therapy intervention were observed by Odendaal (2000), who conducted a study in which eighteen participants were paired with therapy dogs for a time period of five to twenty minutes each. The purpose of the study was to investigate the effects of the dog therapy on blood pressure, chemical plasma, and hormone levels. The data collected from the intervention displayed a significant drop in blood pressure readings across all participants as well as a noted increase in neurochemicals such as oxytocin, which induces a calming, positive effect on the body (Odendaal, 2000). Odendaal’s (2000) results indicate that the presence of and human interaction with a dog in a room has a significant impact on stimulating good mental health wellness and positive emotional responses (Odendaal, 2000).

Kogan, Granger, Fitchett, Helmer and Young (1999) conducted a study with consistent findings to Odendaal (2000), in which student anxiety was decreased through the use of a therapy dog. In the study, two male students, ages eleven and twelve, who were diagnosed with emotional disturbance, interacted weekly with a therapy dog in their classroom for twelve weeks (Kogan et al., 1999). The purpose of the study was to evaluate the effectiveness of AAT on the student's stress and anxiety levels within the classroom in regard to their behavioral outbursts. The data collection measured for the study included researcher observations, videotapes, and the ADD-H Comprehensive Teacher Rating Scale (ACTeRS) for social skill areas. The data collected on both participants showed a decrease in negative talk about themselves and others, decreased exhibited stress including crying and tantrums, and improved social relationships with peers in the classroom (Kogan et al., 1999). The results from the study suggest that the use of weekly therapy sessions with a dog increases student confidence through improved self-esteem as well as the greater feeling of control over the environment they are in (Kogan et al., 1999).

The findings of Anderson and Olson (2006) also align with what was discovered in the studies of Kogan et al. (1999) in regard to the benefits of AAT intervention on student anxiety and comfort in the classroom. Anderson and Olson (2006) chose six student participants (three boys and three girls) from the ages of six to eleven who were classified with varying disabilities. They received AAT from a therapy dog that was owned by a paraprofessional in the classroom. Data collection in this study included student observations and parent interviews. They were looking at the levels of each student's anxiety as well as their frequency of verbal outbursts and violent behavior.

After the data was collected, it was found that all six students showed a significant decrease in anxiety and emotional crisis in the classroom as well as an increase in focus and empathy towards the dog and peers in the classroom (Anderson & Olson, 2006). The results of the study suggest that AAT intervention allows students to form an emotional bond with the animal, therefore leading to an increase in self-worth and a decrease in feelings of anxiety and frustration in the school environment (Anderson & Olson, 2006).

AAT for Students with Low Motivation and Poor Attendance at School

A common hardship for students with disabilities who feel anxiety at school is they may be unmotivated to attend school due to fear and worry of what stress they may encounter (Tyrrell, 2005). AAT is an intervention that could be used to motivate students to attend school and stay within the classroom for the duration of the period as well as exhibit better focus (Friesen, 2010). In a study conducted by Beetz (2013), an experimental group of third grade students with varying ability levels participated in AAT weekly with a therapy dog that visited their classroom as opposed to a control group that did not receive the intervention. The purpose of the study was to examine if a therapy dog would motivate students to improve their positive mood towards the school environment as well as to the peers around them. The data collection measured in the study included a depression scale for children and a questionnaire regarding emotional regulation and emotional/social experiences in school, appropriate for third through fourth grade students. The results of the study demonstrated that the experimental group – who received the AAT intervention – reported a significant increase in positive class climate among students and positive emotions toward learning (Beetz, 2013). These

findings suggest that AAT can help students regulate their emotions better and form a more positive attitude towards learning (Beetz, 2013).

Similarly, Kotrschal and Ortbauer (2003) conducted a study where a rotation of three therapy dogs owned by a classroom teacher were introduced to her class of twenty-four first grade students, with and without disabilities, for one month. The purpose of the study was to investigate the type of effect the dogs had on the attitudes of the students and their focus in the classroom. The data collection measured was through a videotape, where Kotrschal and Ortbauer (2003) used focal and scan sampling to view student behavior with the dog as individuals and in the large group setting. Upon observations, the results of the data displayed that students who participated in the AAT intervention were less likely to engage in aggressive behaviors such as yelling, hitting, or screaming, and were more likely to practice calm, appropriate, and respectful behavior with others in the classroom (Kotrschal & Ortbauer, 2003). Also, the observations showed a decrease in loneliness of the students, meaning students were more inclined to leave their seat and join other students in conversation when petting the dogs (Kotrschal & Ortbauer, 2003). The results from the study suggest that the use of therapy dogs in the classroom setting allows students to become more comfortable with being social with others in their learning environment, and provides students with positive feelings and confidence about being a member of their classroom community (Kotrschal & Ortbauer, 2003).

In alignment with the findings of Beetz (2013) and Kotrschal and Ortbauer (2003), Zents, Fisk, and Lauback (2017) conducted a study in an urban school district with elementary, middle, and high school students participating in AAT with four traveling therapy dogs between the schools. The purpose of the study was to evaluate the

effectiveness of therapy dogs on the socio-emotional well-being of the students.

Although thousands of students across the district came in contact with the dogs, Zents et al. (2017) collected data on thirty-five students with and without disabilities. They compiled student interviews and questionnaires for data collection. The results showed a significant increase for students in positive feelings about school as well as increased appropriate socialization and communication in the classroom in students with disabilities such as autism (Zents et al., 2017). It was also noted in the results that there was one particular male middle school student with consistent absences who began to attend regularly and on time due to the fact that he enjoyed greeting the therapy dogs in the morning (Zents et al., 2017). The results of the study suggest that the use of AAT, across multiple grade levels of students, can encourage proper socialization as well as motivate students to attend school on a consistent basis (Zents et al., 2017).

Student and Staff Satisfaction with Participation in AAT

When an AAT intervention is implemented in the classroom, there should be an evaluation done to show the satisfaction of the intervention by all members of the classroom – students, teachers, and/or paraprofessionals – which can demonstrate how successful it was. In the Zents et al. (2017) study mentioned previously, the results concluded that the four therapy dogs involved in the AAT interventions were successful in helping students increase motivation to attend school and socialize with peers appropriately. The thirty-five students included in the study that completed the student interviews and questionnaires also completed a Likert scale at the conclusion of the study. The results of the questionnaire and Likert scale demonstrated that 77% of the students surveyed rated having a therapy dog in the classroom as either “highly effective”

or “effective” Zents et al., 2017). Furthermore, two of the highlighted comments from students on the questionnaire stated, “She [the therapy dog] is one of the reasons I come to school here,” and, “I think it’s good having a therapy dog in school because if you are having a bad day, they can cheer you up and then you pay better attention in class” (Zents et al., 2017, p. 91). The results of the study show students are very satisfied with the implementation of AAT.

Even though students were assessed for their satisfaction of the AAT intervention, it would also be helpful to receive feedback about it from professional staff members in the building as well. In a study conducted by Esteves and Stokes (2008), an AAT intervention was used in a special education Kindergarten through second grade classroom where three students diagnosed with intellectual disabilities from the ages of five to nine were participants. The students were exposed to a therapy dog every day for eight minutes in the classroom. The teacher and the paraprofessional helped the students who were participating pet and interact with the dog, while the observer (the school guidance counselor) videotaped sessions for data collection and assessment. At the end of the study, both the teacher and the paraprofessional in the classroom were administered a Likert scale to evaluate how successful the AAT intervention was for the students. The teacher and the paraprofessional both answered that they “agreed” or “strongly agreed” the AAT intervention was effective for the students because it promoted positive behavior and social experiences for them (Esteves & Stokes, 2008).

However, in contrast to the findings of overall student and teacher satisfaction in these studies about AAT intervention, Jalongo (2008) raises some important concerns about integrating a dog into the classroom. In a meta-analysis by Jalongo (2008), one of

the most critical aspects of inviting dogs into schools for AAT is the fear of dog bites and the safety of children. Jalongo (2008) does go on to explain, though, that two aspects of this topic are critical for a healthy AAT intervention for all members of the classroom: a trained dog and owner, and appropriate pet handling education. First, Jalongo (2008) states that the best chance at a successful AAT interaction is one where the dog participating in the therapy session is highly trained by the owner and insured for liability purposes. Second, educating children in how to approach the dog and how to read their body language is key to ensuring a pleasant and safe experience between the dog and child(ren) (Jalongo, 2008). Other common concerns discussed in a meta-analysis by Friesen (2010) is that of pet allergies and dog fear, where staff members and students in the room may either be allergic to or fearful of the dog participating in AAT. A suggested alternative to combat this problem is through speaking with an administrator, passing out surveys about allergies and animal fears, and obtaining parental consent for the dog to be in the classroom with the students (Friesen, 2010).

Conclusions

Through the findings of Green et al. (2015) like Li and Morris (2007), it is evident that students with disabilities can feel stressed with anxiety and fear in the classroom, whether through academic or social frustrations within the school environment. However, AAT is one intervention that may help reduce their worries and discomfort at school. An AAT intervention can help students ease the burden of the physical symptoms of stress as well as the mental symptoms of worry and panic. Odendaal (2000) discovered that AAT can help humans lower their blood pressure and increase the production of hormones that aide the body in feeling calm. Similarly, the findings of

Kogan et al. (1999) along with Anderson and Olson (2006) suggest that the use of AAT in the classroom can assist students in decreasing their feelings of anxiety and frustration by letting them pet and be with a dog in the classroom.

AAT may also support students by motivating them in their school performance and to be consistent in their attendance. Beetz (2013), Kotrschal and Ortbauer (2003), and Zents et al. (2017) all conducted studies which found that students were more motivated to complete work, increase focus, and demonstrate higher levels of socialization with their peers when a dog was present in the room for an AAT program. Additionally, both students and staff members alike found satisfaction in the use of AAT within the classroom. Zents et al. (2017) concluded that the majority of the students surveyed found the therapy dogs in the program as “effective” or “highly effective” in helping them throughout their school day. Similarly, Esteves and Stokes (2008) discovered that teachers and paraprofessionals either “agree” or “strongly agree” that AAT promotes a healthier and more positive student behavior within the classroom.

However, there were some important concerns raised by Jalango (2008), who concluded that some students may be fearful of the dog or have allergies to pet dander; therefore, posing a risk to some students. Jalango (2008) also states that safety education is needed before the dog enters the classroom, so students understand how to approach a dog and avoid any type of dog biting incidents. Additionally, Friesen (2010) focuses on receiving help of a supportive administrator. From there, a school professional can elicit survey responses from parents and children about these topics as well as receive parental consent in order to make sure bringing a dog to school for AAT is safe for all students.

While there is research that looks at the effectiveness of AAT on students in the classroom, most of the research centers around children of younger ages in the elementary grades. There is little research to show its effectiveness specifically with middle school aged students. Furthermore, the majority of research involving students participating in AAT measures the effect on anxiety while there is little research showing the effect it has on student's attendance at school. This study aims to examine how the use of AAT effects levels of anxiety and school attendance of middle school students with disabilities in the LLD resource setting.

Chapter 3

Methodology

Setting

School. The study was conducted in a public middle school in suburban northern New Jersey. During the 2015-2016 school year, the school served 759 students in grades six through eight. Of the 759 students, 136 of them (18%) had a disability and received special education services. Ten of those students with disabilities participated in this study. All of them are currently receiving special education services in the Language and Learning Disabled (LLD) resource science classroom and have their Individualized Education Plans (IEPs).

Classroom. The study was conducted in one of the school's resource classrooms for LLD science. The classroom is an old home economics room, which houses multiple cabinets, five stoves, and a dishwasher from the previous course. Since the school no longer offers home economics as an elective, the room has now been converted into a resource setting classroom. When walking into the room, a white board with a BrightLink overhead projector next to a desktop computer with a HoverCam document camera attachment can be seen. There are six large tables set in rows of three behind the white board. Two students sit at each large table and face the white board directly for instruction.

The study took place during the eighth period science class. This class begins at 1:22 PM and ends at 2:02 PM, making it a forty-minute long period. There are ten students with disabilities enrolled in the eighth period science class. Each student has an IEP based on their disabilities.

Participants

Students. A total of ten students with disabilities participated in this study. Of the ten students, five were male and five were female. Of the male students, one was Asian, one was Hispanic, and three were Caucasian. Of the female students, all five of them were Caucasian. The students were classified as eligible for Special Education services under the following categories: Autism, Communication Impaired, Emotionally Disturbed (Generalized Anxiety Disorder and Posttraumatic Stress Disorder), Other Health Impaired (ADHD), and Specific Learning Disability (Dyslexia and Dyscalculia). Table 1 displays participant information:

Table 1

General Information on Students

Student	Age	Grade	Sex	Classification
A	12	7	F	Communication Impaired
B	12	7	M	Other Health Impaired (ADHD)
C	13	7	M	Emotionally Disturbed (Generalized Anxiety Disorder)
D	13	7	M	Communication Impaired
E	13	7	F	Other Health Impaired (ADHD)
F	13	7	F	Emotionally Disturbed (Posttraumatic Stress Disorder)
G	12	7	F	Autism
H	12	7	F	Specific Learning Disability (Dyscalculia)
I	12	7	M	Specific Learning Disability (Dyslexia)
J	12	7	M	Communication Impaired

Student A is a 12-year-old Caucasian female in seventh grade who is classified as Communication Impaired. According to her IEP, Student A demonstrates below average language abilities. Specifically, this student has trouble with expressive and receptive language skills. In order to improve her communication skills, she receives speech therapy with a speech teacher once per week for forty minutes. Socially, this student acts very mature for her age and has many friends in her grade level. However, due to her

communication needs, she is enrolled in the Social Skills and Transition class with a special education teacher. Academically, this student is always prepared for class with needed materials, completed homework, and studies well for her assessments. She currently has an A average in science class.

Student B is a 12-year-old Caucasian male in seventh grade who is classified as Other Health Impaired due to his diagnosis of ADHD. According to his IEP, Student B exhibits concerns with focus and attentiveness during instruction time. Also, this student was born in Jordan and came to the United States five years ago. Although his English is very good, he does receive ESL and speech services for one forty-minute period a week with an ESL teacher and speech teacher, respectively. Socially, this student is respectful of other students and staff members; however, he can easily get distracted and join in fooling around with other students. Academically, he struggles to maintain consistent grades due to his lack of focus in classroom activities. This student also admits to not studying well and does not consistently complete homework on time. He currently has a C average in science class.

Student C is a 13-year-old Caucasian male in seventh grade who is classified as Emotionally Disturbed due to his diagnosis of Generalized Anxiety Disorder. According to his IEP, Student C exhibits extreme nervousness and anxiety throughout all aspects of his life. Socially, he struggles to make friends and is very sensitive in communicating with others due to his misunderstanding of social cues. Because of this, Student C is enrolled in a Social Skills and Transition class with a special education teacher. Academically, this student cares about his grades and studies well for assessments. However, he exhibits severe test-taking anxiety in which he often becomes frustrated

during testing. He needs constant clarification of assessment directions as well as generous praise to finish tasks. He currently has a B average in science class.

Student D is a 13-year-old Hispanic male in seventh grade who is classified as Communication Impaired. According to his IEP, this student demonstrates below average language abilities. Specifically, this student has trouble with inferences, summarizing, and figurative language. In order to improve his communication skills, he receives speech therapy with a speech teacher once per week for forty minutes. Socially, this student is respectful of other students and staff members; however, he can easily get distracted and join in fooling around with other students. Academically, he tries his best to participate in class and complete homework on a daily basis. Student D studies for assessments, but finds trouble answering questions due to weaknesses in overall reading comprehension. He currently has a B average in science class.

Student E is a 13-year-old Caucasian female in seventh grade who is classified as Other Health Impaired with a diagnosis of ADHD. According to her IEP, this student demonstrates concerns with inattentiveness. Even though she is diagnosed with ADHD, this student frequently falls asleep in class. When asked why, she responds that she does not sleep well at night due to hyperactivity and constant thoughts. Socially, Student E is very mature and has formed many appropriate friendships at school with her peers. She enjoys engaging in conversations with others and is active in many clubs in the school community. Academically, she is a very intelligent individual who loves projects that allow her to draw and use her creativity. She currently has an A average in science class.

Student F is a 13-year-old Caucasian female in seventh grade who is classified as Emotionally Disturbed due to her diagnosis of Posttraumatic Stress Disorder. According

to her IEP, she is considered very anxious and sensitive due to stress endured from a traumatic episode within her family when she was in elementary school. Due to constant stress, this student has become school phobic and is frequently absent from classes. Socially, she is mature, respectful of peers and teachers, and has many friends that she talks to inside and outside of school. However, this student has been bullied in the past and is fearful of school because of this. Academically, Student F is very intelligent and despite her many absences, she makes up work in a timely manner. She performs very well on her assessments and needs little assistance to complete them. She currently has an A average in science class.

Student G is a 12-year-old Caucasian female in seventh grade who is classified as being diagnosed with Autism. According to her IEP, this student exhibits concerns with socialization. She also has heightened sensitivities to touch, including concerns with wearing certain fabrics of clothes. Student G often likes to work by herself and immerses herself in her favorite activity; drawing. In order to increase her social skills, she has been placed in the Social Skills and Transition class with a special education teacher. Academically, Student G is intelligent and an active class participant in discussions and activities. She is usually prepared for class with necessary materials as well as completed homework. She currently has a B average in science class.

Student H is a 12-year-old Caucasian female in seventh grade who is classified with Specific Learning Disability. According to her IEP, this student was found to have significant concerns in her mathematics ability, which lead to the diagnoses of Dyscalculia. Student H struggles with concepts in science that involve mathematical reasoning. Socially, she is very quiet and soft-spoken, but has many friends in her grade

level. She is also respectful of her peers and teachers. Academically, Student H is very studious and studies very well for assessments. She is always prepared with necessary materials for class and completed homework. Due to her quiet disposition, however, she is encouraged to participate in class more. She currently has an A average in science class.

Student I is a 12-year-old Asian male in seventh grade who is classified as having a Specific Learning Disability. According to his IEP, this student has significant reading concerns, which lead to the diagnoses of Dyslexia. He struggles to read fluently and, due to this, also struggles with reading comprehension. Socially, this student likes to work alone and, when placed in groups, often takes the lead and starts arguments with other students. He has very few friends in his grade level. Academically, Student I is an intelligent and creative individual who has vast prior knowledge on many science topics. He maintains good grades on assignments and assessments but struggles to maintain organization with his science binder and notebook. He currently has a B average in science class.

Student J is a 12-year-old Caucasian male in seventh grade who is classified as Communication Impaired. According to his IEP, this student has significant concerns with expressive and receptive language. He visits the speech teacher once a week for forty minutes for speech and language services. Socially, he has many friends in his grade but often acts inappropriately in class with them. In a typical class period, Student J is found calling out, making noises, and trying to fool around with other students. Academically, this student struggles to maintain consistent grades. Although he struggles

with reading comprehension, he does not ask for nor accept any help given to him on assignments and assessments. He currently has a D average in science class.

Teacher. A Special Education Science teacher instructed the class during this study. The teacher has eight years of teaching experience in science and working in the LLD classroom setting. She has been teaching at this school for eight years. She is responsible for following the IEP plan accommodations and modifications of the students while adhering to the Next Generation Science Standards (NGSS). These standards are set forth by New Jersey's Department of Education's Student Learning Standards. The teacher also receives classroom support from one female classroom paraprofessional who helps all students with behavior and academic concerns, if needed.

Materials

The intervention technique for this study was animal-assisted therapy (AAT), where students had the opportunity to interact with and pet an animal in the classroom. The animal used in this study was Thor, an eight-month-old male German Shepherd puppy who was born at the Seeing Eye®, a guide dog school based in Morristown, New Jersey. He was raised from seven weeks old by the classroom teacher, who is currently a volunteer puppy raiser for the organization. He resides with her at her home. Thor has been training to exhibit basic obedience and socialization with the environment around him. He actively prepares for his return to the Seeing Eye® at about one and a half years old, where he will officially begin training to become a guide dog for a person who is blind. Thor also attends weekly training meetings and public exposure outings with the classroom teacher. Therefore, Thor was able to interact safely with the students involved in the study due to his constant training and calm temperament.

Measurable Materials

Ottawa-Georgia Mood Scale for Stress. The students evaluated their stress level on a scale from 0 to 10, with “0” being no stress felt and “10” being overwhelmed with stress. The scale was copied on paper and distributed to students each day during the research study. An example of the scale can be seen below in Figure 1.

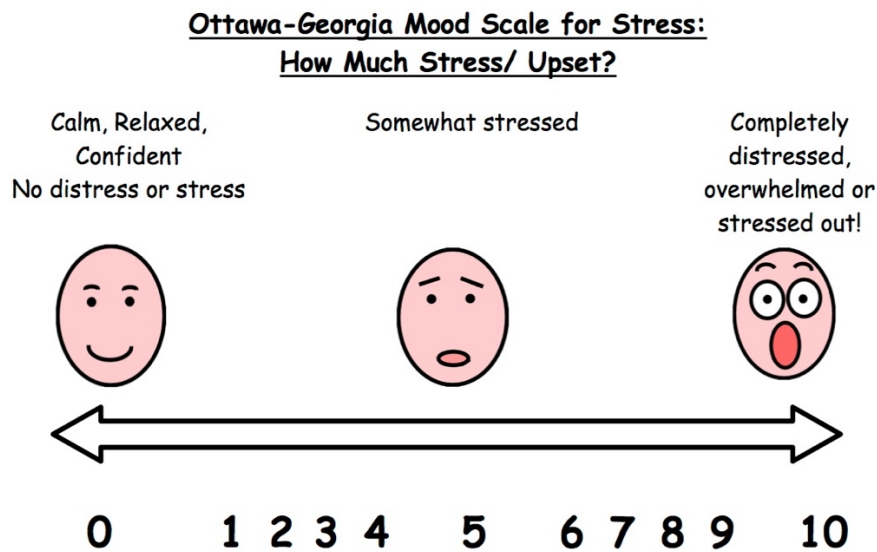


Figure 1. Ottawa-Georgia mood scale for stress

Class Roster Attendance Sheet. The student's attendance was taken daily by the classroom teacher during the research study. The student roster sheet was printed by the classroom teacher and used by herself and the classroom paraprofessional to mark if students were present or absent for the class period each day. An example of the class roster sheet can be seen below in Figure 2.

<input checked="" type="checkbox"/> Present					
<input type="checkbox"/> Absent					
Phase _____					
Student	Monday /	Tuesday /	Wednesday /	Thursday /	Friday /
A					
B					
C					
D					
E					
F					
G					
H					
I					
J					

Figure 2. Class roster attendance sheet

Likert Scale Survey. Lastly, the students were asked to complete a survey about their feelings toward the animal-assisted therapy intervention once the study had concluded. The survey was copied on paper by the classroom teacher and distributed to the students. An example of the survey can be seen below in Figure 3.

Statements	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. I wanted to go to school because Thor was coming to class.	5	4	3	2	1
2. I looked forward to seeing Thor every day I came to class.	5	4	3	2	1
3. I enjoyed getting to pet Thor during the class period.	5	4	3	2	1
4. Thor made me smile, laugh, and/or feel happier in class.	5	4	3	2	1
5. Thor made me feel less anxious in the classroom.	5	4	3	2	1

Figure 3. Likert scale survey

Research Design

The study was conducted using a single subject design with ABAB phases. The effect of the independent variable (animal-assisted therapy) on the dependent variable (student anxiety levels and attendance) was the aim of the study. During Phase A, baseline data was collected for one week by the researcher using the mood scale and the class attendance roster sheet. During Phase B, the teacher implemented the use of animal-assisted therapy with her Seeing Eye® puppy, Thor, for one week. During the second Phase A, which lasted one week, the teacher returned to baseline and did not use animal-assisted therapy with her instruction in the classroom. During the second Phase B, which lasted one week, the teacher used animal-assisted therapy again during her instruction. The teacher used the same types of assessments – both the mood scale and the class attendance roster – during each phase.

Procedures

The study was conducted from January 2019 to February 2019. Before the study started, the students were introduced to the animal-assisted therapy technique and proper ways to approach and pet a dog. The classroom teacher took one forty-minute science period to display a slideshow presentation about dog communication, body language, and the proper ways to approach a dog. The classroom teacher also provided the students with a video featuring her puppy in training classes. At the end of the class period, the teacher distributed permission slips for students and parents to sign, which included a place for parents to comment if their child had allergies or a fear of dogs. All ten students returned their permission slips signed with no students being allergic or fearful of dogs.

The baseline phase of the study took place during the second and fourth week of January. Each week consisted of five full science classroom periods for the study. When the students arrived to class, they were asked to take part in their daily “Do Now” science activity, where they answer a question independently in their science journals. Following the completion of their “Do Now” activity, the classroom teacher took attendance on her classroom roster sheet and handed out the stress scale for each student to complete. The students were instructed to circle their appropriate stress level from 0 to 10 and hand the scale back to the teacher. During this phase, the students participated in their normal science lessons, activities, and assessments. The students did not receive the animal-assisted therapy intervention during this time.

The intervention phase of the study took place during the third week of January and the first week of February. Each week consisted of five full science classroom periods for the study. When the students arrived to class, they were asked to take a seat and wait to be called in groups of three or four to pet the puppy, Thor. The students sat around Thor on a blanket and their interaction with the puppy was monitored by the classroom teacher. Each group of students had approximately three minutes to interact and pet Thor. After each student pet him, the classroom teacher took attendance on her classroom roster sheet and handed each student a stress scale to complete. The students were instructed to circle their appropriate stress level from 0 to 10 and hand the scale back to the teacher. During this phase, the students received animal-assisted therapy with Thor during the first ten minutes of class. From there, the classroom teacher proceeded with her normally scheduled science class lessons, activities, and assessments while Thor rested quietly next to her.

Measurement Procedures

Ottawa-Georgia Mood Scale for Stress. After students circled the number for their stress level during the baseline and intervention phase, the classroom teacher collected their responses. The number the students indicated on their scale was recorded by the classroom teacher on a spreadsheet throughout the study.

Class Roster Attendance Sheet. The classroom teacher took attendance before students completed their daily anxiety scales. A check mark was placed next to their name if they were present and an “X” was placed next to their name if they were absent on the day data was collected during the baseline and intervention phases.

Likert Scale Survey. Following the completion of the baseline and intervention phases of the study, the students were asked to take a survey. The survey contained five statements in which the students responded with the feelings they had toward the animal-assisted therapy intervention. The students completed the surveys and handed them to the classroom teacher, who in turn recorded the responses on a spreadsheet.

Data Analysis

The data from the stress scales was collected and represented visually in a line graph. The data collected from the student roster attendance sheet and the Likert scale surveys was represented in tables through percentages. The results of both variables were compared for the baseline and intervention phases. The data points were used to identify changes in the mean performance in both variables. Both the mean and standard deviations were reported for student anxiety and attendance; they were reported in tables. Comparing the results of the baseline and intervention phases in the study helped to

determine the effects of using animal-assisted therapy in the classroom on student well-being and attendance.

Chapter 4

Results

The single-subject design study utilized ABAB phases to examine the effects of animal-assisted therapy on anxiety levels and school attendance of students with learning disabilities. Ten seventh grade middle school students, receiving animal-assisted therapy with a Seeing Eye® puppy named Thor in a language and learning disabled science classroom setting, participated in this study. Research questions investigated are as follows:

1. Will AAT decrease the level of anxiety of middle school students with disabilities in the LLD classroom?
2. Will AAT increase school attendance of middle school students with disabilities in the LLD classroom?
3. Are middle school students with disabilities in the LLD classroom satisfied with the use of AAT?

Student attendance was taken daily during the baseline and intervention phases by the classroom teacher, as well as student anxiety level numbers indicated by students through an Ottawa-Georgia Mood Scale for Stress. At the end of the study, all ten students voluntarily participated in a Likert scale survey regarding their satisfaction with the animal-assisted therapy intervention.

Student Anxiety Levels

The levels of student anxiety were obtained through students completing Ottawa-Georgia Mood Scales for Stress. The students rated their daily level of stress in the classroom through circling a number from zero through ten, with zero being the least

stressed (calm) and ten being the most stressed. Means and standard deviations of the students' anxiety levels in both baseline and intervention phases are presented below in Table 2.

Table 2

Student Anxiety Levels

Student	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
A	5.0	0.7	3.3	0.5	5.8	0.8	2.4	0.9
B	4.0	0.7	0.8	0.4	4.4	1.1	2.0	0.0
C	4.4	0.9	0.6	0.5	3.2	0.8	0.8	0.8
D	4.0	2.8	0.6	0.5	2.6	1.1	2.5	1.0
E	5.3	1.5	2.0	0.7	4.3	1.7	2.2	0.8
F	8.3	1.5	1.8	0.8	6.0	0.0	3.3	0.6
G	2.6	0.9	0.4	0.5	3.0	1.2	0.8	0.8
H	6.4	3.3	2.2	0.8	8.0	2.3	2.4	1.1
I	6.0	3.4	0.6	0.9	5.0	3.0	1.0	1.0
J	5.6	2.9	0.6	0.5	3.3	2.3	0.8	1.1

Student A is a 12-year-old Caucasian female in seventh grade. She is eligible for special education services under the classification of Communication Impairment.

During the first baseline phase, Student A's mean anxiety level rating was 5.0. Student A's mean anxiety level rating decreased during the first intervention phase to 3.3. During

the second baseline phase when the intervention was removed, Student A’s mean anxiety level rating increased to 5.8 and then decreased with the second intervention phase to 2.4. Student A’s daily anxiety levels throughout the study are shown in Figure 4. As seen in the figure, Student A’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student A’s anxiety level ratings displayed a decrease in both intervention phases.

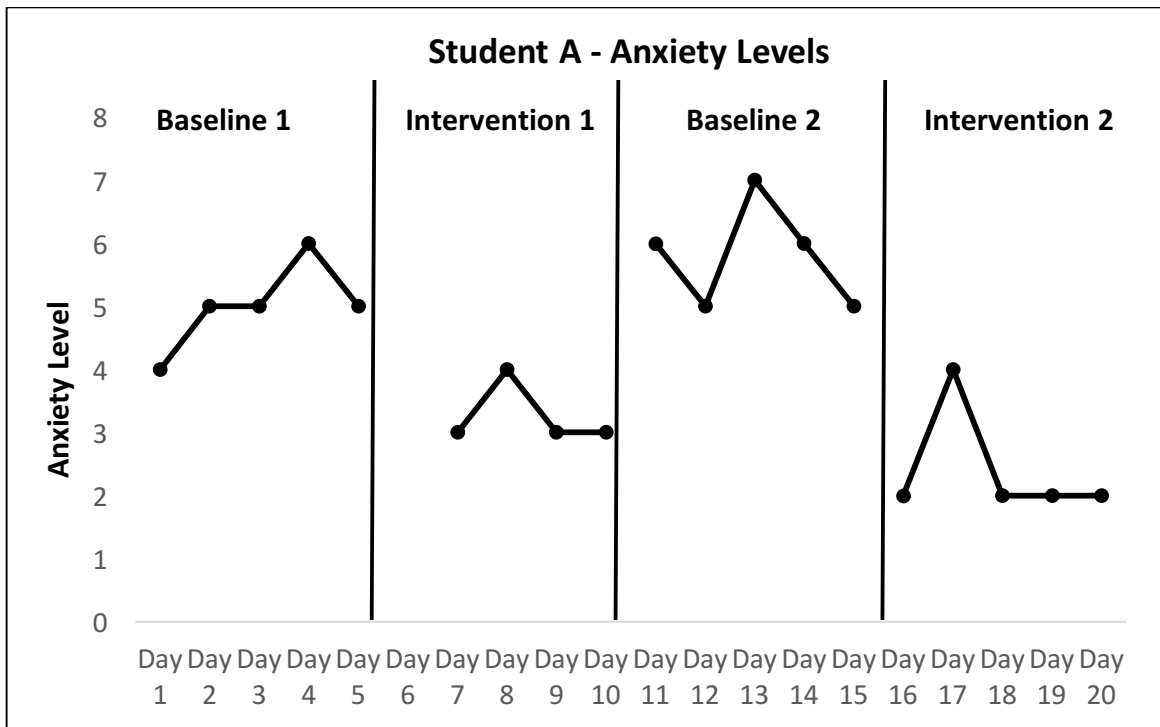


Figure 4. Student A anxiety levels.

Student B is a 12-year-old Caucasian male in seventh grade. He is eligible for special education services under the classification of Other Health Impaired (ADHD). During the first baseline phase, Student B's mean anxiety level rating was 4.0. Student B's mean anxiety level rating decreased during the first intervention phase to 0.8. During the second baseline phase when the intervention was removed, Student B's mean anxiety level rating increased to 4.4 and then decreased with the second intervention phase to 2.0. Student B's daily anxiety levels throughout the study are shown in Figure 5. As seen in the figure, Student B's anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student B's anxiety level ratings displayed a decrease in both intervention phases.

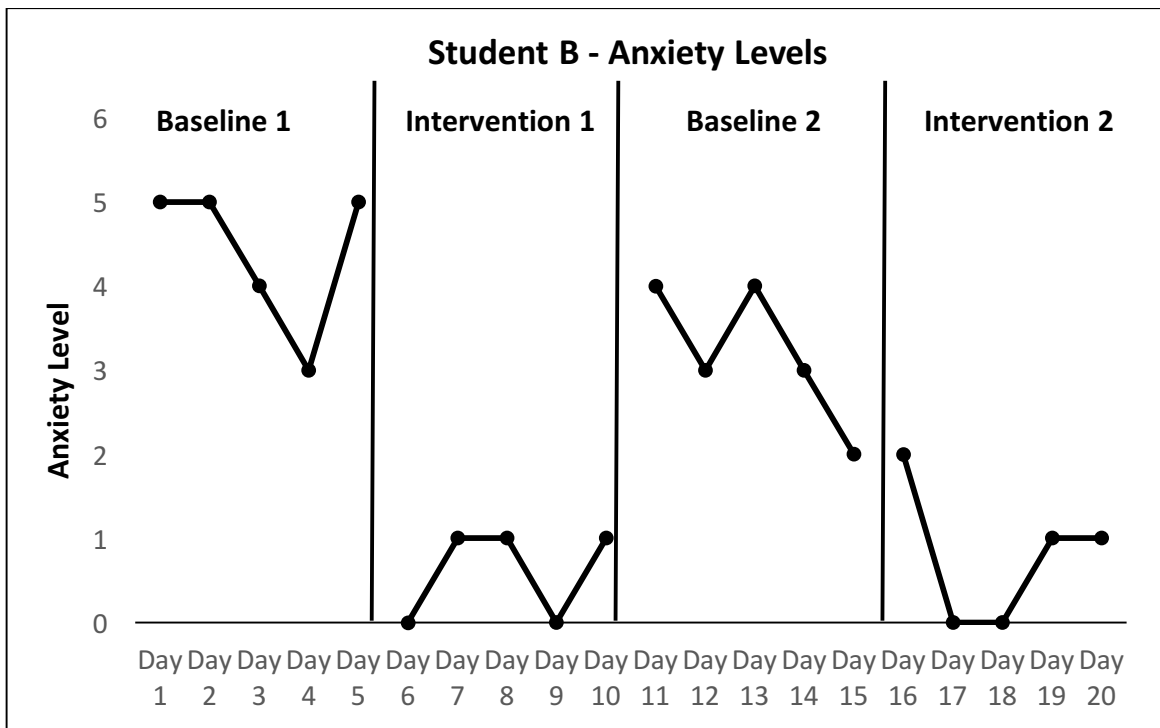


Figure 5. Student B anxiety levels.

Student C is a 13-year-old Caucasian male in seventh grade. He is eligible for special education services under the classification of Emotionally Disturbed (Generalized Anxiety Disorder). During the first baseline phase, Student C's mean anxiety level rating was 4.4. Student C's mean anxiety level rating decreased during the first intervention phase to 0.6. During the second baseline phase when the intervention was removed, Student C's mean anxiety level rating increased to 3.2 and then decreased with the second intervention phase to 0.8. Student C's daily anxiety levels throughout the study are shown in Figure 6. As seen in the figure, Student C's anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student C's anxiety level ratings displayed a decrease in both intervention phases.

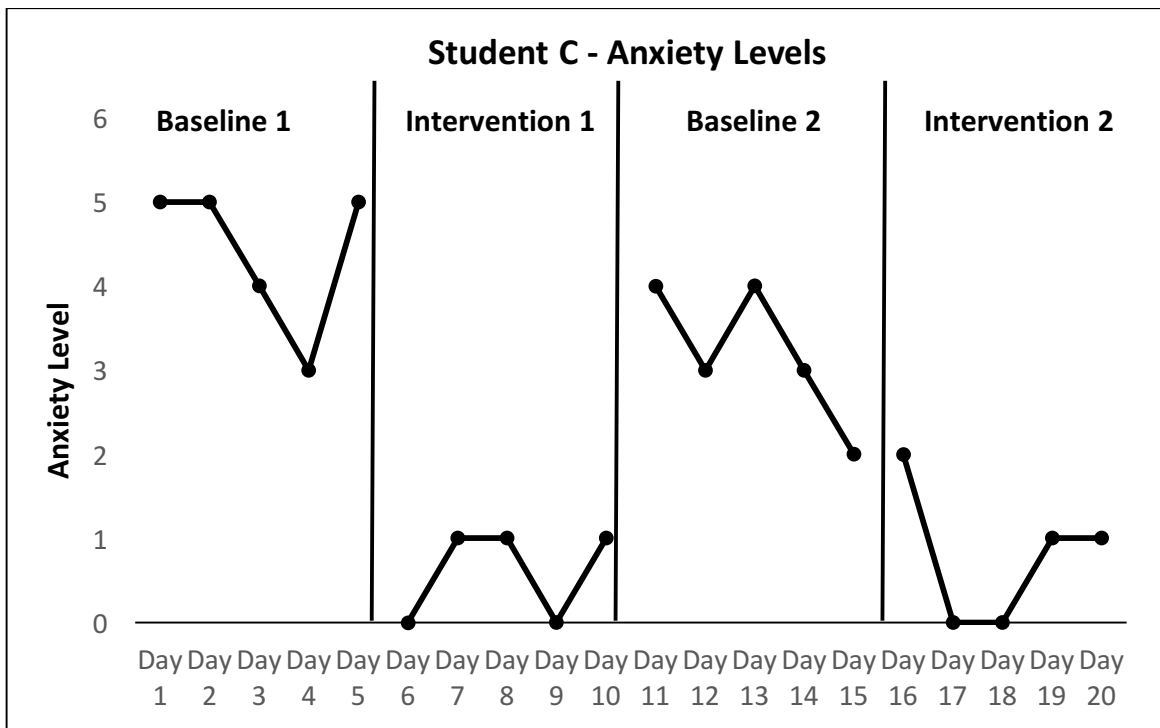


Figure 6. Student C anxiety levels.

Student D is a 13-year-old Hispanic male in seventh grade. He is eligible for special education services under the classification of Communication Impaired. During the first baseline phase, Student D's mean anxiety level rating was 4.0. Student D's mean anxiety level rating decreased during the first intervention phase to 0.6. During the second baseline phase when the intervention was removed, Student D's mean anxiety level rating increased to 2.6 and then decreased with the second intervention phase to 2.5. Student D's daily anxiety levels throughout the study are shown in Figure 7. As seen in the figure, Student D's anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student D's anxiety level ratings displayed a decrease in both intervention phases.

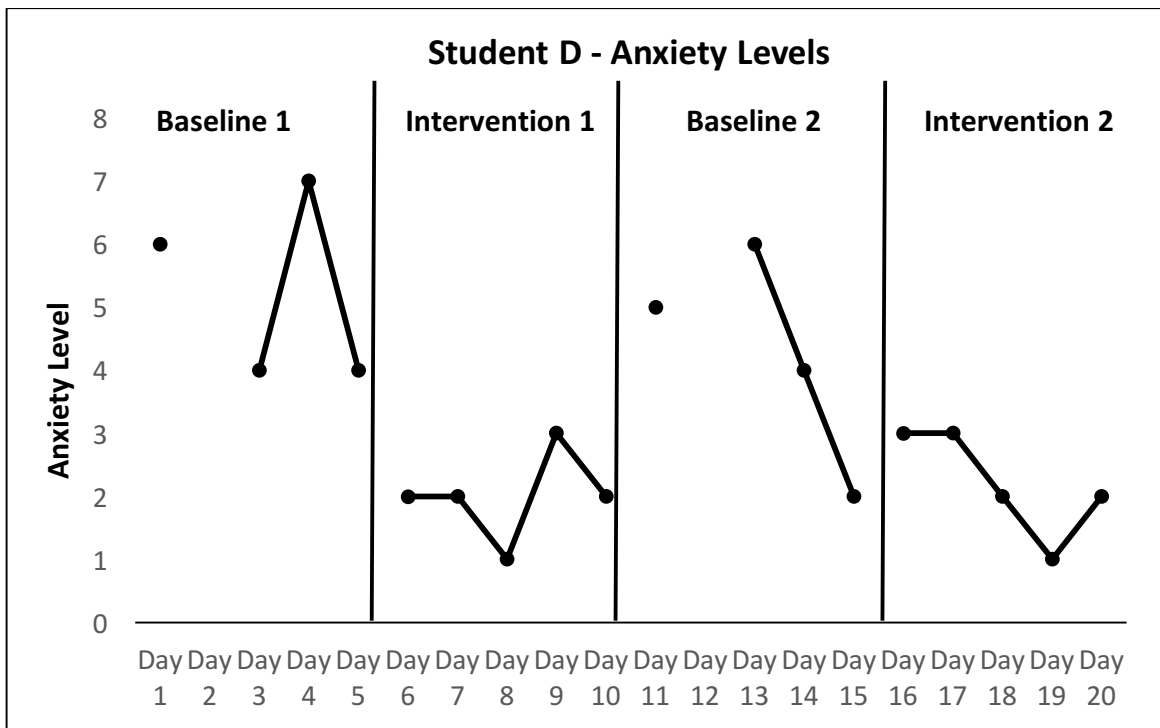


Figure 7. Student D anxiety levels.

Student E is a 13-year-old Caucasian female in seventh grade. She is eligible for special education services under the classification of Other Health Impaired (ADHD). During the first baseline phase, Student E’s mean anxiety level rating was 5.3. Student E’s mean anxiety level rating decreased during the first intervention phase to 2.0. During the second baseline phase when the intervention was removed, Student E’s mean anxiety level rating increased to 4.3 and then decreased with the second intervention phase to 2.2. Student E’s daily anxiety levels throughout the study are shown in Figure 8. As seen in the figure, Student E’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student E’s anxiety level ratings displayed a decrease in both intervention phases.

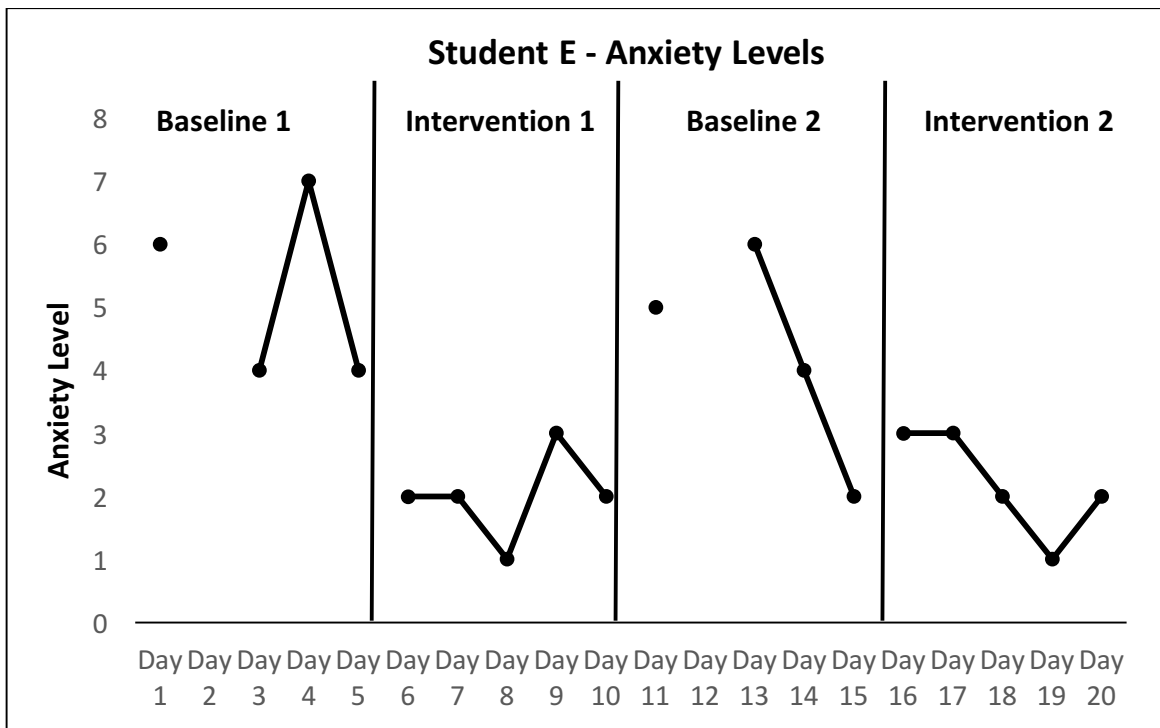


Figure 8. Student E anxiety levels.

Student F is a 13-year-old Caucasian female in seventh grade. She is eligible for special education services under the classification of Emotionally Disturbed (Posttraumatic Stress Disorder). During the first baseline phase, Student F’s mean anxiety level rating was 8.3. Student F’s mean anxiety level rating decreased during the first intervention phase to 1.8. During the second baseline phase when the intervention was removed, Student F’s mean anxiety level rating increased to 6.0 and then decreased with the second intervention phase to 3.3. Student F’s daily anxiety levels throughout the study are shown in Figure 9. As seen in the figure, Student F’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student F’s anxiety level ratings displayed a decrease in both intervention phases.

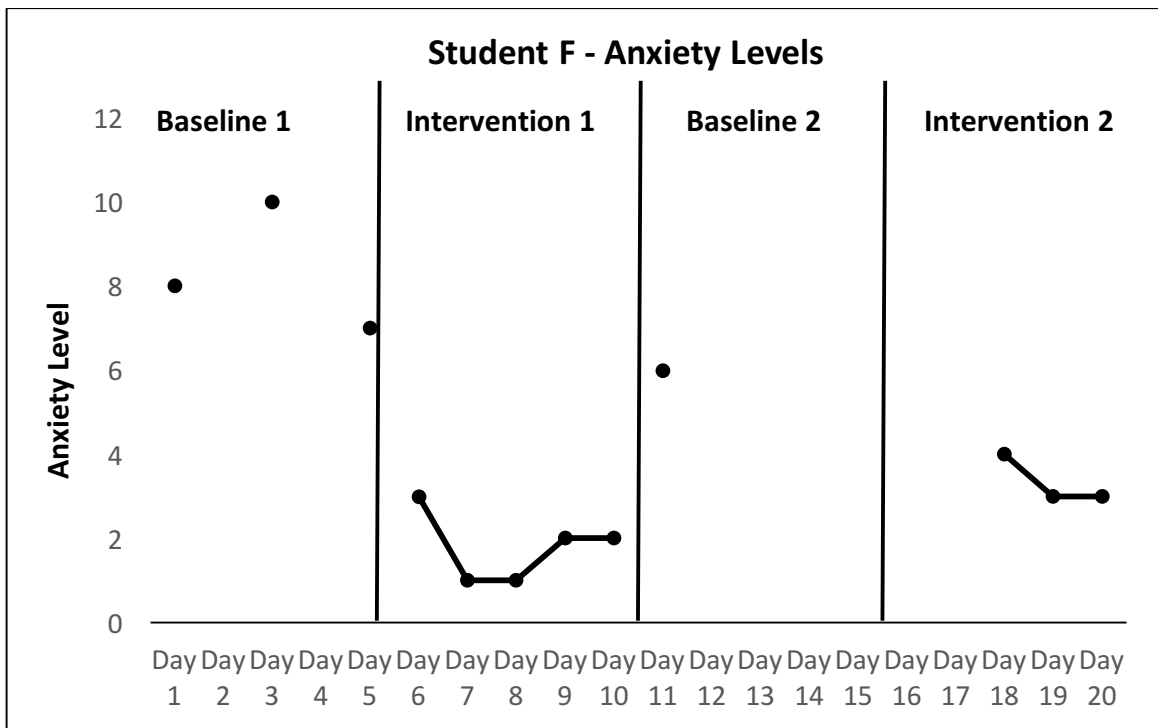


Figure 9. Student F anxiety levels.

Student G is a 12-year-old Caucasian female in seventh grade. She is eligible for special education services under the classification of Autism. During the first baseline phase, Student G’s mean anxiety level rating was 2.6. Student G’s mean anxiety level rating decreased during the first intervention phase to 0.4. During the second baseline phase when the intervention was removed, Student G’s mean anxiety level rating increased to 3.0 and then decreased with the second intervention phase to 0.8. Student G’s daily anxiety levels throughout the study are shown in Figure 10. As seen in the figure, Student G’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student G’s anxiety level ratings displayed a decrease in both intervention phases.

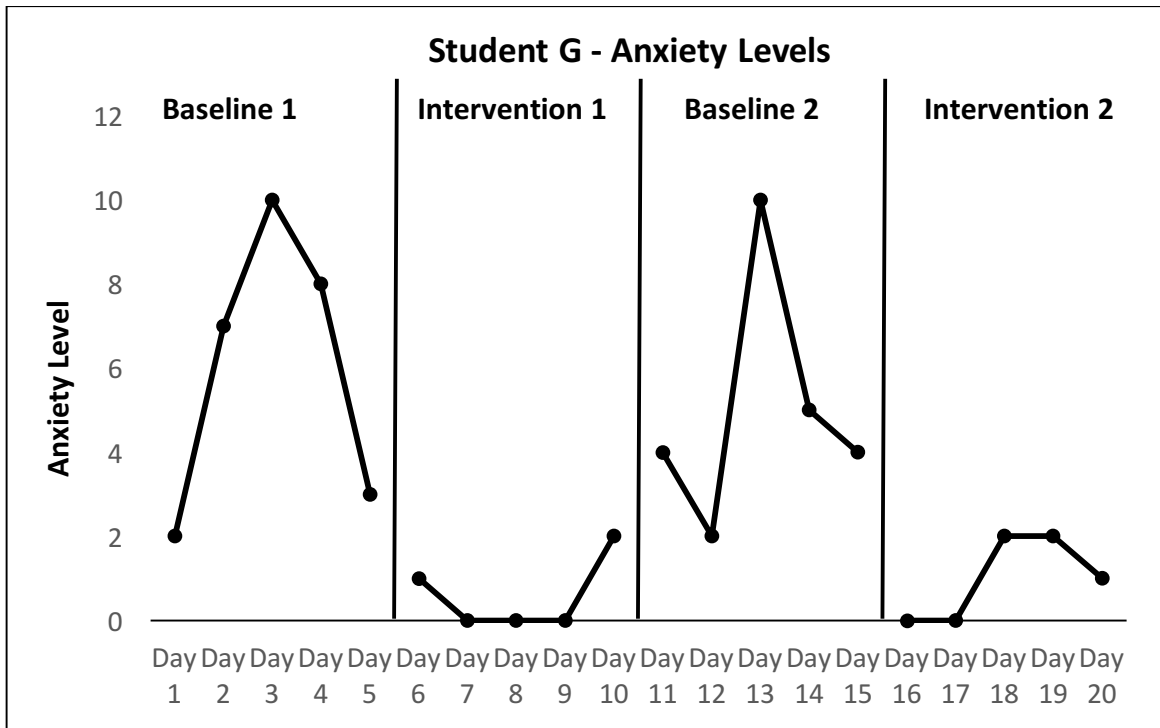


Figure 10. Student G anxiety levels.

Student H is a 12-year-old Caucasian female in seventh grade. She is eligible for special education services under the classification of Specific Learning Disability (Dyscalculia). During the first baseline phase, Student H’s mean anxiety level rating was 6.4. Student H’s mean anxiety level rating decreased during the first intervention phase to 2.2. During the second baseline phase when the intervention was removed, Student H’s mean anxiety level rating increased to 8.0 and then decreased with the second intervention phase to 2.4. Student H’s daily anxiety levels throughout the study are shown in Figure 11. As seen in the figure, Student H’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student H’s anxiety level ratings displayed a decrease in both intervention phases.

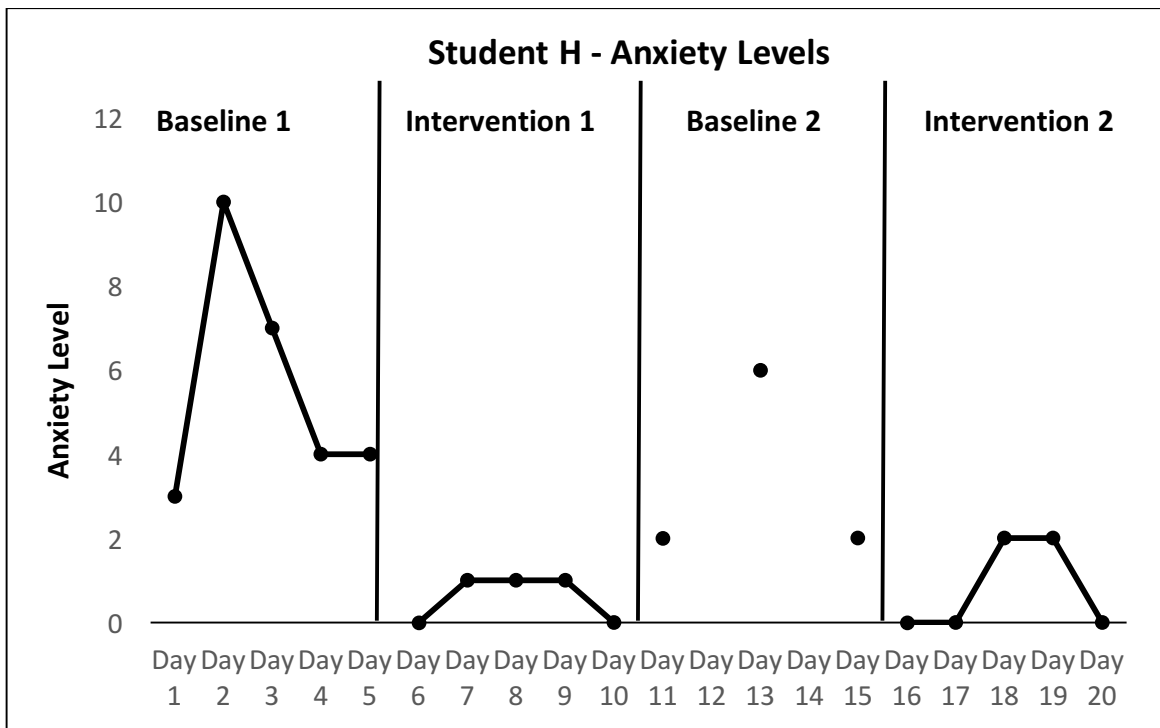


Figure 11. Student H anxiety levels.

Student I is a 12-year-old Asian male in seventh grade. He is eligible for special education services under the classification of Specific Learning Disability (Dyslexia). During the first baseline phase, Student I's mean anxiety level rating was 6.0. Student I's mean anxiety level rating decreased during the first intervention phase to 0.6. During the second baseline phase when the intervention was removed, Student I's mean anxiety level rating increased to 5.0 and then decreased with the second intervention phase to 1.0. Student I's daily anxiety levels throughout the study are shown in Figure 12. As seen in the figure, Student I's anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student I's anxiety level ratings displayed a decrease in both intervention phases.

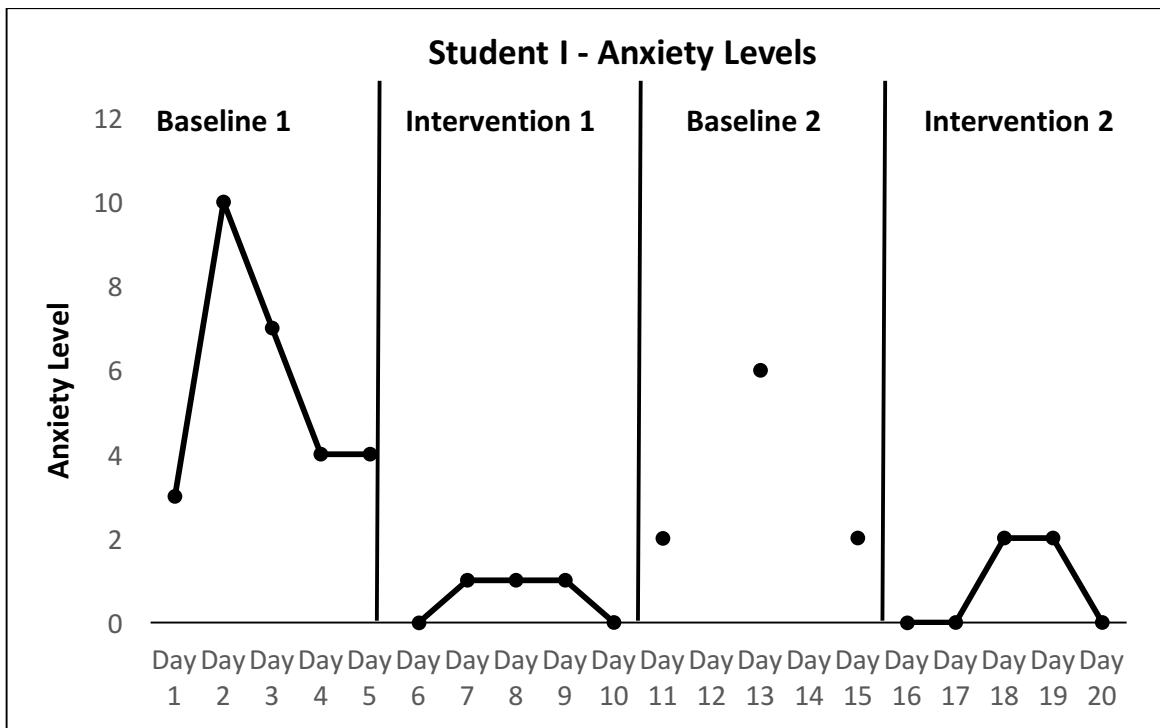


Figure 12. Student I anxiety levels.

Student J is a 12-year-old Caucasian male in seventh grade. He is eligible for special education services under the classification of Communication Impaired. During the first baseline phase, Student J’s mean anxiety level rating was 5.6. Student J’s mean anxiety level rating decreased during the first intervention phase to 0.6. During the second baseline phase when the intervention was removed, Student J’s mean anxiety level rating increased to 3.3 and then decreased with the second intervention phase to 0.8. Student J’s daily anxiety levels throughout the study are shown in Figure 13. As seen in the figure, Student J’s anxiety level ratings increased during the baseline phases. When the animal-assisted therapy was introduced, Student J’s anxiety level ratings displayed a decrease in both intervention phases.

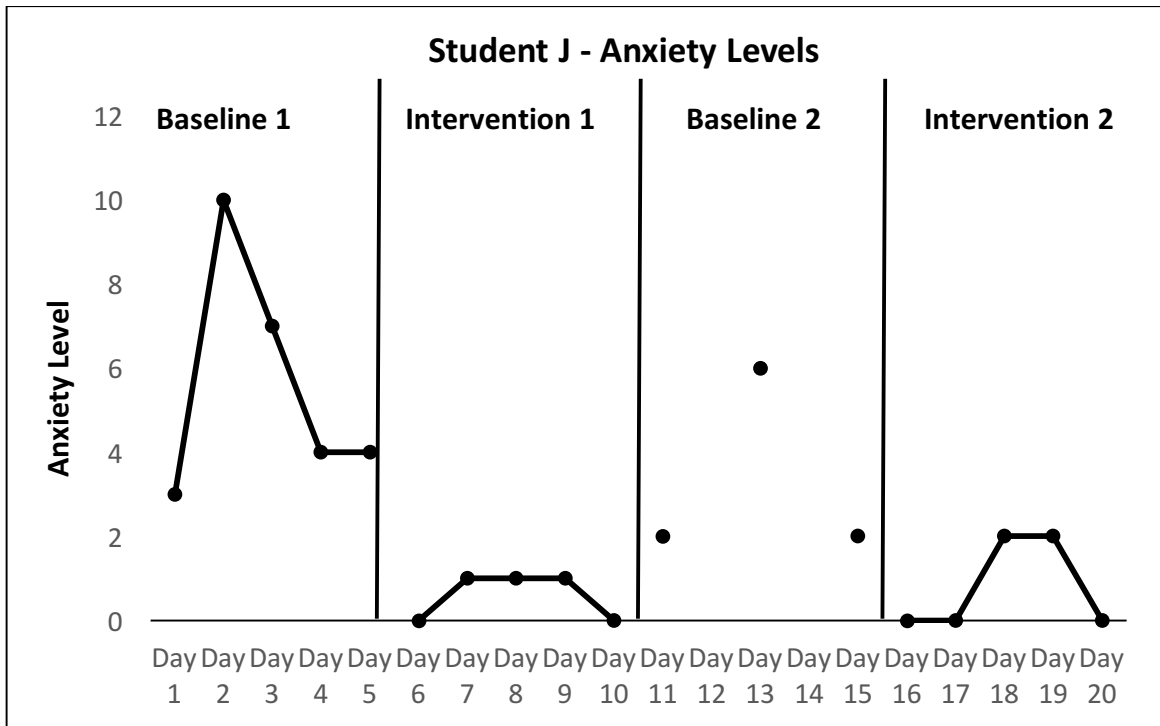


Figure 13. Student J anxiety levels.

Student School Attendance

The attendance of students was taken during each day of the study and converted into percentages. The percentage of the student's weekly five-day attendance during each baseline and intervention phase is presented below in Table 3.

Table 3

Student Attendance

Student	Baseline 1	Intervention 1	Baseline 2	Intervention 2
	Mean	Mean	Mean	Mean
A	100	80	100	100
B	100	100	100	100
C	100	100	100	100
D	100	100	100	80
E	80	100	80	100
F	60	100	20	60
G	100	100	100	100
H	100	100	100	100
I	100	100	100	100
J	100	100	60	100

Student A had the highest attendance during the first baseline, second baseline, and second intervention phases with 100% attendance. Her lowest attendance was during the first intervention phase with 80% attendance. She was absent once during the entire study. This absence took place during the first day of the first intervention phase due to her presence on a family trip.

Student B had 100% attendance during this study. He consistently attended all class periods during the first and second baseline and intervention phases.

Student C had 100% attendance during this study. He consistently attended all class periods during the first and second baseline and intervention phases.

Student D had the highest attendance during the first baseline, first intervention, and first baseline phases with 100% attendance. His lowest attendance was during the second intervention phase with 80% attendance. He was absent once during the entire study. This absence took place during the first day of the second intervention phase due to illness with an ear infection.

Student E had the highest attendance during the first and second intervention phase with 100% attendance. Her lowest attendance was during the first and second baseline phase with 80% attendance. She was absent during the second day of the first baseline phase and the second day of the second baseline phase due to illness with a stomachache.

Student F had the highest attendance during the second intervention phase with 100% attendance. Her lowest attendance was during the second baseline phase with 20% attendance. She was absent eight times during the entire study. The first two absences took place during the second and fourth day of the first baseline phase due to school

anxiety. The last six absences took place consecutively from the second day of the second baseline phase to the second day of the second intervention phase due to illness with a diagnosis of the flu.

Student G had 100% attendance during this study. She consistently attended all class periods during the first and second baseline and intervention phases.

Student H had 100% attendance during this study. She consistently attended all class periods during the first and second baseline and intervention phases.

Student I had 100% attendance during this study. He consistently attended all class periods during the first and second baseline and intervention phases.

Student J had the highest attendance during the first baseline, first intervention, and second intervention phases with 100% attendance. His lowest attendance was during the second baseline phase with 60% attendance. He was absent twice during the entire study. These absences took place on the first and second day of the second baseline phase due to illness with a cold.

Likert Scale Survey Results

All ten students voluntarily completed a Likert scale survey after the completion of the second animal-assisted therapy intervention phase. Results were tallied and then converted into percentages based upon student answers. The student response percentages for each category in the five-statement Likert scale survey are presented in Table 4.

Table 4

Likert Scale Survey Percentage Results

Statements	Strongly Agree (%) 5	Agree (%) 4	Undecided (%) 3	Disagree (%) 2	Strongly Disagree (%) 1
1. I wanted to go to school because Thor was coming to class.	30	60	10	0	0
2. I looked forward to seeing Thor every day I came to class.	60	30	10	0	0
3. I enjoyed getting to pet Thor during the class period.	70	20	10	0	0
4. Thor made me smile, laugh, and/or feel happier in class.	50	40	10	0	0
5. Thor made me feel less anxious in the classroom.	50	40	10	0	0

As displayed in Table 4, a score of a 4 or 5 represents that the students agreed or strongly agreed with the corresponding statement. If a student responded with a score of 3, it demonstrates that they are undecided about the statement. If a student responded with a score of 1 or 2, it demonstrates that the students disagreed or strongly disagreed

with the corresponding statement. Almost all participants strongly agreed or agreed with all five statements in the survey. In particular, the majority of students strongly agreed with the statement “I enjoyed getting to pet Thor during the class period”. Also, over half of the student participants strongly agreed with the statements “I looked forward to seeing Thor every day I came to class”, “Thor made me smile, laugh, and/or feel happier in class”, and “Thor made me feel less anxious in the classroom”. Only one student in the study indicated an undecided rating for all five survey statements. Overall, Table 4 indicates that the majority of students enjoyed having Thor in the science classroom with them.

Chapter 5

Discussion

The purpose of this study was to determine the effectiveness of AAT as an intervention for improving anxiety levels and school attendance for middle school students with disabilities. At the conclusion of the study, student participants were asked to complete a voluntary Likert scale satisfaction survey to assess their feelings toward the AAT intervention.

Findings

The results of the study demonstrate a successful AAT intervention for both decreasing student anxiety levels and increasing student attendance. As a group, the student participants decreased their collaborative mean anxiety levels by nearly half. The highest recorded mean in each baseline intervention phase was an 8.3 and an 8.0, while the highest mean in each intervention phase was a 3.3. Also, student participants demonstrated an increase in attendance as a group. In the baseline phases, their mean attendance was 90% as compared to 96% in the intervention phases with AAT. Furthermore, the majority of students noted on their Likert scale survey that they enjoyed interacting with Thor in the classroom.

In agreement with the findings of Kogan et al. (1999) and Anderson and Olson (2006), this study demonstrates a positive change in the behavior and anxiety level of the students. All student participants reported some level of decrease in feelings of stress from the baseline to intervention phases. It is also noted that when students were observed in the classroom, they seemed happier in the intervention phases as compared to the baseline phases. Student participants were witnessed smiling and laughing as they

approached and pet Thor. Furthermore, student participants treated their classmates with kindness and used appropriate social skills as they took turns petting Thor during the designated class time.

In addition, it was found that overall student attendance increased in the intervention phases as compared to the baseline phase. As with the findings of Zents et al. (2017), students often expressed wanting to come to school the next time the dog was going to be in the classroom. The increase in attendance during the AAT was approximately 6% even though the class already had good attendance in general before the intervention was introduced. However, the student with school phobia due to PTSD, Student F, had inconclusive attendance results due to contracting the flu. This student was out for over a week and unfortunately could not interact with the dog as much as necessary for a conclusive result. It is noted that when the student was available to participate in AAT, she shared with teachers and other students that she was happy to come to school because Thor was present.

Finally, it was observed through the study that students were satisfied with the AAT intervention in the classroom and this student satisfaction corroborates the findings of Zents et al. (2017). As evidenced by the Likert scale survey responses, all but one student agreed or strongly agreed that they felt less stressed and enjoyed having Thor in the classroom. Only one student selected 'undecided' for each survey statement. It is also noted, in agreement with the findings of Esteves and Stokes (2008) that adults in the classroom and school building showed happiness and reduced stress when Thor was present. Both students and staff members displayed smiles, laughs, and excitement when participating in AAT.

Limitations

The present study had two main limitations. The first limitation is the frequency of student absences. Overall, many students did their best to attend school in a consistent manner. However, due to the winter season breeding sickness in the school building, some students did occasionally become ill. The most common sicknesses were colds, sinus infections, and stomachaches. One student in particular, Student F, was diagnosed with the flu and missed six consecutive days of school. Usually, she is a student that frequently misses school because of anxiety. When she was diagnosed with the flu, it was difficult to conclude the effects of AAT on her anxiety levels and school attendance as she had excusable absences.

The second limitation is the time period in which the study was conducted at the school. Since data collection took place in the winter months of January and February, there were many interruptions in the school day schedule due to snow and extreme cold weather. There were two days during the study where a delayed opening schedule was implemented, meaning that school started an hour and a half later than the usual opening time. Therefore, the typical class time where students would meet for science started later in the day. Also, class times were shortened by roughly ten minutes. Due to the shortened time periods, much of the schedule was rushed that day in order to accommodate for the time change. This schedule change due to weather events may have affected student anxiety levels and/or attendance during the school day.

Implications and Recommendations

Despite the limitations of the study, it demonstrates that student anxiety levels decreased while class attendance increased for most of the student participants. Students

enjoyed seeing Thor around the hallways and in their classroom, and they enjoyed having time to pet him during class time. Thor proved himself to be a well-behaved and patient dog with the students throughout the study. An implication for practice for teachers includes the recommendation that a therapy dog, service dog, or either therapy or service dog in training should be used in further studies. Dogs who are currently in training or already trained have been exposed to a variety of social situations and people, as well as being exposed to obedience training needed to act appropriately in the classroom.

Based on the findings of this study, teachers may strongly consider the use of AAT in the classroom to increase student presence in the classroom as well as decreasing their anxiety levels while learning. The findings of this study add to current research on the effects of animal-assisted therapy with dogs in the classroom. It is noted that further research is still necessary based on the academic, social, and behavioral needs of the students in the classroom. Additional research is still needed when it comes to the best practice in implementing AAT into individual classrooms.

The implications for future research involving the use of AAT with trained dogs include recommendations for studies involving decreasing distracting or troublesome student behaviors in the classroom. Also, future studies can also include the study of the stress levels of staff members in the building in addition to that of students. Researchers may also consider increasing the duration of both the baseline and intervention phases in order to ensure a strong correlation between animal-assisted therapy and student anxiety levels and attendance.

Conclusions

Overall, it appears that the use of AAT in the classroom was effective in decreasing student anxiety as well as improving attendance for students. Students reported less stress on days in which they interacted with Thor, and they seemed to be motivated to attend school knowing that they would see him during their regularly scheduled science class. Additionally, student participants in the study expressed a high level of content with the AAT intervention, as evidenced by their responses in the Likert scale satisfaction survey.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.
- Amerine, J. L., & Hubbard, G. B. (2016). Using animal-assisted therapy to enrich psychotherapy. *Advances in mind-body medicine*, 30(3), 11-11.
- Anderson, K. L., & Olson, M. R. (2006). The value of a dog in a classroom of children with severe emotional disorders. *Anthrozoös*, 19(1), 35-49.
- Beetz, A. (2013). Socio-emotional correlates of a schooldog-teacher-team in the classroom. *Frontiers in psychology*, 4, 886.
- Esteves, S. W., & Stokes, T. (2008). Social effects of a dog's presence on children with disabilities. *Anthrozoös*, 21(1), 5-15.
- Friesen, L. (2010). Exploring animal-assisted programs with children in school and therapeutic contexts. *Early childhood education journal*, 37(4), 261-267.
- Glover, J., & Fritsch, S. L. (2018). # KidsAnxiety and social media: a review. *Child and Adolescent Psychiatric Clinics*, 27(2), 171-182.
- Green, S. A., Berkovits, L. D., & Baker, B. L. (2015). Symptoms and development of anxiety in children with or without intellectual disability. *Journal of Clinical Child & Adolescent Psychology*, 44(1), 137-144.
- Hajar, R. (2015). Animal-assisted therapy. *Heart views: the official journal of the Gulf Heart Association*, 16(2), 70.
- Jalongo, M. R. (2008). Beyond a pets theme: Teaching young children to interact safely with dogs. *Early Childhood Education Journal*, 36(1), 39-45.
- Kirby, A. (2018). REFUSAL: Kids who just say no to school. *The Education Digest*, 83(8), 41-43.
- Kogan, L. R., Granger, B. P., Fitchett, J. A., Helmer, K. A., & Young, K. J. (1999). The human-animal team approach for children with emotional disorders: Two case studies. *Child and Youth Care Forum*, 28(2), 105-121.
- Kotrschal, K., & Ortbauer, B. (2003). Behavioral effects of the presence of a dog in a classroom. *Anthrozoös*, 16(2), 147-159.
- Levinson, B. M. (1978). Pets and personality development. *Psychological Reports*, 42(3_suppl), 1031-1038.

- Li, H., & Morris, R. J. (2007). Assessing fears and related anxieties in children and adolescents with learning disabilities or mild mental retardation. *Research in developmental disabilities, 28*(5), 445-457.
- Marcus, D. A. (2013). The science behind animal-assisted therapy. *Current pain and headache reports, 17*(4), 322.
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(10), 980-989.
- Moran, K. (2016). Anxiety in the classroom: Implications for middle school teachers. *Middle School Journal, 47*(1), 27-32.
- Odendaal, J. S. (2000). Animal-assisted therapy—magic or medicine? *Journal of psychosomatic research, 49*(4), 275-280.
- Tyrrell, M. (2005). School phobia. *The journal of school nursing, 21*(3), 147-151.
- 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.