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AN ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATION ASSISTANCE DOGS
AND THE ATTENDANCE, VERBAL COMMUNICATION UTTERANCES, AND
MALADAPTIVE BEHAVIORS OF SELF-CONTAINED SPECIAL EDUCATION
STUDENTS IN ONE FLORIDA SCHOOL DISTRICT

by

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A dissertation in practice submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Educational Leadership and Higher Education,
in the College of Community Innovation and Education
at the University of Central Florida
Orlando, Florida

Summer Term
2020

Major Professor: Thomas Vitale

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ABSTRACT

The purpose of this study was to examine the relationship between the introduction of education assistance dogs (EAD) on the attendance, verbal communication utterances, and maladaptive behaviors of students on behavior intervention plans who were enrolled in self-contained, special education classrooms. Teachers in two elementary classrooms and one middle school classroom gathered data on the three areas of focus. The researcher then utilized a single subject design and corresponding line graphs to represent the data. The results indicated a positive trend in the scores for verbal communication utterances and maladaptive behaviors among targeted students after end introduction of the EAD. The results were inconclusive for student attendance. These results suggested that the large, urban, Central Florida school district in which the study was conducted may want to consider continuation of the EAD program to gather additional data.

This dissertation is dedicated to all students who have special needs and the people who support them.

ACKNOWLEDGMENTS

I have always been inspired by the quote from Mahatma Ghandi, “Be the change you wish to see in the world.” I took on the challenge of a doctoral program for that very reason. I wish to make a difference in this world.

My motivation to become a special educator was stimulated by the experience of growing up with two aunts who had special needs. Although they have both passed away now, I owe my career and a debt of gratitude to Mary Jane Derflinger and Lois Horn, who taught me the important lessons of patience and compassion.

I want to thank the teachers and paraprofessionals who initiated the Education Assistance Dog program and those who continue to carry the torch into the future. Annemarie Atkinson, Katherine Bradley Eyerly, Kaitlyn Chamberlin, Karen Corbett, Denise D’Amario, Stephanie Diehl, Tina Giacobbe, Kristin Martin, Crystal Nori-Gross, Mariaelena Torres, and Jennifer Wrona, this dissertation would not have been possible without the countless training hours and endless work you dedicated to making this program (and our students) a success. Likewise, thanks goes out to our EAD dogs: Annie, Apple, Blair, Curly, Haven, Kailani, Murphy, Sterling, and Welch.

Completing this doctoral degree was aided by my personal cheerleading squad at work, including Chrissy Bauer, Jeanette Johnson, Yolanda Rodriguez-Brinkley, and Beth Davis (who knows what it’s like to write a dissertation for UCF!) Thanks also to my supervisors, Lisa Overton, who suggested that I consider majoring in Education Leadership, and Linda Schroder-King, who never failed to ask about my studies when I saw her.

I also want to thank my committee chair, Dr. Thomas Vitale, for his advice, feedback, and humor. The members of my committee, Dr. Lee Baldwin, Dr. Constance Goodman, and Dr. Amy Flowers, were an integral part of the dissertation process. I appreciate the time and care they took to provide me with feedback and edits, ensuring that my study was solid.

Thanks also to Terrie Sypolt, the research librarian for educational programs at UCF. Ms. Sypolt spent multiple hours with me, devising search terms, establishing accounts, and helping me to locate literature relating to my study.

To all of the members of Cohort VIII, especially Rachel Adams, Soraya Smith, Stephanie Stan, Chrissy Steppi, and Eileen Warder, I want to thank each of you for your support and friendship. We talked each other down from a few ledges and cheered one another across the finish line. I will never forget the experiences I had with this incredible group of people.

My parents, Arlene and Ron Derflinger, were a source of strength and support throughout this doctoral program. I want to thank them for their encouragement to pursue this dream of mine, for their enthusiasm throughout the process, and for their understanding when my academic commitments got in the way of other things. I love you both more than words can say. Thank you for everything.

Finally, a special thank you goes out to my husband, Gregory S. Lucas. We began this journey both engaged in academic pursuits, and we both came out stronger and more determined at the end. Thank you for giving me space when I needed it and for calling me out on my procrastination (more than once!) I love you very much.

The three years spent in this doctoral program went by very quickly. It was a time of tremendous relationship-building, collaboration, and academic growth that helped to define each

of the eighteen members of Cohort VIII as both researchers and instructional leaders. In addition to academics, we celebrated each other's joys through four weddings, two babies, and numerous job promotions during our time together. We also faced collective disappointment when our cohort celebration was canceled, and our doctoral experience ended in isolation due to the Corona Virus. I will never forget this time in my life.

I would like to conclude where I began, with another quote from Mahatma Ghandi. I feel that my cohort members and I became the essence of these words over the last three years. "Live as if you were to die tomorrow. Learn as if you were to live forever." Thank you.

TABLE OF CONTENTS

LIST OF FIGURES	xiv
LIST OF TABLES	xv
LIST OF ABBREVIATIONS	xvi
CHAPTER ONE: THE PROBLEM AND ITS CLARIFYING COMPONENTS	1
Background of the Study	1
Statement of the Problem	3
Purpose of the Study	4
Significance of the Study	5
Definition of Terms	5
Research Questions	7
Limitations	7
Delimitations	9
Assumptions	9
Conclusions/Justification for the Study	9
Summary	11
CHAPTER TWO: REVIEW OF LITERATURE	12
Introduction	12
Location of Sources	12
Organization of the Literature Review	13
Theoretical Framework	13
Historical Background of Topic	16

Seminal Researcher	16
Emotional and Academic Uses for Animals in Schools	17
Utilizing Service Dogs with Students who have Autism Spectrum Disorder	17
Utilizing Service Dogs for Art and Physical Education Therapy	20
Utilizing Service Dogs to Reduce Anxiety in Students.....	22
Utilizing Service Dogs in Reading Interventions	25
Utilizing Service Dogs with Students who have Emotional and Behavioral Disabilities	29
Utilizing Service Dogs in School Counseling Sessions	32
Main Conclusions from the Literature	34
Gaps Found	34
Summary	37
CHAPTER THREE: METHODOLOGY	39
Introduction	39
Purpose of the Study	39
Research Questions	40
Population and Sample.....	40
Setting.....	41
Data Collection.....	42
University Protocol.....	42
Large Urban School District Protocol	42
Data Collection	43
Procedures	44

Data Analysis	44
Summary	47
CHAPTER FOUR: RESULTS	48
Introduction	48
Research Questions	48
District Population.....	48
School Populations.....	49
Elementary School #1.....	49
Elementary School #2.....	50
Middle School #1.....	51
Classroom Populations.....	51
Elementary School #1.....	51
Elementary School #2.....	52
Middle School #1.....	52
Research Question 1	53
Elementary School #1.....	53
Student One.....	53
Student Two.....	54
Student Three.....	55
Student Four.....	56
Elementary School #2.....	57
Student One.....	58

Student Two.....	58
Middle School #1.....	59
Student One.....	60
Student Two.....	61
Student Three.....	62
Research Question 1 Summary.....	63
Research Question 2.....	66
Elementary School #1.....	67
Student One.....	67
Student Four.....	68
Elementary School #2.....	69
Student One.....	70
Student Two.....	70
Middle School #1.....	71
Student Two.....	72
Student Three.....	73
Research Question 2 Summary.....	73
Research Question 3.....	76
Elementary School #1.....	76
Student One.....	77
Student Two.....	78
Student Three.....	79

Student Four.....	80
Elementary School #2.....	81
Student One.....	82
Student Two.....	83
Middle School #1.....	84
Student One.....	85
Student Two.....	85
Student Three.....	86
Research Question 3 Summary.....	87
Summary	92
CHAPTER FIVE: SUMMARY, DISCUSSION, AND IMPLICATIONS	93
Introduction.....	93
Summary of the Study.....	93
Statement of the Problem	93
Population.....	93
Data Collection	94
Methods	94
Discussion of the Findings	95
Research Question 1	95
Research Question 2	95
Research Question 3	96
Implications and Recommendations for Practice.....	97

Recommendations for Further Research	97
Guidelines for Practice and Shared Terminology.....	98
Greater Precision in Research Design	98
Continuation or Replication of the Current Study.....	100
Summary and Conclusion	101
APPENDIX A INSTITUTIONAL REVIEW BOARD APPROVAL.....	104
APPENDIX B SCHOOL DISTRICT IRB APPROVAL	107
APPENDIX C DATA SHEET CREATED BY HEATHER LUCAS AND UTILIZED BY TEACHERS FOR THE EAD PROGRAM	109
REFERENCES	111

LIST OF FIGURES

Figure 1. Educational Benefits of Human-Animal Interaction Theory	14
Figure 2. Line Graph for Research Question 1, Elementary School #1, Student One.....	54
Figure 3. Line Graph for Research Question 1, Elementary School #1, Student Two.....	55
Figure 4. Line Graph for Research Question 1, Elementary School #1, Student Three.....	56
Figure 5. Line Graph for Research Question 1, Elementary School #1, Student Four.....	57
Figure 6. Line Graph for Research Question 1, Elementary School #2, Student One.....	58
Figure 7. Line Graph for Research Question 1, Elementary School #2, Student Two.....	59
Figure 8. Line Graph for Research Question 1, Middle School #1, Student One	61
Figure 9. Line Graph for Research Question 1, Middle School #1, Student Two.....	62
Figure 10. Line Graph for Research Question 1, Middle School #1, Student Three.....	63
Figure 11. Line Graph for Research Question 2, Elementary School #1, Student One.....	68
Figure 12. Line Graph for Research Question 2, Elementary School #1, Student Four.....	69
Figure 13. Line Graph for Research Question 2, Elementary School #2, Student One.....	70
Figure 14. Line Graph for Research Question 2, Elementary School #2, Student Two.....	71
Figure 15. Line Graph for Research Question 2, Middle School #1, Student Two.....	72
Figure 16. Line Graph for Research Question 2, Middle School #1, Student Three.....	73
Figure 17. Line Graph for Research Question 3, Elementary School #1, Student One.....	78
Figure 18. Line Graph for Research Question 3, Elementary School #1, Student Two.....	79
Figure 19. Line Graph for Research Question 3, Elementary School #1, Student Three.....	80
Figure 20. Line Graph for Research Question 3, Elementary School #1, Student Four.....	81
Figure 21. Line Graph for Research Question 3, Elementary School #2, Student One.....	83
Figure 22. Line Graph for Research Question 3, Elementary School #2, Student Two.....	84
Figure 23. Line Graph for Research Question 3, Middle School #1, Student One	85
Figure 24. Line Graph for Research Question 3, Middle School #1, Student Two.....	86
Figure 25. Line Graph for Research Question 3, Middle School #1, Student Three.....	87

LIST OF TABLES

Table 1: Student Attendance Data for Elementary School #1	53
Table 2: Student Attendance Data for Elementary School #2	57
Table 3: Student Attendance Data for Middle School #1	60
Table 4: Summary of Student Absence Data	64
Table 5: Student Communication Data for Elementary School #1	67
Table 6: Student Communication Data for Elementary School #2	69
Table 7: Student Communication Data for Middle School #1	72
Table 8: Summary of Student Communication Data	74
Table 9: Student Behavior Data for Elementary School #1	77
Table 10: Student Behavior Data for Elementary School #2	82
Table 11: Student Behavior Data for Middle School #1	84
Table 12: Summary of Student Maladaptive Behavior Data	88

LIST OF ABBREVIATIONS

AAT	Animal Assisted Therapy
ACD	Augmentative Communication Device
ASD	Autism Spectrum Disorder
BaRK	Building Reading Confidence for Kids
BIP	Behavior Intervention Plan
CBT	Cognitive Behavioral Therapy
CITI	Collaborative Institutional Training Initiative
DHH	Deaf and Hard-of-Hearing
EAD	Education Assistance Dog
EBD	Emotional Behavioral Disability
ELL	English Language Learners
FAPE	Free and Appropriate Public Education
FLDOE	Florida Department of Education
HAI	Human-Animal Interaction Theory
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Educational Program
InD	Intellectual Disability
IRB	Institutional Review Board
LRE	Least Restrictive Environment
PE	Physical Education
READ	Reading Education Assistance Program

CHAPTER ONE: THE PROBLEM AND ITS CLARIFYING COMPONENTS

Background of the Study

The Individuals with Disabilities Education Act (IDEA) was enacted by the United States Congress in 1997 and reauthorized in 2004 (Office of Special Education and Rehabilitative Services, 2016). IDEA contains provisions that entitle all children to a Free and Appropriate Public Education (FAPE) in their Least Restrictive Environment (LRE). To ensure that students receive FAPE, school districts must follow procedures in developing an individualized education program (IEP); and the services outlined in the IEP must be carefully designed to provide educational benefit (Berry & Katsiyannis, 2012). These IEP services can take the form of direct or related special education provisions, supplemental aids and services, and modifications and/or accommodations. Related services include developmental, corrective, and other supportive services as needed to enhance the educational benefits for children with disabilities. One such support that has been the subject of recent case law is the use of service dogs (Berry & Katsiyannis, 2012).

According to Von Bergen (2015), “for centuries, people have noted that animals can have a positive influence on human functioning, and conventional wisdom has long supported the use of animals in promoting human well-being” (p. 18). Health science research includes evidence of physiological, psychological, and emotional health aids that can be derived from human-animal interactions (Von Bergen, 2015); and shows that while animal companionship is therapeutic for many people, unique benefits were found for those individuals with mental or psychiatric disorders.

Boris Levinson, a child psychologist at Yeshiva University Medical School, introduced the concept of animal-assisted therapy during a meeting of the American Psychological Association in 1961. Levinson proposed that playful interaction with dogs could improve socio-communicative abilities of children with autism (Levinson, 1969). To this end, therapy dogs are now observed throughout training for characteristics of calmness, patience, and tolerance for a wide range of actions and noises from humans and the environment around them (Obrusnikova, Bibik, Cavalier & Manley, 2012; Walkup, 2010). Research by Harris and Sholtis (2016) showed that service dogs can help to develop character traits, such as generosity, responsibility, empathy, and patience that can be applied to human relationships in the classroom and beyond. Walkup (2010) described a school where two trained therapy dogs worked. When asked how these dogs, Daisy and Rosie, helped at school, students were reported to have replied, “to help us,” “to keep us from being sad,” and “to be a friend.” Walkup concluded that the dogs “assisted students with special needs as well as students whose needs were special” (Walkup, 2010, p. 40).

There are various types of working animals, and multiple related terms to define their roles. To address the inconsistent vocabulary and confusion, Parenti, Foreman, Jean Meade, and Wirth (2013) proposed a concise taxonomy for classifying assistance animals. These researchers devised five factors which can be used for differentiating the categories of assistance animals, including “(1) whether the animal performs work or tasks related to an individual's disability; (2) the typical level of skill required by the animal performing the work or task; (3) whether the animal is used by public service, military, or healthcare professionals; (4) whether training certifications or standards are available; and (5) the existence of legal public access protections for the animal and handler” (p. 745). After development of the categorization system, Parenti et

al. (2013) established six functional categories. These included: “(1) service animal; (2) public service animal; (3) therapy animal; (4) visitation animal; (5) sporting, recreational, or agricultural animal; and (6) support animal” (p. 745). The development of this taxonomy helped to provide a clear vocabulary for all those impacted by the use of working animals, including consumers, professionals working in the field, researchers, policy makers, and regulatory agencies.

Statement of the Problem

In terms of the current study, the researcher sought to determine if education assistance dogs (EADs) should be incorporated into a large number of self-contained, special education classrooms within a targeted large, urban, Central Florida school district. The program was being implemented, at the time, in three self-contained, special education classrooms. One of the classrooms was for students with autism spectrum disorder, while the other two were for students with intellectual disabilities. The researcher chose to utilize attendance, verbal communication utterances, and maladaptive behaviors as dependent variables, since baseline data indicated that these areas presented the greatest need for intervention throughout the three classes.

Anecdotally, service and therapy dogs appeared to be helpful for a variety of purposes in schools, but unfortunately, there was little statistically significant evidence to support it. In most of the studies reviewed in preparation for this research, the sample sizes utilized by the researchers were too small to be impactful for generalizability (Kayman, 2005; Kirnan, Shah & Lauletta, 2018, Lamkin, 2017; Linder, Mueller, Gibbs, Alper & Freeman, 2018; Rosenburg, 2016). The sample size of nine utilized in the current study was larger than that used by Kayman (2005), Kirnan, Shah & Lauletta, 2018, Lamkin (2017), and Rosenburg (2016) who used four, four, three, and three students, respectively. The current study was smaller than the sample

utilized by Linder et al. (2018), however, whose study featured twenty-eight students. Linder et al. (2018) stood out as having the largest sample size of the studies examined during this literature review.

Contrastingly, the current study was conducted over a lengthier period of time than that of Linder et al. (2018). In that regard, the researcher gathered a greater amount of data and analyzed it in different ways than in previous studies. This study also investigated areas that were not addressed by prior studies, namely attendance and verbal communication utterances; thereby adding substantive information to the existing literature.

Purpose of the Study

Under IDEA, service animals are permitted for use by students as an accommodation, supplementary aid or service on their IEP. These accommodations are written with the intention of providing FAPE for the student. A service animal for a student with disabilities would, thus, be allowed in the school environment when the animal's presence and assistance is documented in the IEP as being necessary for the child to receive the same benefits that are afforded other students (Berry & Katsiyannis, 2012).

Baseline data gathered from three targeted self-contained, special education classrooms in a large, urban, Central Florida school district showed concerns in the areas of attendance, verbal communication utterances, and maladaptive behaviors among the students. To address these concerns, canines known as education assistance dogs (EADs), were trained specifically for use with students who had autism spectrum disorder or other developmental disabilities and were introduced to these three classrooms. Therefore, the purpose of this study was to examine the relationship between the introduction of EADs on the attendance, verbal communication

utterances, and maladaptive behaviors of students in self-contained, special education classrooms.

Significance of the Study

This study aimed to assist special education leaders and district level administrators in the targeted large, urban, Central Florida school district to make informed decisions regarding the placement of EADs in self-contained classrooms. If the data indicated that EADs were more impactful with one specific special education subgroup, such as autism spectrum disorder rather than intellectual disabilities, district leaders could have decided to allocate greater resources toward placing EADs with that population. Moreover, if the data indicated that EADs significantly impacted the targeted data, the program could have been expanded throughout the school district in similar classes, or extended to address additional populations of students, such as those with Emotional and Behavioral Disabilities (EBD), the Deaf and Hard-of-Hearing (DHH) population, or school student bodies as a whole, through the placement of EADs with guidance counselors. Contrastingly, if the EADs did not significantly impact the attendance, verbal communication utterances, or maladaptive behaviors of self-contained students, the program could have been dissolved in favor of pursuing a different intervention entirely.

Definition of Terms

This study utilized the following terms: Animal Assisted Therapy, Attendance, Augmentative Communication Device, Behavior Intervention Plan, Education Assistance Dogs, Maladaptive Behaviors, Self-Contained Classroom, and Verbal Communication Utterances.

Animal-Assisted Therapy - “a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. Animal-Assisted Therapy is directed

and/or delivered by a health/human service professional with specialized expertise, and within the scope of practice of his/her profession. Key features include specified goals and objectives for each individual; and measured progress” (Kruger, Tractenberg, & Serpell, 2004, p. 4).

Attendance: The district of focus in this study collected attendance data in three categories – absence from school, tardiness in the morning, or leaving school early in the afternoon. For the purposes of this study, all three categories were combined into attendance.

Augmentative Communication Device (ACD): an electronic device used to supplement or replace verbal output for individuals with disabilities who cannot utilize natural speech (Henderson, Kyger & Guarino-Murphey, 1998; National Institute on Disability and Rehabilitation Research, 1992).

Behavior Intervention Plan: a plan designed to instruct a student on positive behaviors and reward approximations. It details the problem behavior, the reasons the behavior occurs and the intervention strategies that will address the problem behavior (Coleman Tucker, 2019).

Education Assistance Dogs: a dog, generally a Golden Retriever, Yellow Labrador, or a mix of the two breeds, that has been specifically trained through an organization selected by the targeted school district. EADs are bred by the association and selected for use in schools according to their personality, temperament, and trainability. The mission of these dogs is to promote social, emotional and educational well-being for individuals with autism and other developmental disabilities (Pawsitive Action Foundation, 2017).

Maladaptive Behaviors: disruptive and/or dysfunctional actions displayed by individuals to reduce mental discomfort or anxiety (Maladaptive Behaviors, n.d.). These actions can include

self-harm, tantrums, and aggressive behaviors including, but not limited to hitting, kicking, biting, scratching, spitting, hair-pulling, throwing objects, and eloping.

Self-Contained Classroom: a classroom in which a teacher certified in special education is the instructor of all academic subjects. The classroom is generally separated from general education classrooms but housed within a traditional school setting (Dalien, 2014).

Verbal Communication Utterances: speech produced either through spoken words or via an augmentative communication device (Henderson, Kyger & Guarino-Murphey, 1998; National Institute on Disability and Rehabilitation Research, 1992). For the purpose of this study, verbal communication utterances could have been either positive or negative in nature.

Research Questions

The following were the research questions addressed in this study:

1. What is the relationship between the presence of an EAD on the attendance of special education students enrolled in a self-contained classroom?
2. What is the relationship between the presence of an EAD on the instances of verbal communication utterances exhibited by special education students enrolled in a self-contained classroom?
3. What is the relationship between the presence of an EAD on the instances of maladaptive behaviors exhibited by special education students enrolled in a self-contained classroom?

Limitations

As with many of the studies reviewed in preparation for this research regarding the utilization of service and therapy dogs in schools, the limited sample size impacted the generalizability of this study beyond that of the targeted school district (Kayman, 2005; Kirnan,

Shah & Lauletti, 2018, Lamkin, 2017; Linder et al., 2018; Rosenburg, 2016). Since the EAD program was new to the targeted school district, the number of classrooms hosting dogs was still relatively small.

Additionally, the students examined within this study were not uniform in terms of their age or disability status. Nine students participated in the EAD program during the initial year of implementation. Six of those were elementary aged students, while three were enrolled in middle school. Four of the students were taught in self-contained classrooms for students with autism spectrum disorder, while the remaining five were provided instruction in classrooms targeting students with intellectual disabilities.

The researcher was also unable to control for several extraneous variables. In one of the targeted classrooms for students with intellectual disabilities (InD), the provision of adult assistance available to the students was reduced from three to two. Each self-contained classroom typically had one teacher and two paraprofessionals. In the instance of this classroom, one of the paraprofessionals was removed for another assignment, thereby lessening the amount of time that was dedicated to working with the students, in conjunction with the EAD, on the dependent variables.

Moreover, two of the students being tracked in the elementary ASD classroom experienced extenuating circumstances during the time of the study. The first of these students was the subject of a custody dispute between his parents. The second student had numerous changes occur within his personal life, as reported to the teacher by his parent. He experienced the loss of a grandparent, as well as a move to a new house, and the addition of a grandparent

into his household. All of these factors could have caused an elevation in student behaviors unrelated to the EAD.

Finally, while all of the EADs received training from the same organization, they were ultimately still dogs, and could have each responded differently to students in their assigned classrooms. The EADs were also handled by unique human educators who could have differed according to their level of prompting, provision of treats, and various other factors.

Delimitations

The delimitations utilized by the researcher served the purpose of focusing the scope of the study on the relationship of EADs to the attendance, verbal communication utterances, and maladaptive behaviors of students in self-contained, special education classrooms. Specifically, the researcher focused on classes specializing in students who had autism or intellectual disabilities. Additionally, the researcher concentrated on students who had Behavior Intervention Plans, so as to examine the impact of the EAD on the highest prevalence of maladaptive behaviors.

Assumptions

1. It was anticipated that the EAD program would be renewed for a second school year, thus allowing for the continuation of data collection in anticipation of potential further study.
2. The researcher assumed that all nine students included in the original sample would continue in the study during the second year of implementation.

Conclusions/Justification for the Study

In conclusion, the present study was justified because it shed light upon areas that were previously absent in the literature. Specifically, it tracked the number of absences of students to

determine if an EAD encouraged a decrease from the baseline. Additionally, this study quantified the instances of verbal communication utterances by students in comparison to a baseline score in order to understand if an EAD encouraged a student to build communication abilities. Finally, this study tallied occasions of maladaptive behaviors to determine if the presence of an EAD decreased the instances of these behaviors from a baseline. In gathering these facts, this study contributed to the literature by addressing current gaps. It also presented factual evidence on the impact of EADs in self-contained, special education classrooms, thereby impacting decision-making regarding the future of the program in the targeted large, urban, Central Florida school district, and potential placement within other school districts.

Summary

This study introduced new research into the existing literature on the use of animal-assisted therapies in schools. While previous literature demonstrated positive trends associated with the interaction of service dogs and therapy dogs with students in areas such as reading, physical education, art, and counseling, no known studies had focused on the relationship between such dogs on student attendance and verbal communication utterances. In addition, while several studies placed emphasis on minimizing anxiety or controlling emotions, none specifically traced the reduction in instances of maladaptive behaviors. This study sought to examine such relationships in an effort to demonstrate new ways in which dogs could play an instrumental role in assisting student achievement.

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

Animal-assisted therapy (AAT) has existed since 1961, when it was proposed by Boris Levinson, a child psychologist at Yeshiva University Medical School, during a meeting of the American Psychological Association (Levinson, 1969). Levinson developed the idea of AAT after observing one of his non-verbal patients begin talking to his dog, Jingles (Geist, 2013).

Research has since shown that service dogs can help to develop character traits, such as generosity, responsibility, empathy, and patience that can be applied to human relationships in the classroom and beyond (Harris & Sholtis, 2016). According to Von Bergen (2015), animal companionship may be considered therapeutic for many people, however, unique benefits were found for those individuals with mental or psychiatric disorders. The current study concentrated on analyzing the relationship between Education Assistance Dogs (EAD) and the attendance, verbal communication utterances, and maladaptive behaviors of self-contained, special education students in one large, urban, Central Florida school district.

Location of Sources

The studies cited within this literature review were located within multiple databases and online libraries including Education Source, ERIC, ProQuest Education Journal, PsycInfo, SAGE Journals, Sage Research Methods, Science Direct, Springer LINK, Taylor & Francis Journals, Web of Science, and the University of Central Florida Educational Leadership Database for Dissertations. These databases and online libraries were utilized to locate peer-reviewed journals, articles, books, and dissertations relating to the topics of assistance dogs, students with disabilities or mental health concerns, and school settings. The following search

terms were employed to pinpoint the most relevant studies: “service dogs” or animals, autism or disabilities or intellectual disability or “special education,” emotional behavioral disability, schools or education or classrooms, children or students, “sensory signal dogs,” “autism assistance dogs,” counseling, anxiety, reading, art, and physical education.

The publication dates of the sources explored within this chapter range predominantly between the years of 2001 to 2019, with only two sources being representative of prior years. One such preceding source was published in 1969. This work was included to reflect the research of Boris Levinson, the seminal investigator in the field of AAT.

Organization of the Literature Review

A review of the literature showed that service animals have performed multiple purposes within schools. Beginning with an introduction to animal assisted therapy via the seminal researcher in the field, Boris Levinson, the scope of this literature review focused strictly on emotional and academic purposes. After eliminating literature citing physical purposes for AAT, six categories emerged involving emotional and academic uses for animals with children or in schools. This literature review was divided into six sections based upon these categories. These included: working with students diagnosed as having autism spectrum disorder, sharing in art and physical education therapy, reducing anxiety in children, participating in reading intervention, assisting students identified as having Emotional and Behavioral Disabilities (EBD), and helping students through counseling sessions.

Theoretical Framework

The researcher found that several of the studies and books examined during the literature review process utilized the Human-Animal Interaction (HAI) Theory either as their theoretical

framework or as an explanatory concept (Davis, Scalzo, Butler, Stauffer, Farah, Perez, Mainor, Clark, Miller, Kobylecky & Coviello, 2015; Esposito, McCune, Griffin, & Maholmes, 2011; McCune, Kruger, Griffin, Esposito, Bures, Hurley & Gee, 2019; McCune, Kruger, Griffin, Esposito, Freund, Hurley, & Bures, 2014; O’Haire, McKenzie, McCune, & Slaughter, 2014; Triebenbacher, 2006). The concept inherent to HAI is that animals have a connection to people that benefits them in both physical and psychological ways (Gee, Griffin and McCardle, 2017). Researchers familiar with HAI indicated through their studies and scholarly writing that humans often rely upon animals during times when they are seeking non-judgmental social interaction (Esposito et al., 2011; McCune et al., 2014). According to McCune et al. (2019), animals are able to support humans during social situations by serving as either a direct source of comfort, or as an indirect facilitator of interactions between people. When specifically working with children, animals may represent comfort and safety, or serve as an intermediary in uncomfortable situations to alleviate distress and diminish negative behaviors (Triebenbacher, 2006).

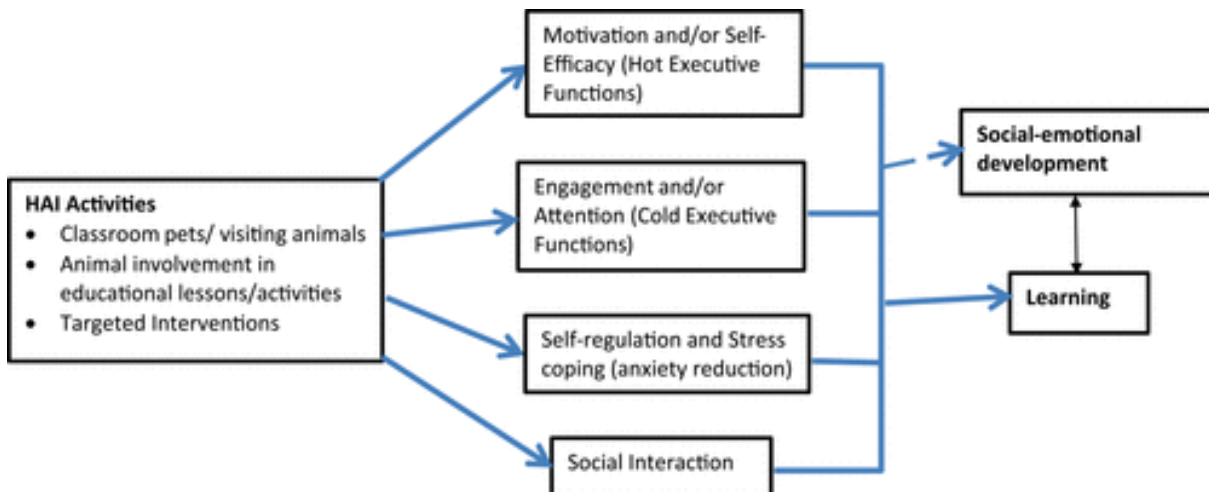


Figure 1. Educational Benefits of Human-Animal Interaction Theory (Gee, Griffin, & McCardle, 2017, p. 3).

Figure 1, by Gee, Griffin and McCardle (2017), illustrates the ways in which the HAI theoretical framework can directly impact a student's motivation, engagement, self-regulation, and social interaction in the classroom setting. It also depicts secondary effects on social-emotional development and learning. Gee, Griffin and McCardle (2017) included a dashed line to the box for social-emotional development, while all other lines were solid, suggesting that this was an area in need of further research.

The researcher selected HAI as the theoretical framework for the current study because it involved interactions between therapy dogs and students with special needs. The concepts addressed by HAI, including motivation, engagement, self-regulation, and social interaction, related directly to the research questions investigated within this study. The researcher sought to determine if there was a relationship between the presence of a therapy dog on the attendance, verbal communication utterances, and maladaptive behaviors of students in self-contained, special education classrooms. Anecdotally, attendance can, at times, be linked to the motivation to attend school, while verbal communication utterances could possibly become more spontaneous when students are engaged, and maladaptive behaviors are often directly related to concerns with self-regulation and social interactions. HAI theory posits that interaction between animals and human can impact motivation, engagement, self-regulation, and social engagement. The current research aimed to determine if human-animal interaction could be taken a step farther, to demonstrate an impact on the attendance, verbal communication utterances, and maladaptive behaviors of students in self-contained classrooms.

Historical Background of Topic

Seminal Researcher

Boris Levinson, the child psychologist who initially proposed animal assisted therapy, wrote of his underlying awareness that his work with animals and children would be met with uncertainty from both outsiders as well as those in his field (Geist, 2011). Levinson foreshadowed this by writing, “Do professionals consider this subject too humdrum, too lowbrow, or ‘unscientific’ to warrant serious consideration and investigation?” (Levinson 1969, p. 35). Levinson (1969) went on to state,

“Since the problem of mental disorders in children is so vast, any plausible measure that promotes diminution deserves investigation and testing. Even with the enormous escalation of scientific research, little is known concerning what brings about improvement. Some authorities in the field question whether therapy of any kind is effective. Furthermore, the current methods of treatment, assuming their effectiveness, are very lengthy and costly, therefore, there is a need to develop new ways of cutting down on cost and length of success treatment” (p. 27).

In accordance with Levinson’s questions, this literature review examined multiple researchers who studied emotional and academic uses for animals with children or in schools. Areas reviewed included: students with autism spectrum disorder (ASD), emotional behavioral disability (EBD) or anxiety, counseling sessions, art and physical education therapy, and reading interventions.

Emotional and Academic Uses for Animals in Schools

Utilizing Service Dogs with Students who have Autism Spectrum Disorder

Research indicated that students diagnosed with autism spectrum disorder (ASD) are one of the growing populations utilizing service dogs. In 1997, a Canadian organization called National Service Dogs placed a service dog, for the first time, into the home of a child who had ASD (Burrows, Adams & Millman, 2008). Between 1997 and 2008, National Service Dogs had placed ninety-two service dogs with children who had ASD. They averaged placing ten to sixteen dogs per year, based upon the number of applications received (Burrows, Adams & Millman, 2008). The numbers from this organization alone illustrate the growing demand for service dogs to work with this specialized population of children.

The core impairments of children with ASD include difficulties with social interaction and communication, along with repetitive, restricted, and stereotyped patterns of behaviors and interests (Celani, 2002; Obrusnikova, Bibik, Cavalier, & Manley, 2012; Prothmann, Ettrich, & Prothmann, 2009; Rosenburg, 2016; Stevenson, Jarred, Hinchcliffe & Roberts, 2015). These traits have previously been noted to lead to difficulty engaging these students, both socially and academically. In the school setting, service dogs assisted students with ASD by calming the student during times of anxiety, redirecting unacceptable behaviors, and protecting the student from danger (Harris & Sholtis, 2016). Additionally, Stevenson et al. (2015) noted that research and anecdotal evidence has increasingly shown the positive impact that dogs can have in terms of prosocial behavior and decreases in social withdrawal. Students included in this study increased their levels of interactive play, visual interest, and expressions of pleasure when the dog was present. The researchers also indicated that students decreased sensory/ritualistic

behaviors and the amount of time spent in solo play. Interactive play with the teacher increased, as did expressions of pleasure toward them (Stevenson et al., 2015).

Burrows, Adams and Millman (2008) utilized a qualitative approach including interviews and observations in eleven homes where service dogs had been placed with children who had ASD. The researchers conducted observations in various locations, including the family car, the local mall, during recreational activities, and in classrooms (Burrows, Adams & Millman, 2008). The researchers utilized semi-structured and open-ended interview questions to gain perspectives from each participating family. According to the families interviewed, the most important role of the service dog was to provide safety to the child, such as in instances where dogs had to prevent children from darting into the street or fleeing from their parents (Burrows, Adams, & Millman, 2008). According to Burrows, Adams, and Millman, (2008) “Despite the same background training, each dog was expected to provide secondary services ranging from alerting the parent if the child was anxious, being a source of security and comfort, sleeping with the child, and accompanying the child to school” (p. 60). The researchers found that, ultimately, the role of the service dog was based upon the characteristics of the child and could vary widely (Burrows, Adams & Millman, 2008).

Prothmann, Ettrich, and Prothmann (2009) conducted a study with fourteen children between the ages of six and fourteen who had been diagnosed with ASD to determine if they showed a preference or differential responsive when given the opportunity to interact with an adult human, a live dog, or an inanimate object (p. 163). Each participant was videotaped for twenty-minute intervals during three different trials. After analyzing the data, the researchers determined that the children interacted with the dog more than twice as often as they did with the

adult human, and more than sixteen times as often as they did with the inanimate object (Prothmann, Ettrich, & Prothmann, 2009, p. 167). The researchers reported that the children showed a greater interest in social contact with the dog during the second observation, and that their interest remained heightened during the third observation. This finding indicated that familiarity with the dog increased the children's desire to interact and negated the assumption that the children reacted to the dog strictly as a novelty. The researchers also noted that the participants showed a ten-percent decrease in socially-isolating and self-stimulatory behaviors over the course of the three observations (Prothmann, Ettrich, & Prothmann, 2009, p. 168).

Celani (2002) conducted a similar study to the one completed by Prothmann, Ettrich, and Prothmann (2009). Celani's participants included one group of twelve children with ASD, one group of twelve children with Down Syndrome, and one group of twelve typically-developing children. He compared the groups according to their preferences for animate versus inanimate objects and inanimate objects versus interpersonal relationships, with the intention of determining if the group of students with ASD differed from the other two groups in their selections. The researcher presented each group with four choices: "(1) human beings or inanimate objects, (2) animals or inanimate objects, (3) a child handling an object or a child in contact with another person, and (4) pleasant or unpleasant situations without living beings" (Celani, 2002, p. 94). Celani (2002) utilized multiple statistical methods including Pearson's correlational coefficient and chi-squared to address his research questions. He ultimately found that the children with ASD preferred inanimate relationship pictures, and preferred inanimate objects to people, but not to animals (Celani, 2002). These results corresponded with the outcome of Prothmann, Ettrich, and Prothmann's (2009) study, indicating a positive trend that

children with ASD prefer interactions with animals to those with inanimate objects or human beings.

Utilizing Service Dogs for Art and Physical Education Therapy

A review of pertinent literature supported the use of therapy dogs to enhance the participation of students with disabilities in physical education (P.E.) or art class. Obrusnikova et al. (2012) reported that, during physical activities, students with ASD and therapy dogs worked together as teams to achieve shared goals. This cooperative learning experience resulted in students recognizing that both parts of the team, human and dog, were striving for a mutual benefit. As a result, they gained from one another's efforts, empowered one another, and celebrated jointly when either of the team members were recognized for achievement (Obrusnikova et al., 2012).

Roberts-Schneider (2016) examined the impact of therapy dogs on three different educational settings in Indiana. The third of the three settings was an adaptive P.E. class for students with disabilities. A therapy dog, Wendy, was observed to help students achieve in the areas of motivation, enthusiasm, and communication (Roberts-Schneider, 2016). When interviewed, the teacher reported that, "Wendy's main role is to motivate the kids, whether that's for the physical activity or the behavior" (Roberts-Schneider, 2016, p. 114). The teacher also expressed that as the students gained confidence and self-esteem, they appeared to experience a greater sense of safety and security, enabling their willingness to attempt new things (Roberts-Schneider, 2016).

Wendy specifically interacted with a first-grade student who was confined to a wheelchair. The teacher shared that Wendy encouraged the student to communicate with his

classmates, and to help him engage in activities during P.E. (Roberts-Schneider, 2016). Since the student was wheelchair-bound, he was unable to participate in the same activities as his peers, which appeared to make him feel embarrassed and lonely. Wendy became a motivator for the student to participate in all activities, utilizing modifications, without feeling uncomfortable or ashamed for being different (Roberts-Schneider, 2016). For example, the teacher

“attached a hockey stick to each side of the boy’s wheelchair to serve as the child’s feet.

Wendy was attached to the left side of the boy’s wheelchair, and wherever the boy moved his wheelchair in an effort to “kick” the ball, Wendy was right beside him. Wendy never left the boy’s side, and she never hesitated to respond to the boy’s commands or needs” (Roberts-Schneider, 2016, p. 117).

Utilizing assistance dogs during physical activity anecdotally appears to be helpful in terms of motivation, confidence, self-esteem, communication, and achievement, especially for students who have disabilities. However, Jalango, Linder, Rotz, and Schultz (2018) suggested that, “further research into this field is required to fully understand the impact on motivation and the possible impact on physical health outcomes” (p. 348).

Rosenburg (2016) found similar results to those observed in P.E. when investigating art education for students with ASD. Although the generalizability of Rosenburg’s study was limited by its small scale, she indicated that there was, “evidence of increased social interaction between students with ASD and their peers, personal growth within in their artwork, and a strong correlation between the presence of a therapy dog and creating a more inclusive environment in the art classroom” (p. 49).

John Hattie (2009), in his book, *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*, found the effect sizes of exercise/relaxation and art/drama to be 0.26 and 0.38, respectively. A 0.26 effect size indicated the relationship between physical fitness and cognitive functioning to be small but positive. Moreover, creative activities such as art and drama had positive effects on children's achievement at the elementary level in such skills as oral language, self-esteem, moral reasoning, and role taking abilities (Hattie, 2009). These effect sizes indicated that if AAT could encourage students to participate in art and physical education activities, the impact would be positive for students.

Utilizing Service Dogs to Reduce Anxiety in Students

During the literature review process, the researcher located several studies and conference papers indicating that AAT may be at least moderately beneficial with reduced anxiety symptoms in children (Crossman, Kazdin, Matijczak, Kitt, & Santos, 2018; Lupton, Fisk, & Lauback, 2014; Lupton, Fisk, & Lauback, 2015; Zents, 2017; Zents, Fisk, & Lauback, 2017). Only one study (Woolley, 2005) did not find supporting evidence of this relationship.

Woolley (2005) conducted a study with twenty-one at-risk children who had endured abuse, neglect, or maltreatment. As a result of their prior experiences, the participants each suffered from anxiety, depression and displayed behavioral concerns. All participants lived in a residential treatment facility. Woolley (2005) divided the participants into two groups. The treatment group received AAT in addition to convention psychotherapy, while the control group received conventional psychotherapy alone. Psychotherapy consisted of group therapy and one session of individual therapy per week. After conducting the experiment over a nine-week time period, the researcher found that relationships between AAT and anxiety and behavioral

concerns were not supported (Woolley, 2005). There was minimal support for a relationship between AAT and depression, with significantly lower scores recorded during one of the nine weeks (Woolley, 2005).

Zents (2017) studied ten adolescents who were experiencing problems with anxiety. Her study paired AAT with cognitive behavioral therapy (CBT) to determine if the addition of AAT would bolster the effects of CBT with students in school settings across two school districts. Small groups of students received either CBT alone or CBT combined with AAT. Zents ultimately concluded that combining the two types of therapy showed promise for decreasing anxiety symptoms in some students. The researcher noted that, “Although the treatment groups did not approach significance on measures of anxiety and therapeutic alliance, trend lines on repeated measures of these factors show some participants lowered their anxiety and most participants increased their therapeutic alliance” (p. 104). In addition, Zents determined that, “adding a therapy dog to treatment did not harm students on measures of anxiety and therapeutic alliance” (p. 104).

Zents, Fisk, and Lauback (2017) conducted semi-structured interviews with thirty-five students between sixth and twelfth grade in western New York who had contact with a therapy dog on at least two-to-three occasions per week. Students were asked: “(a) to indicate in what capacity and how often they have been in contact with the therapy dog, (b) to provide comments as to whether or not a therapy dog was effective for promoting well-being for students, and (c) to answer questions pertaining to the dog’s efficacy on a 5-point Likert scale ranging from 1 (not at all effective) to 5 (very effective)” (Zents, Fisk, & Lauback, 2017, p. 87). The researchers confirmed the findings of Zents (2017) in that AAT decreased anxiety symptoms in some

students and assisted with treatment compliance (Zents, Fisk, & Lauback, 2017). They also found that therapy dogs proved useful in increasing the overall mental well-being of the student participants, decreasing their depression and fear, and cultivated positive behaviors (Zents, Fisk, & Lauback, 2017). Lupton, Fisk, and Lauback (2014) presented the findings of Zents, Fisk and Lauback (2017) at the annual conference of the New York Association for School Psychology, and again at the annual conference of the National Association of School Psychologists in Orlando, Florida (Lupton, Fisk, & Lauback, 2015).

Crossman et al. (2018) conducted a study with seventy-eight children in the northeastern United States. The researchers examined anxiety in children, beginning with a baseline score for each of the participants, and then comparing the baseline to a score obtained after one of three possible interventions. The interventions consisted of (1) a fifteen-minute wait time for the participant, (2) interaction between the participant and a soothing object, or (3) a fifteen-minute interaction between a study participant and a dog (Crossman et al., 2018). Crossman et al. (2018) found that after exposing study participants to a moderately stressful situation, those who had briefly interacted with a dog displayed a positive affect that was higher than the participants who had interacted with a soothing object or those who had simply waited during the fifteen-minute interval (Crossman et al., 2018). Regarding anxiety, the researchers noted that the participants who interacted with a dog displayed lower levels of anxiety relative to those who waited for the same amount of time; however, their anxiety level remained equal to the participants who had been provided a soothing object (Crossman et al., 2018). The researchers indicated these effects on positive affect and anxiety to be “medium in magnitude” (Crossman et al., 2018, p. 10).

Utilizing Service Dogs in Reading Interventions

Another way in which schools utilized AAT/therapy dogs was through a “Reading Dogs” program. There are multiple brand-named, canine-assisted literacy programs in the United States, including Building Reading Confidence for Kids (BaRK), Reading Education Assistance Program (READ), and Tail Waggin’ Tutors (Roberts-Schneider, 2016). The most comprehensive of these initiatives was the READ program (Boe, 2008; Hughes, 2002; Jalango, 2005; Shaw, 2013; Swift, 2009). In this program, therapy dogs were invited into elementary schools, and children spent time reading books to the dogs and their handlers. The presence of the dogs assisted by helping struggling readers, “build motivation, maintain focus, and increase task persistence, even when other interventions have failed” (Jalango, 2005, pp. 153-154). The READ program also incorporates motivational strategies relating to the therapy dogs aside from simply reading aloud to them. For example, after a targeted student has read ten books, he or she has earned a book “pawtographed” with the therapy dog’s paw print. This book then belongs to the student, thereby increasing motivation and getting books into the hands of reluctant readers. Swift (2009) reported that after surveying therapy dog handlers associated with the READ program, quantitative data showed that the dog handlers perceived the program to be well-received by the staff members at the host elementary school locations (p. 65).

Fisher and Cozens (2014) studied the effectiveness of the BaRK reading program on one ten-year-old student in Toronto, Canada. The program was conducted over eight weekly sessions at a public library. The student participant had a history of disengagement with reading activities, although prior achievement testing showed him to be of average intellect (Fisher & Cozens, 2014). The researchers utilized descriptive, empirical data to show that, after

implementation of the BaRK program, their student participant displayed marked improvement in both reading accuracy and comprehension (Fisher & Cozens, 2014). The student expressed that reading the books with Flash, the dog, motivated him because it was less intimidating to read to a dog than an adult (Fisher & Cozens, 2014). The researchers, however, noted that one limitation of the BaRK reading program involved the motivation of the student. They questioned whether the results they observed were based upon the enjoyment experienced by the student when interacting with both the book and the dog, or if the results could have possibly been due to the student's freedom to select his own reading materials (Fisher & Cozens, 2014).

Kirnan, Siminerio and Wong (2016) analyzed standardized reading test scores of students in kindergarten through fourth grade and found a significant difference in the end-of-year scores of kindergarten-aged students who participated in a reading AAT over those in a control group. A follow-up analysis of mid-year reading scores confirmed that these differences were not related to pre-existing reading levels. The researchers also conducted interviews with educators and dog owners/handlers. In addition to test scores, participants reported an improvement in attitude and enthusiasm for reading across all grade levels, with greatest gains in special education, students who spoke English as a second language (ELL), and children who struggled with reading (Kirnan, Siminerio, & Wong, 2016).

In 2018, Kirnan, Ventresco, and Gardner conducted a follow-up to the aforementioned study (Kirnan, Siminerio, & Wong, 2016) and found that there continued to be a significant difference for kindergarten students after the second year of implementation, and, unlike the first year, there was also a significant difference in the mean scores of first grade participants, as well. The researchers also noted that, "Significant reading score differences were found between ELL

and non-ELL students, as well as those enrolled in the program compared with the control group. When prior reading ability was controlled for, the main effect for ELL status disappeared, but the main effect for the reading program was still significant, $F(1,75) = 18.07, p < .001$, with those in the dog assisted literacy programs reporting significantly higher spring reading scores ($M = 171.31; SD = 10.84$) than the control group ($M = 160.34, SD = 11.97$)” (Kirnan, Ventresco and Gardner, 2018, pp. 112-113).

Kirnan, Shah, and Lauletta (2018) further analyzed the use of AAT for reading intervention. Four special education students enrolled in a self-contained classroom were the focus of this study. Kirnan, Shah, and Lauletta (2018) used a single case study design with each of the four participants to determine if the presence of a certified therapy dog assisted in strengthening the students’ enthusiasm for reading, in addition to improving negative behaviors such as task avoidance, defiance, yelling/cursing and aggression. Students in the self-contained classroom would take-turns reading to the dog in a defined area of the classroom once weekly for approximately ten-to-fifteen minutes (Kirnan, Shah & Lauletta, 2018). The researchers conducted interviews with classroom staff and learned that students who had been reluctant to read aloud became more willing to do so in the presence of the dog. According to the classroom staff members, students showed a greater interest in reading, and began making improvements in oral fluency. Students were also reported to practice their reading in anticipation of a dog visit (Kirnan, Shah & Lauletta, 2018). Behaviorally, only one student showed positive improvement with task avoidance, defiance, and aggression, as evidenced by daily behavioral charts and chi-square analyses. Anecdotally, however, classroom staff members reported an overall calming

effect that they attributed to the dog, as well as an increased ability by the students to remain focused (Kirnan, Shah & Lauletti, 2018).

Linder et al. (2018) conducted a study focusing on second graders who were already reading on grade level. These students completed a six week after-school canine-assisted reading program at an elementary school. Results suggested that the intervention may have improved student attitudes toward academic reading via the interaction with the therapy dog. Although the reading skills and attitudes results were numerically improved, the results were not statistically significant, possibly due to the small sample size (Linder et al., 2018).

Kayman (2005) studied the “SHARE a Book” program at an elementary school in Northern California. Throughout the course of this program, students read to dogs as part of an intervention strategy in a reading skills pull-out classroom. She observed the students to engage with the book and appear to be more focused and alert while reading to the dogs than at other academic times without the dog. Kayman targeted four third grade students, again minimizing the generalizability of this study due to the small sample size. Although the four targeted students had a history of difficulty reading orally to peers, they responded favorably when reading to the therapy dog. When asked how they felt about reading aloud to a dog, the students responded with positive answers ranging from, “really happy,” “really excited,” and “good because it’s fun” (Kayman, 2005).

In a study by Lamkin (2017), three struggling adolescent readers engaged with a therapy dog during literacy activities. Lamkin reported that interacting with the dog and its handler had a calming effect, created interest, and established a purpose for reading. The students became more attentive to their own reading performance as the handlers provided vocabulary supports,

questions, comments, and book choices. Given this assistance, students began to self-monitor, self-correct, and discuss stories. Their audience grew to include additional students and staff. Lamkin indicated that targeted students ultimately became more expressive about their reading, discussing books in ways that surpassed their abilities and ameliorated many of their preexisting behavioral concerns.

Hattie (2009) found the effect size of comprehensive interventions for students with learning needs to be 0.77. This represented a high effect size. Hattie indicated in his book that 0.40 was the average effect size for all academic interventions that he had studied. Throughout his research, Hattie compared the success of all academic influences to 0.40, or what he referred to as the ‘hinge point’ (Hattie, 2009, p. 16). Although animal assisted therapy is just one method for providing intervention to struggling students, Hattie noted that “a combined direct instruction and strategy instruction model was an effective procedure for remediating learning disabilities” (Hattie, 2009, p. 217).

Utilizing Service Dogs with Students who have Emotional and Behavioral Disabilities

Students who have EBD frequently exhibit concerns in school that can take the form of aggression towards peers and teachers, a lack of social skills, and inability to make friends (Bassette & Taber-Doughty, 2013). Hattie (2009) indicated that meta-analyses of behavior intervention programs showed a high 0.62 effect size. This score represented a large, positive effect, above Hattie’s hinge point of 0.40 (p. 16).

Three elementary-aged students identified as having EBD participated in Bassette and Taber-Doughty’s study. The researchers hoped to determine if a functional relationship existed between the intervention of reading to a therapy dog and on-task behaviors. Although their

sample size was too small for generalizability, results indicated that all three students experienced moderate to significant improvements in on-task behavior when participating in the animal-assisted reading program (Bassette & Taber-Doughty, 2013).

Boe (2008) utilized a single subject design to examine the relationship between AAT and the self-esteem and classroom behaviors of an eighteen-year-old male student with EBD over a four-week time period. The participant experienced two weeks of AAT and two weeks without. During the treatment weeks, the participant spent one hour per day with the dog. He was then monitored by staff members via behavior tracking sheets for instances of impolite behavior, off-task behavior, and non-compliance (Boe, 2008). The participant also completed a baseline self-esteem inventory and scale. He initially rated himself to be significantly below average when compared to his same-aged peers. After the treatment, the participant rated himself to be somewhat below average. His other self-rated score rose by five percent. The frequency data collected by staff members showed a reduction during both treatment phases in all three target behaviors.

“Impolite behavior decreased by sixteen percent at the end of the first week of animal-assisted therapy and twenty-three percent at the end of the second treatment week. Off-task behavior was decreased by fifty-seven percent at the end of the first week of therapy and fifty-two percent at the end of the second week. Non-compliance decreased by thirty-one percent at the end of the first therapy week and fifty-eight percent at the end of the second treatment week” (Boe, 2008, p. 40).

Roberts-Schneider (2016) examined the impact of therapy dogs on three different educational settings in Indiana. The second of the two settings was a classroom for twelve

students with emotional disabilities. The therapy dog, Opey, was fully integrated into classroom routines and was observed to be a benefit to the classroom both academically and motivationally. Students read aloud to Opey and strived to complete their work in order to spend time with him. The teacher who was interviewed during the study, reported that Opey also served as a classroom management tool due to his calm temperament. She stated that although each of her twelve students were diagnosed with EBD, “Their attitudes are different around him, they’re laughing, they’re happy, they’re excited” (Roberts-Schneider, 2016, p. 112).

Six self-contained, elementary-aged students in urban North Dakota participated in Anderson and Olson’s (2006) study of AAT in a classroom of children with severe emotional disorders. The study occurred over an eight-week time period, during which the researchers observed the students, interviewed both the children and their parents, and examined data relating to emotional meltdowns by the students. Emotional crisis was defined by the researchers as severe verbal and/or physical aggression (Anderson & Olson, 2006). The researchers collected both quantitative and qualitative data beginning with a baseline score for each of the six students. The teacher provided daily social skills instruction concentrating on the methods that the dog used to convey his needs and emotions. She then had the students compare-and-contrast these methods with their own approaches (Anderson & Olson, 2006). The researchers concluded that, “Qualitative analysis of all coded data indicated that the dog’s placement in this classroom: a) contributed to students’ overall emotional stability, evidenced by prevention and de-escalation of episodes of emotional crisis; b) improved students’ attitudes toward school; and c) facilitated students learning lessons in responsibility, respect, and empathy” (Anderson & Olson, 2006, p. 40).

Geist (2013) conducted a study of fifteen middle and high school aged students enrolled in either EBD self-contained classrooms or partial hospital settings in south-central Pennsylvania. Five trained therapy dogs worked with the participants. The researcher conducted interviews with the students and their teachers, and videotaped observations of student interaction with the therapy dogs. Geist (2013) concluded that her study supported the existence of “therapeutic elements operating in the interaction between students and therapy dogs” (p. 77). These included: “(1) support of affect regulation development; and (2) the support for reworking of insecure attachments. These two therapeutic elements may combine to bring about academic, emotional, and social improvement in the students” (Geist, 2013, p. 77).

Utilizing Service Dogs in School Counseling Sessions

Finally, counseling showed a 0.35 effect size according to Hattie (2009). This effect size was small, but positive. Multiple researchers (Bach-Gorman, 2015; Chandler, 2001; Daltry & Mehr, 2015; Daughhetee, Stalls, & Spencer, 2006; Friesen, 2010; Trivedi & Perl, 1995) found that using therapy dogs, in conjunction with the services of a counselor, helped to provide stress relief and comfort to students. According to Friesen (2010, p. 261), “children seem to perceive the dogs as non-judgmental participants who are outside of the complications and expectations of human relationships.” Kruger, Tractenberg, and Serpell (2004) agreed that utilizing animals in conjunction with counseling might serve as a motivational incentive for children to attend and continue with treatment (p. 12).

Daughhetee et al. (2006) described group counseling sessions composed of diverse adolescent boys, using a therapy dog to foster the importance of openness and acceptance. After recognizing that the dog greeted each student without discrimination, one student commented,

“He doesn’t make assumptions about who we are, he just likes us.” The boys were encouraged to emulate the dog’s acceptance, attentiveness, openness and friendliness to see if they noticed differences in their social interactions. Over time, the boys in the counseling group were able to relate instances in which they had successfully matched the dog’s positive attitudes and behaviors (Daughhete et al., 2006).

Kruger, Tractenberg, and Serpell (2004) suggested multiple other strategies that could be utilized by therapists during counseling sessions with children. Their list of suggestions included:

“using stories about an animal’s life experiences (real or fictional) as analogues to difficulties present in the life of the patient; by asking patients to create or finish a story about an animal; by allowing youth to disclose their fears and circumstances directly to the animal as a first step toward discussing it with the therapist; and by helping children to learn about the cause-and-effect of human interactions by utilizing the animal’s immediate and unambiguous responses to loud, erratic, aggressive, or unpredictable behaviors as a means of drawing attention to this phenomenon, and then practicing alternative modes of behavior” (p. 12).

Bach-Gorman (2015) studied the experiences of nine teenagers as they participated in counseling via AAT on a therapeutic ranch. The researcher utilized a phenomenological research study method, which she defined as being a qualitative narrative of the shared experiences of her participants, describing the nature of a specific phenomenon (Bach-Gorman, 2015, p. 21). Bach-Gorman collected data through observation, participant interviews and reflective journals. Subjects participated in one individual canine therapy session, one group

therapy session, and at least one group dog care/training session per week over a period of ten weeks (Bach-Gorman, 2015, p. 31). The researcher concluded that four themes emerged from her study. These included, “(a) a rippling effect on relational patterns across the intrapersonal, interpersonal, and therapeutic domains; (b) cross-dimensional identification and realization of skill attainment; (c) therapeutic factors unique to the presence of a dog; and (d) building and expanding one’s community” (Bach-Gorman, 2015, p. 61). Participants described the experience as being more “meaningful, enjoyable, and personally relatable” than any of the previous counseling types that they had experienced (Bach-Gorman, 2015, p. 62).

Main Conclusions from the Literature

There was a consistent thread throughout the literature concerning AAT utilized with children and in schools. Regardless of the capacity in which dogs were used (reading, art, P.E., counseling, etc.), a predominance of the studies cited showed that the presence of dogs created a positive impact in a variety of ways, including academic, social, and affective influences on students.

Gaps Found

While much of the research examined for this literature review focused on students with disabilities such as ASD and EBD, none of those mentioned in the literature review concentrated on either the attendance or verbal communication utterances of students in these special education subgroups. In addition, while several studies did place emphasis on preventing anxiety or controlling emotions, none specially traced reduction in instances of maladaptive behaviors.

Furthermore, the researcher for the current study concurred with the conclusions of Kruger, Tractenberg, and Serpell (2004) when they asserted that animal-assisted interventions and therapies are presently poorly defined. As Boris Levinson (1969) initially feared, the practice of AAT has had difficulty gaining acceptance and support. This is largely due to the absence of unifying guidelines for practice and a lack of shared terminology (Kruger, Tractenberg, & Serpell, 2004). Some researchers, such as Parenti, Foreman, Jean Meade, and Wirth (2013) have attempted to solidify the terminology utilized in animal-assisted intervention and therapy by proposing a concise taxonomy for classifying assistance animals. However, efforts of individual researchers like Parenti et al. (2013) have currently failed to unify the field of haphazard studies on animal-assisted interventions and therapies.

Moreover, in terms of the existing research in the realm of animal-assisted interventions and therapies, the predominance of previous efforts to establish efficacy in the field have been plagued by ineffective research designs (Kazdin, 2017). For example, one of the ways in which research designs associated with animal-assisted interventions and therapies have fallen short is through inadequate sample sizes, which tend to be heterogeneous and unrepresentative (Kazdin, 2017). In addition, it is rare to locate a study on AAT that utilizes a true experimental design with an adequate control group. To date, many of the studies in the field of AAT have been descriptive in nature and, as a result, lack the ability to address causal relationships between AATs and outcomes on behavior, communication, or other areas of study (Kazdin, 2017). Kazdin (2017) also noted that when AAT studies were conducted using experimental or quasi-experimental designs, concerns remained regarding short duration times and use of cross-sectional designs. These studies were also prone to having methodological issues which

undermined their validity and generalizability, and made replication studies challenging to complete (Kazdin, 2017).

Summary

AAT has existed since 1961, when it was proposed by Boris Levinson, a child psychologist at Yeshiva University Medical School (Rosenburg, 2016). Levinson questioned whether his colleagues in the American Psychological Association would consider animal-assisted therapy to be a serious enough topic for scientific research (Levinson, 1969). Since Levinson's initial proposal, multiple researchers have investigated the utilization of animals in schools. This literature review focused on academic and emotional uses for animals in schools rather than physical ones. As a result, a review of existing literature showed six major areas of focus for animals in schools. These included: working with students diagnosed with ASD, collaborating with students in art and P.E. classes, reducing anxiety in students, participating in reading intervention, assisting students identified as having EBD, and helping students through counseling sessions. Regardless of the capacity in which they were used, the predominance of studies showed that the presence of dogs created a positive impact for children. These impacts were observed in a variety of ways, including academic, social, and affective influences on students.

Gaps in the literature included a lack of research in the areas of attendance and verbal communication utterances of students in special education subgroups. While several studies did place emphasis on preventing anxiety or controlling emotions, none specially traced reduction in instances of maladaptive behaviors.

Additionally, current literature on AAT is hindered by an absence of unifying guidelines for practice, a lack of shared terminology, and poorly designed interventions and therapies. Moreover, many of the research designs utilized in existing studies contain flaws, such as

inadequate sample sizes, short duration periods, and underuse of true experimental designs. These factors undermine the validity and generalizability of many existing studies, and make replication challenging (Kazdin, 2017; Kruger, Tractenberg, & Serpell, 2004).

The current study focused on the areas lacking within the current literature, including the impact of EADs on attendance, verbal communication utterances, and maladaptive behaviors of students in self-contained, special education classrooms. It was also conducted over a full school year, from August 2018 to May 2019, which represented a lengthier time period than that of many of the studies accessed for this literature review. In these regards, the researcher gathered a greater amount of data and analyzed it in different ways than in previous studies.

CHAPTER THREE: METHODOLOGY

Introduction

Chapter three of this dissertation describes the quantitative research method used for the current study. The researcher utilized a single subject design for each of the nine student participants. This research design was used to analyze the relationship between the presence of an Education Assistance Dog (EAD) and the attendance, verbal communication utterances, and maladaptive behaviors of special education students who were on Behavior Intervention Plans (BIPs) in self-contained classrooms for students with autism spectrum disorder (ASD) or intellectual disabilities (InD). Chapter three is organized into segments including: the purpose of the study, a reintroduction of the research questions, the population and sample, data collection, procedure, and data analysis.

Purpose of the Study

Baseline data gathered from three targeted self-contained, special education classrooms in one large, urban, Central Florida school district showed concerns in the areas of attendance, verbal communication utterances, and maladaptive behaviors among the students. To address these concerns, canines known as Education Assistance Dogs (EADs) were trained specifically for use with students who had autism spectrum disorder or other developmental disabilities and were introduced to these three classrooms. Therefore, the purpose of this study was to examine the relationship between the introduction of EADs on the attendance, verbal communication utterances, and maladaptive behaviors of students in self-contained, special education classrooms.

Research Questions

The following were the research questions addressed in this study:

1. What is the relationship between the presence of an EAD on the attendance of special education students enrolled in a self-contained classroom?
2. What is the relationship between the presence of an EAD on the instances of verbal communication utterances exhibited by special education students enrolled in a self-contained classroom?
3. What is the relationship between the presence of an EAD on the instances of maladaptive behaviors exhibited by special education students enrolled in a self-contained classroom?

Population and Sample

The population for this study included all students within the targeted large, urban, Central Florida school district who were enrolled in self-contained ASD or InD classrooms. The sample was composed of students who were on behavior intervention plans (BIPs) in three self-contained classrooms in which education assistance dogs were placed. These students were selected by their teachers as a result of having maladaptive behaviors severe enough to warrant the development of BIPs.

Students who have the exceptionality of ASD or InD are identified through a defining set of characteristics for each of the identifications. Only when students have met these characteristics are they permitted to be educated in a self-contained classroom. Thus, as a result of this defining set of characteristics, the students who participated in the study were representative of the school district population.

The first monitored class was an ASD unit at the elementary school level. Four students were tracked in this classroom in terms of their attendance, verbal communication utterances, and maladaptive behaviors. The second class was an InD unit at the elementary level. Two students were tracked in this classroom according to the targeted variables. Finally, the third class was an InD unit at the middle school level. Three students were monitored in this classroom. In total, the sample was made up of nine students between third and eighth grade in two types of self-contained classrooms at three different schools.

Setting

At elementary school #1 and elementary school #2, the teachers of the targeted self-contained classrooms were the handlers of the EAD. At middle school #1, one of the paraprofessionals assigned to the targeted classroom was the handler of the dog. All three handlers completed the required service dog training program from the organization that bred and certified the dogs. Doing so ensured that the handlers were uniform in their skills.

The three EADs were included in their classrooms throughout the entire school day. Since they lived with their handlers, the EADs would arrive with their teacher or paraprofessional in the morning and would go home with them at the end of the school day. The classrooms each included a specified area for the EAD, which contained a crate for the dog and toys. Treats were provided to the EAD throughout the school day when he/she successfully completed expectations.

The EADs were incorporated into lessons for all subjects within the targeted classrooms but were specifically utilized for instruction in social skills. A specific curriculum was employed which focused on topics such as feelings, self-esteem, friendship, teamwork, etc.

When students improved in one of the targeted areas, they could earn privileges with the EAD. For example, one of the teacher/handlers reported that a particular student had behavioral difficulties when getting out of the car in the morning to come to school. She devised a reward structure so that the student could earn fifteen minutes with the EAD daily if he got out of the car by himself and made it to class on time. The student could also earn lunch with the teacher and the EAD if he was able to get out of the car independently and on time for a full week.

Data Collection

University Protocol

Prior to collecting data, the researcher submitted an application describing the research study to the University of Central Florida's Institutional Review Board (IRB) on July 10, 2019. The IRB application included information contained within chapter one of the current study. The IRB designated the current study to be Not Human Subjects research via an email to the researcher on July 12, 2019 (see Appendix A).

Per IRB requirements, the researcher also completed coursework regarding ethics in research through the Collaborative Institutional Training Initiative (CITI) organization. The CITI courses were completed during the summer of 2019.

Large Urban School District Protocol

In addition to IRB requirements at the University of Central Florida, the researcher was also required to gain approval from the large, urban, Central Florida School District's Office of Research, Evaluation, and Accountability via the large, urban, Central Florida School District's Institutional Review Board (IRB). The researcher submitted an application outlining the parameters of the research, including the purpose of the study, hypothesis, university affiliation,

expected dates for start, completion, and submission of research findings, district schools to be targeted by the research, the study design, instrumentation procedures, and the need for participation of human subjects. The application was submitted to the large, urban, Central Florida School District on December 2, 2019 and a letter of approval was received via email on December 9, 2019 (see Appendix B).

Data Collection

After completing the protocols for both the University of Central Florida and the large, urban, Central Florida school district, the researcher began the process of data collection. The dependent variables of attendance, verbal communication utterances, and maladaptive behaviors were calculated as a numerical score during data collection. For example, if one student began with a baseline score of ten absences in a month prior to the introduction of the education assistance dog (EAD), during each subsequent month after placement of the EAD, the teacher would tally the number of days the student was absent. During the next month, the student may have been absent eight times, then five the following month, and so on.

In terms of verbal communication utterances, data collection occurred in the same manner as attendance. The teacher began by recording a baseline score for the number of verbal utterances that a student produced within a month, either via spoken words or augmentative communication device, prior to the introduction of an EAD. After the EAD had been placed, the teacher then tallied, per day and per week, the number of verbal communication utterances that the student produced in subsequent weeks, culminating in a monthly numerical total of verbal utterances.

Finally, data were collected following the same pattern when tracking maladaptive behaviors. The teacher established a baseline of the number of maladaptive behaviors that a student exhibited in a month prior to the introduction of the EAD. The teacher then tallied daily and weekly occurrences of maladaptive behaviors and compiled them into a total for the month after the EAD had been placed.

Procedures

Teachers in each of the classes were provided data sheets (see Appendix C) to track the instances of absence, verbal communication utterances, and maladaptive behaviors of targeted students. They began by establishing a baseline for each of the students prior to the introduction of the EAD, then collected monthly data on each of the variables after that point. The EAD began in September of the 2018-2019 school year in the ASD elementary classroom, and in January 2019 in each of the InD classrooms. The teachers returned the data sheets to the researcher at the end of each month so that she could compile the data and examine it for trends.

Data Analysis

The researcher utilized a quantitative single subject research design with each of the nine targeted students. This method was selected because, according to Fraenkel and Wallen (2006), “Single subject research is popular in the fields of special education and counseling. This research design is useful when the researcher is attempting to change the behavior of an individual or a small group of individuals and wishes to document that change. Unlike true experiments where the researcher randomly assigns participants to a control and treatment group, in single subject research the participant serves as both the control and treatment group. The researcher uses line graphs to show the effects of a particular

intervention or treatment. An important factor of single subject research is that only one variable is changed at a time” (p. 318).

In the context of the current study, a single subject design was used within the special education field to analyze the relationship between the presence of an education assistance dog and the attendance, verbal communication utterances, and maladaptive behaviors of students who were on behavior intervention plans in self-contained classrooms for students who had autism spectrum disorder or intellectual disabilities. For research question one, teachers collected attendance data relating to absences, tardies, and early dismissals between August of 2018 and May of 2019 for elementary school #1, and between December of 2019 and May of 2019 for elementary school #2 and middle school #1. The researcher used an examination of frequencies to determine if the education assistance dog had any effect on attendance.

For research question two, teachers were asked to track verbal communication utterances using a researcher-created data sheet between August of 2018 and May of 2019 for elementary school #1, and between December of 2019 and May of 2019 for elementary school #2 and middle school #1. The researcher again used an examination of frequencies to determine if the education assistance dog had any effect on verbal communication utterances.

In regard to research question three, teachers tracked instances of maladaptive behaviors, using the same data sheet created by the researcher. Data collection occurred between August of 2018 and May of 2019 for elementary school #1, and between December of 2019 and May of 2019 for elementary school #2 and middle school #1. As with the first two research questions, the researcher used an examination of frequencies to determine if the education assistance dog had any effect on student maladaptive behaviors.

Utilization of this research design and the resulting line graphs depicted the differences between the baseline scores and final scores of the nine individual students after introduction of the EAD. After all tallies had been collected and compiled, data for each of the nine students were charted on separate line graphs and examined individually for trends.

Summary

Throughout chapter three, the researcher discussed the purpose of the study, the population from which the study drew, the procedures used, and the measures utilized to collect data. She also reintroduced the research questions. The study drew upon data from nine students enrolled in three self-contained, special education classrooms in one large, urban, Central Florida school district. The researcher utilized a quantitative single subject research design and corresponding line graphs to represent the data for each of the nine participants. The results of the analysis are presented in chapter four.

CHAPTER FOUR: RESULTS

Introduction

Chapter four of this dissertation revisited the research questions and considered the resulting data for each of the participants. The researcher utilized the data shared by the teachers at each of the three participating schools to prepare line graphs for each of the targeted students. Graphs were then examined for trends in the areas of attendance, verbal communication utterances, and maladaptive behaviors as they related to the presence of an Education Assistance Dog (EAD) in each of the three monitored classrooms. Chapter four is organized into segments including: a reintroduction of the research questions, demographic information regarding the population and sample, a summation of the data for each research question, and data analysis.

Research Questions

The following were the research questions addressed in this study:

1. What is the relationship between the presence of an EAD on the attendance of special education students enrolled in a self-contained classroom?
2. What is the relationship between the presence of an EAD on the instances of verbal communication utterances exhibited by special education students enrolled in a self-contained classroom?
3. What is the relationship between the presence of an EAD on the instances of maladaptive behaviors exhibited by special education students enrolled in a self-contained classroom?

District Population

The current study took place in a large, urban, Central Florida school district. The county represented by this school district is made up of six major cities and towns. According to

Niche.com (2017a), this county was the fourteenth largest school district in the state of Florida. According to the school district website (2020), it consisted of forty-seven traditional schools and twenty-one charter schools, servicing more than 72,000 students. It was ranked by Niche.com (2017b) to be the twelfth safest and twenty-fourth most diverse district in the state (2017c).

The overall ethnicity of the school district was reported to be 61.6% Hispanic/Latino, 22.6% White, 10.9% Black, 2.1% Asian, 0.3% American Indian/Alaskan Native, 0.2% Native Hawaiian/Pacific Islander, and 2.3% multi-racial, for a total of 77.4% of students considered to be a minority population according to the 2018-2019 School District Fall Overview on the Florida Department of Education (FLDOE) website (Florida Department of Education, 2019a). Just over 48% of the students in the district were female, while 51.7% of students were male (Florida Department of Education, 2019a). Nearly 67% of students were members of economically disadvantaged families (Florida Department of Education, 2019a) and 20.6% of the student population were English Language Learners (Florida Department of Education, 2019a). Finally, 11.5% of the overall district population were students with disabilities (Florida Department of Education, 2019a). The district received an overall “B” on a rating scale ranging from A – F (Florida Department of Education, 2019a).

School Populations

Elementary School #1

The elementary school which housed the self-contained ASD classroom used for this study was classified as a large elementary school. It was located within the third most sizable town within the county. One thousand, six students attended this school during the 2017-2018

school year according to population and enrollment data listed on the school’s report card page on the FLDOE website (Florida Department of Education, 2019b). According to the same website, the student population was 47.6% female and 52.4% male (Florida Department of Education, 2019b). The students were 45.2% Hispanic/Latino, 43.2% white, 6% black/African American, 1.3% Asian, 3.9% multi-racial, and 0.4% from an unidentified subgroup (Florida Department of Education, 2019b). Just over 54% of the students were from economically disadvantaged families (Florida Department of Education, 2019b). Nearly nine percent were English Language Learners, and 14.3% were students with disabilities (Florida Department of Education, 2019b). The school was given an overall “B” rating on the state scale (Florida Department of Education, 2019b).

Elementary School #2

The second elementary school targeted by this study housed the self-contained classroom for students who had intellectual disabilities (InD). This school was classified as a large elementary school and was located within the most populous town within the county. Nine-hundred forty-three students attended this school during the 2017-2018 school year according to population and enrollment data listed on the school’s report card page on the FLDOE website (Florida Department of Education, 2019c). The student population was 46.3% female and 53.7% male (Florida Department of Education, 2019c). The students were 68.6% Hispanic/Latino, 17.7% white, 7.6% black/African American, 3% Asian, 2.4% multi-racial, and 0.7% from an unidentified subgroup (Florida Department of Education, 2019c). Seventy-one percent of the students were from economically disadvantaged families (Florida Department of Education, 2019c). Just over 26% were English Language Learners, and 15% were students with disabilities

(Florida Department of Education, 2019c). The school was given an overall “B” rating on the state scale (Florida Department of Education, 2019c).

Middle School #1

The only middle school represented in the current study was located within the same town as elementary school #1. This school housed one of the targeted self-contained classrooms for students who had InD. According to the FLDOE website (2019d), this middle school was also classified as a large school. One thousand, four hundred fifty students attended this school during the 2017-2018 school year according to population and enrollment data listed on the school’s report card page (Florida Department of Education, 2019d). The student population was 49.5% female and 50.5% male (Florida Department of Education, 2019d). The students were 41.2% Hispanic/Latino, 48.3% white, 5.6% black/African American, 1.3% Asian, 3.3% multi-racial, and 0.3% from an unidentified subgroup (Florida Department of Education, 2019d). Just over sixty percent of the students were from economically disadvantaged families (Florida Department of Education, 2019d). Nearly five percent were English Language Learners, and 15.2% were students with disabilities (Florida Department of Education, 2019d). The school was given an overall “B” rating on the state scale (Florida Department of Education, 2019d).

Classroom Populations

Elementary School #1

The teacher at elementary school #1 gathered data on four students who were identified as having Behavior Intervention Plans (BIP). According to the teacher, all four of these students were male, representing 100% of the class cohort. Three of the students were white (75%), while one was Hispanic/Latino (25%). None of them were English Language Learners. Two of

the students were from economically disadvantaged families (50%), while the other two were not (50%). Two of the students (50%) experienced extenuating circumstances from outside of the classroom. One of the boys was identified as being part of a custody dispute between his parents. Another student experienced numerous changes within his personal life, as reported by his teacher via information from his parent. He had experienced the loss of a grandparent, as well as a move to a new house and the addition of a grandparent into his household.

Elementary School #2

The teacher at elementary school #2 gathered data on the two students in her class who were identified as having BIPs. According to the teacher, both students were male, representing 100% of the class cohort. One of the students was white (50%), while the other was Hispanic/Latino (50%). Neither of them was identified as an English Language Learner and neither of them were from economically disadvantaged families. No extenuating circumstances were reported by the teacher for either student.

Middle School #1

The sole middle school teacher gathered data on the three students in her class who were identified as having BIPs. According to the teacher, all three students were female, representing 100% of the class cohort. All targeted students were white (100%), and none of the three were identified as being English Language Learners. Two of the girls were from economically disadvantaged families (66.6%). No extenuating circumstances were reported by the teacher for any of the three students.

Testing the Research Questions

Research Question 1: What is the relationship between the presence of an EAD on the attendance of special education students enrolled in a self-contained classroom?

Elementary School #1

The teacher in elementary school #1 collected data on four students identified as having autism spectrum disorder. The Education Assistance Dog (EAD) assigned to this class began in September, while the school year began for students in August. Thus, the data collected by the teacher during the month of August represented the baseline for students by which the data from subsequent months was compared. Attendance was not a primary concern in this classroom, however the teacher collected monthly data regarding number of absences beginning in August of 2018 and concluding in May of 2019. The attendance data is displayed in Table 1 below.

Table 1:
Student Attendance Data for Elementary School #1

Student	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May
One	5	0	1	2	1	4	0	0	4	3
Two	0	0	0	0	0	0	0	1	2	0
Three	0	0	0	0	2	0	0	0	0	0
Four	0	0	0	1	0	0	0	0	2	1

Student One

Student one began with a baseline of five absences during the month of August. He dropped to zero absences after the implementation of the EAD in September. Never again throughout the school year did his absences reach five within a single month. In October, the student recorded one unexcused absence. He was tardy twice in November. In December, the

student had one unexcused absence. During January, he accumulated three unexcused absences, and one excused absence for medical reasons resulting in a total of four absences. During April, the student missed four days again. He was tardy once and had three unexcused absences. Finally, the student was tardy once and had two unexcused absences during May. See Figure 2 below.

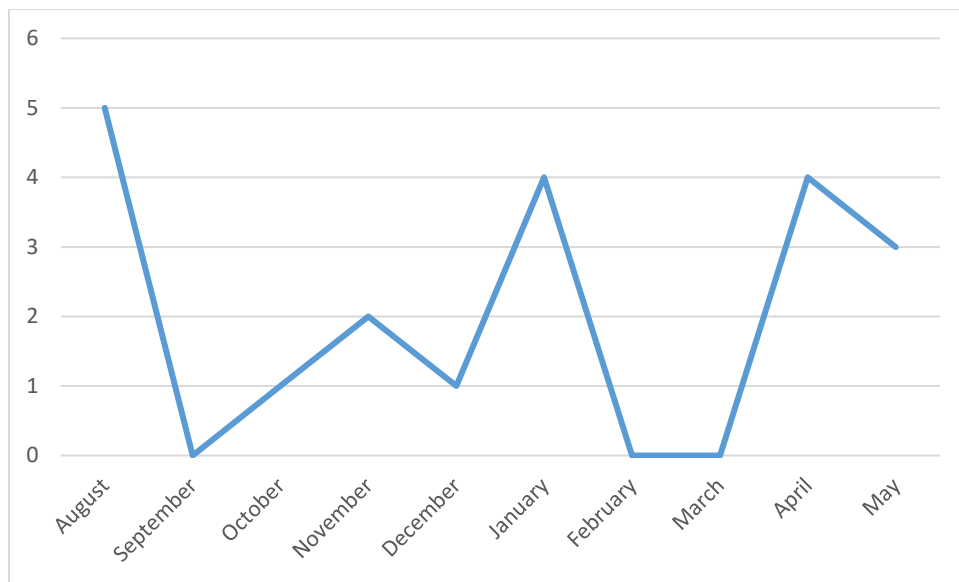
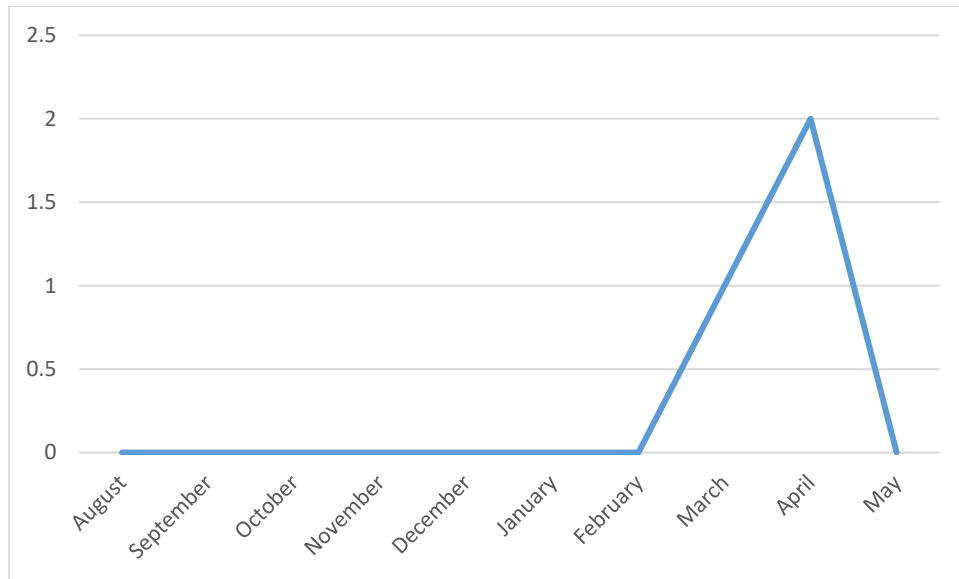


Figure 2. Line Graph for Research Question 1, Elementary School #1, Student One Student Two

Student two only missed three days throughout the entire 2018-2019 school year. He began with a baseline of zero during the month of August. During March, he was excused once for medical reasons. The student was excused twice during the month of April, also for medical reasons. See Figure 3 below.



*Figure 3. Line Graph for Research Question 1, Elementary School #1, Student Two
Student Three*

Student three also recorded very few absences throughout the 2018-2019 school year. He began with a baseline of zero in August. His only absences came in December, when he accumulated two unexcused days. All other months reflected perfect attendance. See Figure 4 below.

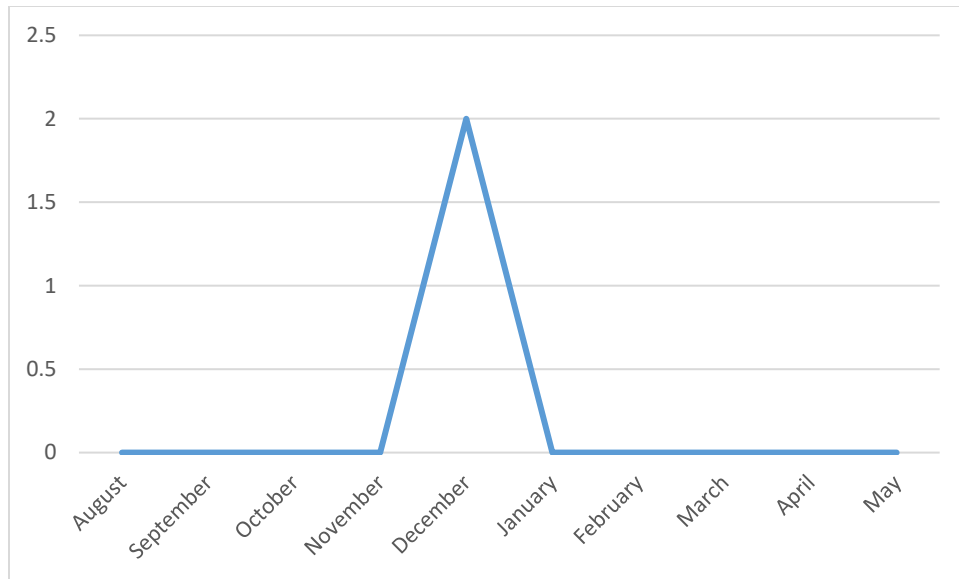


Figure 4. Line Graph for Research Question 1, Elementary School #1, Student Three

Student Four

Student four also began with a baseline of zero absences. He maintained zero absences throughout all but three months of the school year. During November, he had one absence that was excused for medical reasons. In April, the student had two excused absences, and in May, he had one unexcused absence. See Figure 5 below.

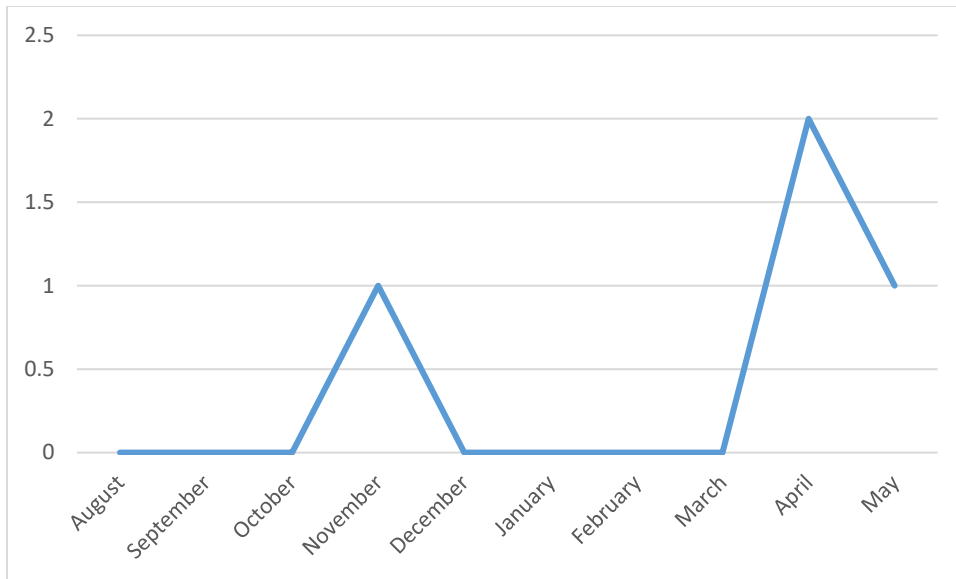


Figure 5. Line Graph for Research Question 1, Elementary School #1, Student Four

Elementary School #2

The teacher in elementary school #2 collected data for two students identified as having intellectual disabilities. The education assistance dog (EAD) assigned to this class began in January after completing training during the first half of the school year. The baseline score for each of these students was determined during the month of December. Attendance was not a problem for one of the students in this classroom, however the other student exhibited concerns in this area. The teacher collected monthly data beginning in December of 2018 and concluding in May of 2019. The student data is displayed in Table 2 below.

Table 2:
Student Attendance Data for Elementary School #2

Student	December	January	February	March	April	May
One	0	0	1	0	0	0
Two	8	1	5	6	6	5

Student One

Student one recorded very few absences throughout the data collection period. He began with a baseline of zero in December of 2018. His only absence came in February, when he was excused from school early on one occasion. All other months reflected perfect attendance. See Figure 6 below.

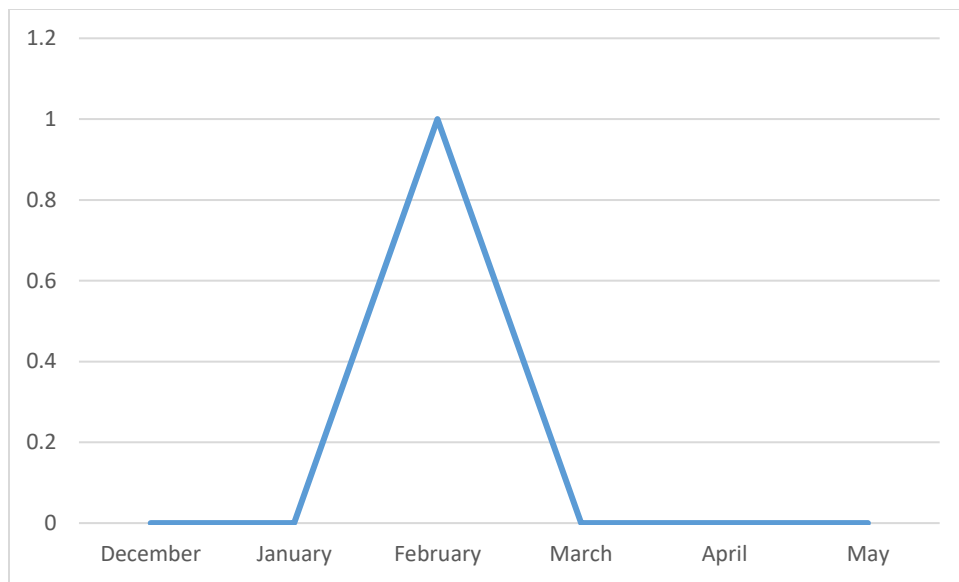


Figure 6. Line Graph for Research Question 1, Elementary School #2, Student One

Student Two

Data for student two reflected concerns in the area of attendance. He began with a baseline of eight absences during the month of December. These were all excused due to medical reasons. In January, when the EAD began in the classroom, the student’s attendance improved to a low of one absence, which was unexcused. The student accumulated five absences during the month of February. Two of these were excused and three were unexcused. He was absent six times in March for medical reasons. He was also absent six times in April. Two of these were excused due to medical reasons. Two were unexcused absences, and two

were early dismissals from school. Finally, in May, the student was absent for a total of five days. Three of these were excused. One was unexcused, and one was an early dismissal. See Figure 7 below.

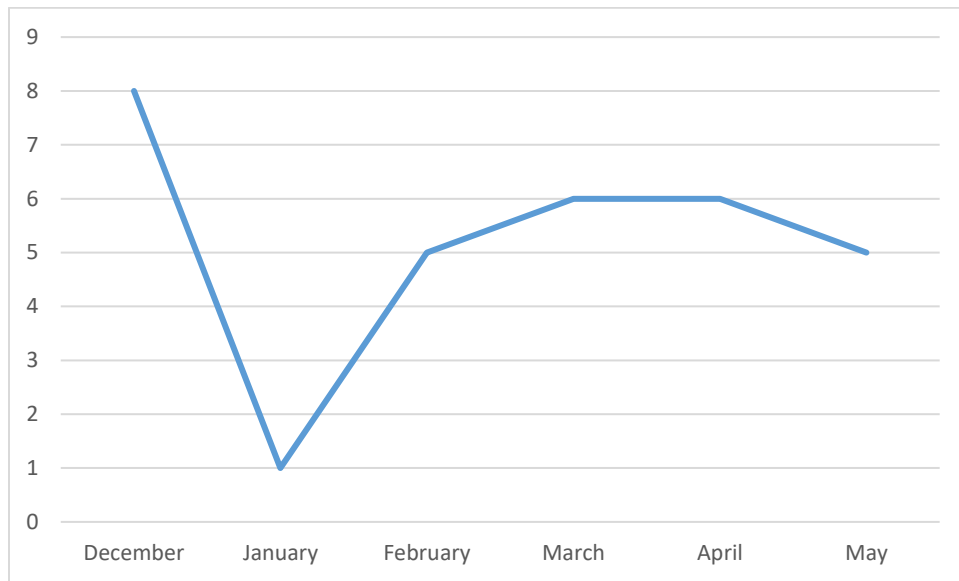


Figure 7. Line Graph for Research Question 1, Elementary School #2, Student Two Middle School #1

The teacher in middle school #1 collected data for three students identified as having intellectual disabilities. Like elementary school #2, the Education Assistance Dog (EAD) assigned to this class began in January of 2019 after completing training during the first half of the school year. The baseline score for each of the targeted students was determined during the month of December of 2018. Unlike the two elementary schools, all three students monitored by the teacher at middle school #1 had attendance concerns. The teacher collected monthly data beginning in December of 2018 and concluding in May of 2019. The student data is displayed in Table 3 below.

Table 3:
Student Attendance Data for Middle School #1

Student	December	January	February	March	April	May
One	5	3	5	4	10	4
Two	2	5	4	0	3	6
Three	1	1	6	2	2	6

Student One

Data for student one reflected concerns in the area of attendance. She began with a baseline of five absences during the month of December. One of these was excused, while four were unexcused. In January, when the EAD began in the classroom, the student's attendance improved to three absences, two of which were excused for medical reasons, and one that was not excused. The student accumulated five absences during the month of February. Three of these were excused for medical reasons. One was an unexcused absence and one was a school-related absence. She had four excused absences during March. The student reached a high of ten absences during the month of April. Seven of these were unexcused, while three were excused for medical reasons. During May, the student was absent for a total of four days. Two of these were excused and two were unexcused. The teacher noted that student one's mother expressed that her daughter's desire and willingness to attend school increased after the EAD was placed in the classroom. See Figure 8 below.

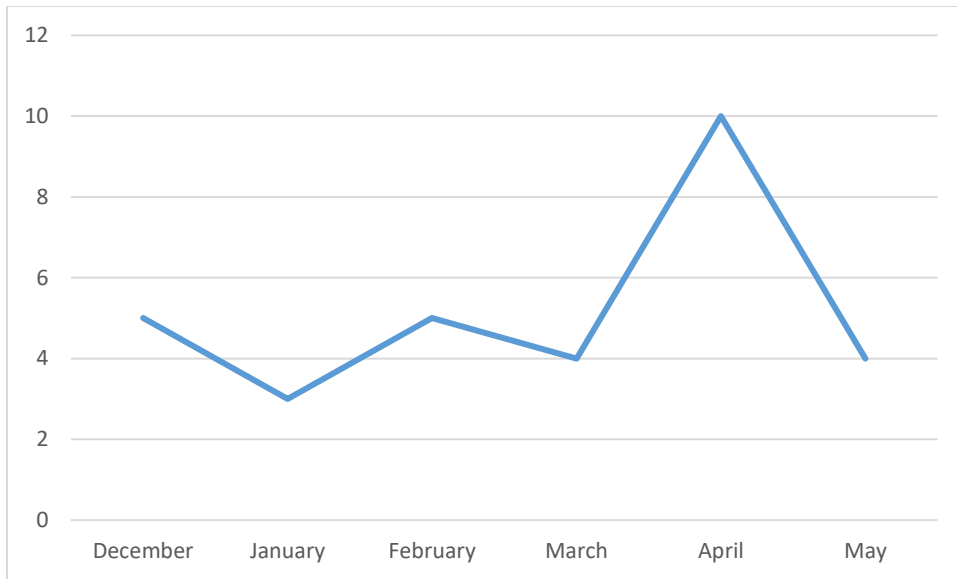


Figure 8. Line Graph for Research Question 1, Middle School #1, Student One

Student Two

Attendance was also a concern for student two. She was tardy to school twice during the month of December, making two her baseline. During January, her attendance concerns increased to five, including two tardies, one early dismissal, one excused absence, and one unexcused absence. She had four disrupted days in February, comprising of three tardies and one early dismissal. The student was present during all school days in March. During April, she was tardy twice and unexcused once, for a today of three impacted school days. Finally, in May, the student accumulated three excused absences, four unexcused absences, one tardy, and one early dismissal, summing nine impacted school days for the month. See Figure 9 below.

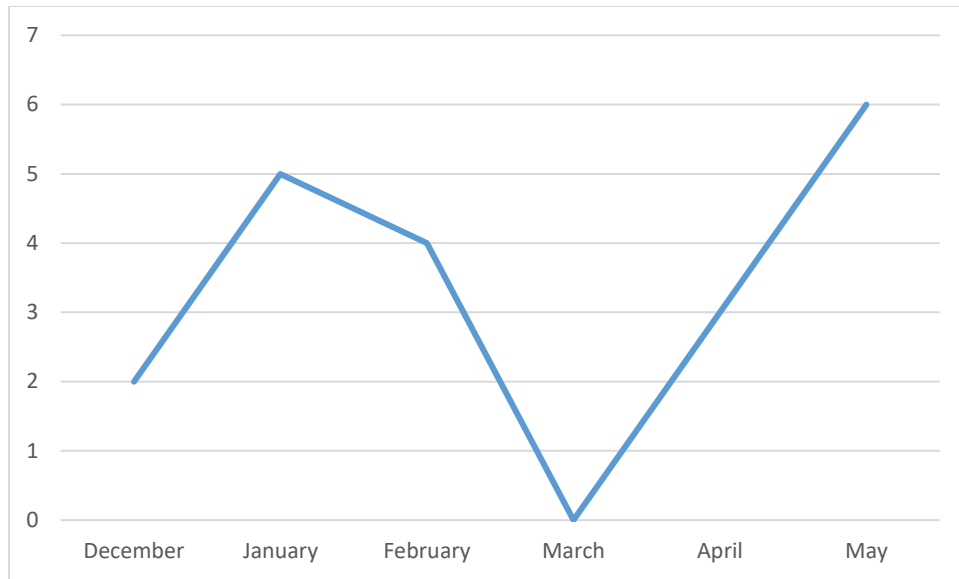


Figure 9. Line Graph for Research Question 1, Middle School #1, Student Two

Student Three

Student three achieved a baseline of one absence during the month of December, which was excused for medical reasons. After the EAD began in her classroom, student three was absent one day in January, as well. This absence was unexcused. In February, she accumulated six absences, including four days excused for medical reasons, one unexcused absence, and one school-related absence. Student three was absent twice in March for excused medical reasons. She had two absences in April, including one that was excused for medical reasons, and one that was unexcused. During May, she was absent six times, four of which were unexcused, and one of which was excused for medical reasons. See Figure 10 below.

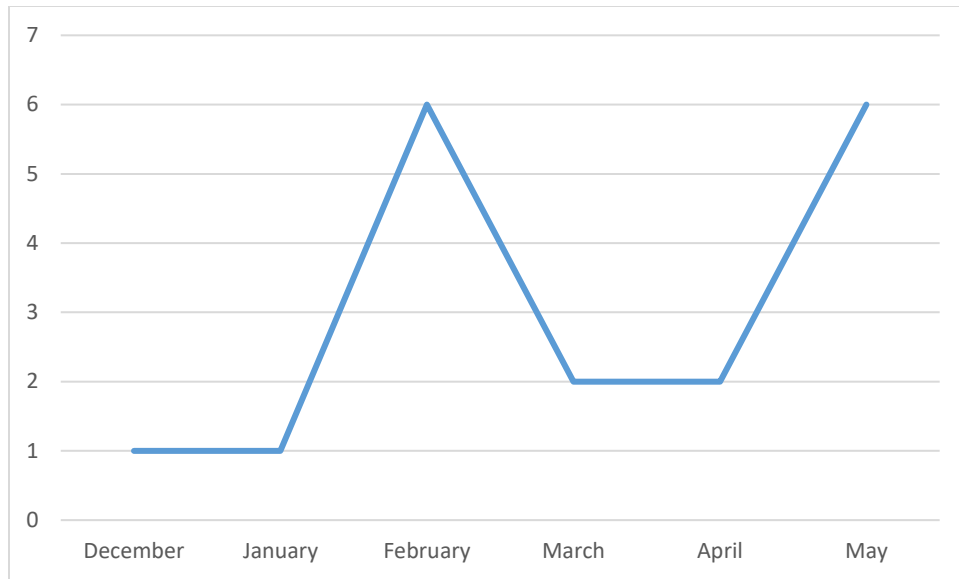


Figure 10. Line Graph for Research Question 1, Middle School #1, Student Three

Research Question 1 Summary

As indicated in Table 4 below, overall, the results were mixed in terms of attendance when comparing students from all three targeted schools. Three of the nine participants (33%) demonstrated a decline in their absences from their baseline score to their end-of-year score. Three of the participants (33%) stayed the same in terms of their attendance, with their baseline score matching their final score. Finally, three of the participants (33%) showed an increase in their number of absences when comparing their baseline score to their end-of-year score.

Table 4:
Summary of Student Absence Data

	Declined	Remained the Same	Increased
Elementary School #1			
One	√		
Two		√	
Three		√	
Four			√
Elementary School #2			
One		√	
Two	√		
Middle School #1			
One	√		
Two			√
Three			√

Of the students who showed a decline in their absences, one was from elementary school #1, one was from elementary school #2, and one was from middle school #1. Therefore, each school had one student whose attendance improved.

Student one at elementary school #1 had a baseline score of five absences. He concluded the study with three absences. During the implementation period, this student averaged only 1.5 days absent per month. This was an average decrease in absences of 67%.

The second student who showed a decline in absences when comparing baseline data to the end-of-year score, was student two at elementary school #2. This student began with a baseline of eight absences and finished with an end-of-year score of five. He averaged 4.5

absences per month during the treatment period. This was an average decrease in absences of 42%.

Finally, student one at middle school #1 demonstrated a decline in absences when comparing baseline to end-of-year scores. She began with a baseline of five absences in December and concluded with an end-of-year score of four. Her average score in between was 5.5 days of absence per month. This was an average increase in absenteeism of 4%.

The researcher compared the end-of-year scores to the averages per month for each of these three students. Two of the three students demonstrated even lower averages during the months between the baseline and end-of-year scores than what their final scores indicated.

Three students remained the same in their attendance when comparing their baseline score to their final score. Two of these were enrolled at elementary school #1 and one was at elementary school #2.

Students two and student three at elementary school #1 ended the year with a score equal to their baseline. Both began with zero days of absence and ended with the same. Student two had an average of .375 days absent during the months in between, while student three had an average of .25 days absent during the same time frame. For student two, this was an average increase in absenteeism of 33%, while for student three, it was a 22% increase.

Student one at elementary school #2 also remained the same between his baseline and end-of-year score. He had zero absences during both December and May. His average score during the months in between was .25 days of absence. This was an average increase in absenteeism of 20%.

Elementary school #1 had one student whose absences increased from their baseline score and middle school #1 had two students where this was also the case. The average scores for two of the three students showed lower averages during the months between the baseline and end-of-year scores than what their final scores indicated.

Student four at elementary school #1 began with a baseline score of zero and concluded with an end-of-year score of one. During the months in between, he averaged .375 days absent per month. This was an average increase in absenteeism of 44%.

Students two and three at middle school #1 demonstrated an increase in the absenteeism. Student two began with a baseline of two absences and finished with an end-of-year score of nine. She averaged three days of absence per month during the treatment period. This was an average increase in absenteeism of 210%.

Student three at middle school #1 started the study with a baseline of one absence and concluded with an end-of-year score of six. She averaged three days of absence during the treatment period. This was an average increase in absenteeism of 340%.

Overall, students showed a 33% increase in attendance. Student two at elementary school #2 showed the greatest decrease in instance of absence per month. Student two began with a baseline score of eight days with some form of absence in December of 2019 and ended with a total of five days with an absence, tardy, or early dismissal in May of 2019. These scores represented a 38% decline in instances of absence for student two.

Research Question 2: What is the relationship between the presence of an EAD on the instances of verbal communication utterances exhibited by special education students enrolled in a self-contained classroom?

Elementary School #1

The Education Assistance Dog (EAD) assigned to the ASD self-contained classroom at elementary school #1 began in September, while the school year began for students in August. Thus, the data collected by the teacher during the month of August represented the baseline for students by which the data from subsequent months was compared. The teacher collected monthly data beginning in August of 2018 and concluding in May of 2019.

Communication was only a concern for two of the four students targeted in this classroom. Both remaining students were completely verbal and received no school-based services for speech or language. As a result, the teacher only collected communication data on the two students demonstrating concerns, with the hope of increasing their verbal communication utterances. These students were identified as student one and student four during the discussion of research question 1, so they will continue to be identified by these numbers during the discussion of research question 2. The student data is displayed in Table 5 below.

Table 5:
Student Communication Data for Elementary School #1

Student	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
One	3	5	5	10	11	8	9	10	9	12
Four	2	0	1	1	0	1	0	1	1	0

Student One

Student one began the school year with a baseline of three verbal communication utterances during the month of August. After the introduction of the EAD in September, student one’s verbal communication utterances increased to five. He matched the score of five again in October. His score doubled to ten during the month of November and then increased again to

eleven during December. During the second half of the school year, student one's verbal communication utterances dropped to eight in January. They increased to nine in February and then ten in March. His score dropped back to nine again in April but rose to a high of twelve in May. See Figure 11 below.

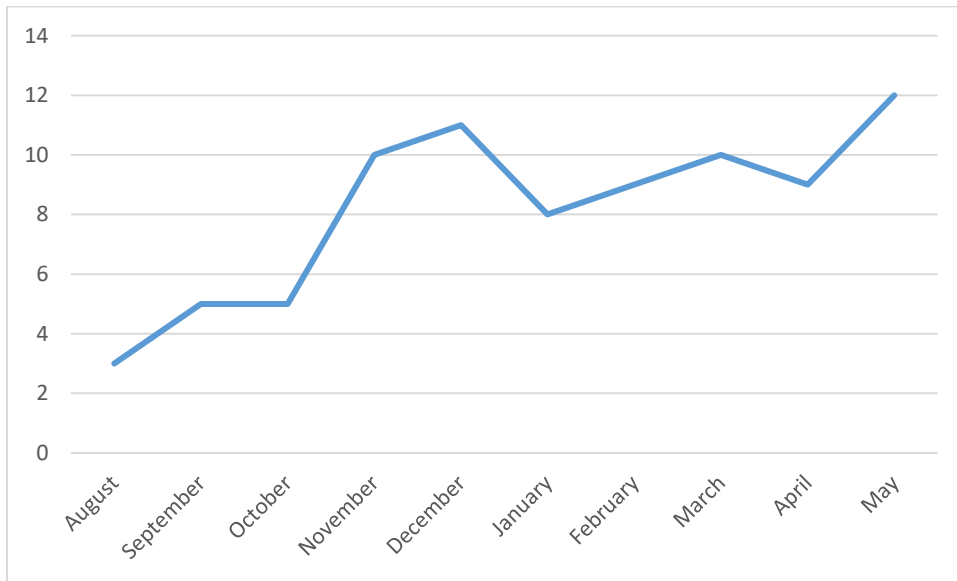


Figure 11. Line Graph for Research Question 2, Elementary School #1, Student One
Student Four

Student four began the year with a baseline of two verbal communication utterances during the month of August. All of his subsequent scores fell below his initial baseline. He did not demonstrate any verbal communication utterances in September after the introduction of the EAD. Student four produce one verbal communication utterance during October, and one during November. He did not produce any verbal communication utterances during December. The student produced one verbal communication utterance during January, but zero in February. During both March and April, student four produced one verbal communication utterance each

month. He concluded the school year with zero verbal communication utterances in May. See Figure 12 below.

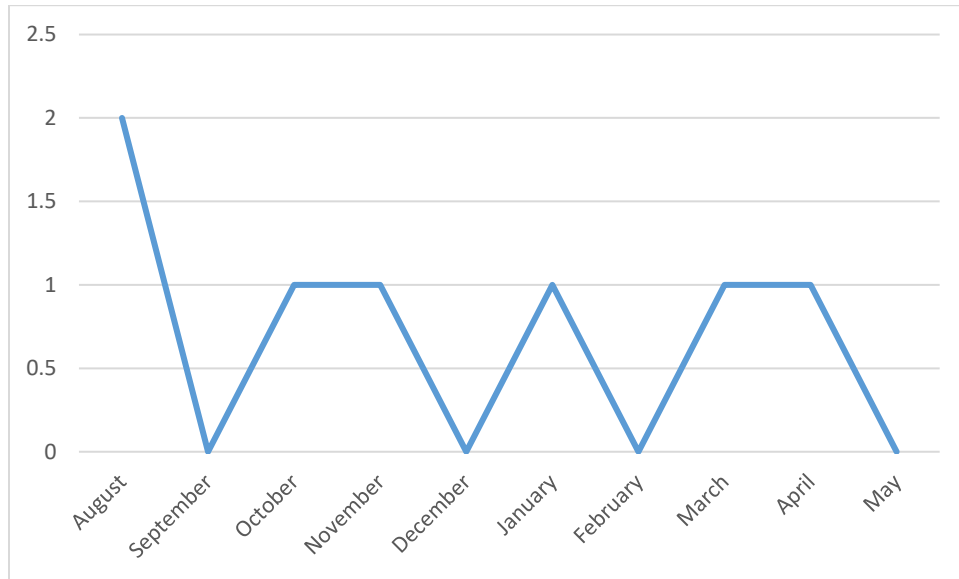


Figure 12. Line Graph for Research Question 2, Elementary School #1, Student Four

Elementary School #2

The EAD assigned to the InD self-contained classroom at elementary school #2 began in January, so baseline data was gathered for the targeted students in December. The teacher collected monthly data for both targeted students in her class beginning in December of 2018 and concluding in May of 2019. See Table 6 below.

Table 6:
Student Communication Data for Elementary School #2

Student	December	January	February	March	April	May
One	22	22	27	24	62	68
Two	20	26	18	32	52	46

Student One

Student one produced twenty-two verbal communication utterances during the month of December of 2018, making this his baseline score. After the introduction of the EAD in January of 2019, student one’s verbal communication utterances remained at twenty-two. His score rose to twenty-seven during the month of February but dropped back to twenty-four during March. His score showed a major increase during the month of April when he produced sixty-two verbal communication utterances. His final score in May continued to increase when the teacher documented sixty-eight verbal communication utterances. See Figure 13 below.

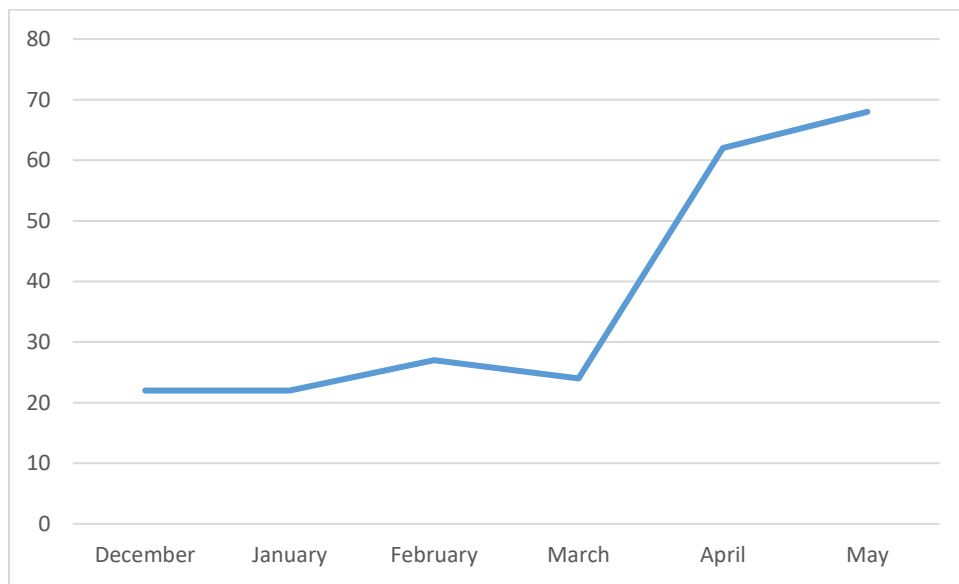


Figure 13. Line Graph for Research Question 2, Elementary School #2, Student One

Student Two

Student two produced a baseline score of twenty verbal communication utterances during the month of December of 2018. After the introduction of the EAD in January of 2019, student two’s verbal communication utterances increased to twenty-six. His score dropped back to eighteen during February. These scores increased during the month of March when he produced

thirty-two verbal communication utterances. Student two’s verbal communication utterances increased dramatically in April when he produced fifty-two instances. His final score in May fell to forty-six verbal communication utterances. See Figure 14 below.

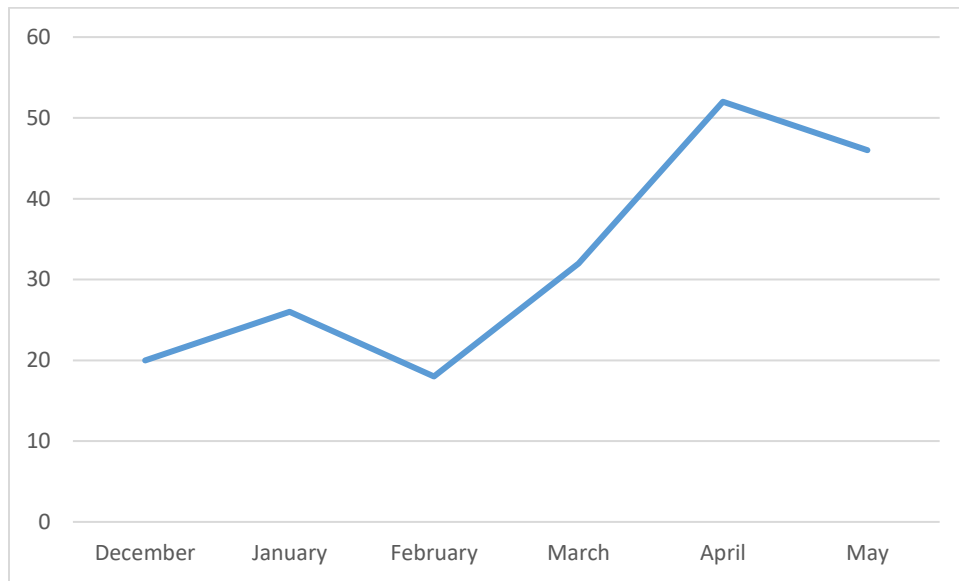


Figure 14. Line Graph for Research Question 2, Elementary School #2, Student Two
Middle School #1

The EAD assigned to the InD self-contained classroom at middle school #1 began in January of 2019, so baseline data was gathered for the targeted students in December of 2018. Accordingly, data collection began in December of 2018 and concluded in May of 2019. The teacher collected monthly data for two of the targeted students in her class for whom production of verbal communication utterances was a substantial concern. The remaining student (student one) was completely verbal, therefore not requiring data collection in this area. The two students for whom data was collected were identified as student two and student three during the discussion of research question 1, so they will continue to be identified as such during the discussion of research question 2. See Table 7 below.

Table 7:
Student Communication Data for Middle School #1

Student	December	January	February	March	April	May
Two	7	7	6	5	16	18
Three	3	3	1	1	2	3

Student Two

Student two began with a baseline of seven verbal communication utterances in December of 2018. After the EAD began in January of 2019, student two’s verbal communication utterances remained at seven. Her score declined to six during February and then to five during March. Student two’s verbal communication utterances increased to sixteen during April and concluded with a high of eighteen during May. See Figure 15 below.

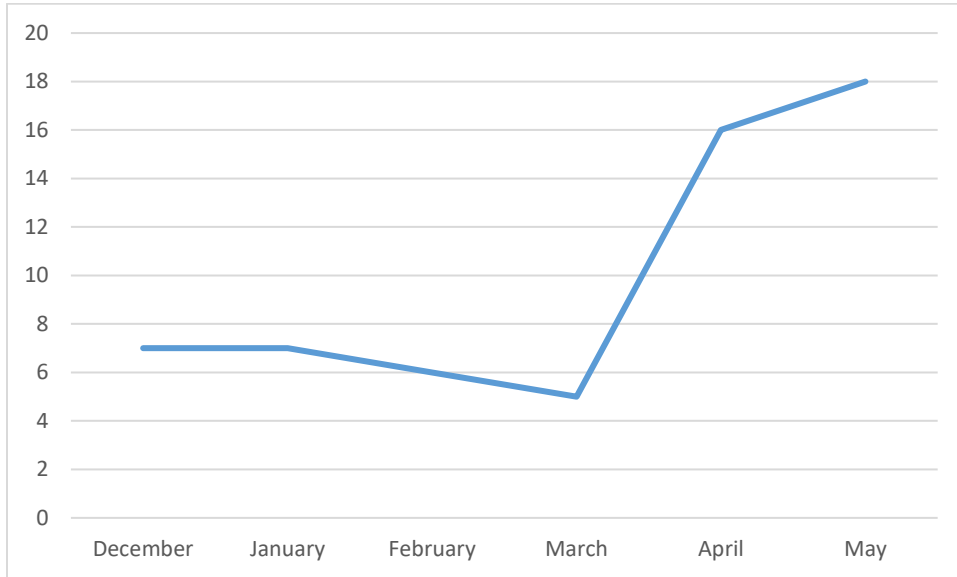


Figure 15. Line Graph for Research Question 2, Middle School #1, Student Two

Student Three

Student three was noted by the teacher to have substantial concerns producing verbal communication utterances. She began with a baseline score of three verbal communication utterances during the month of December of 2018. After the EAD began in January of 2019, student three’s score remained at three. Her score dropped to only one occasion where a verbal communication utterance was documented during February and again in March. In April, student three produced two verbal communication utterances, and then returned to her baseline score of three to conclude the school year in May. See Figure 16 below.

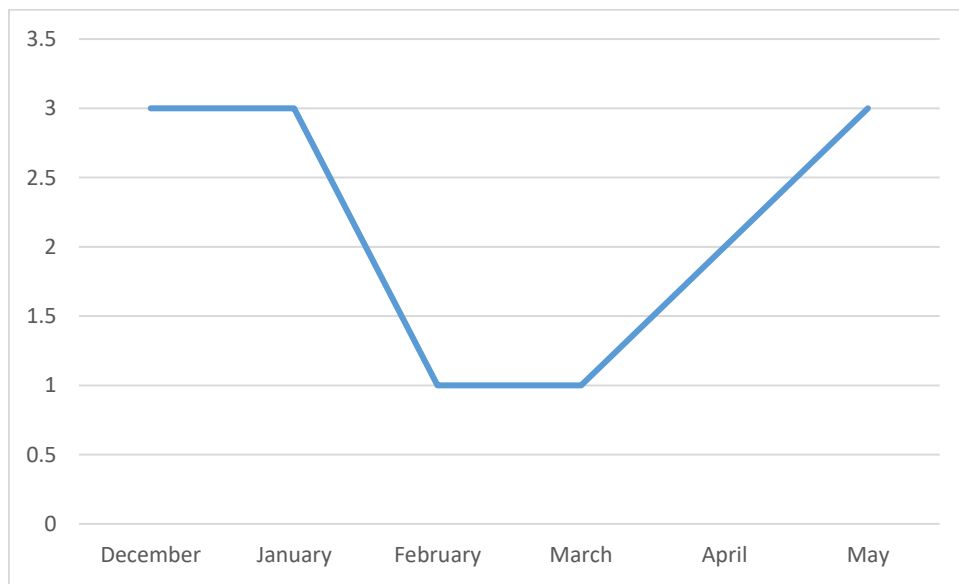


Figure 16. Line Graph for Research Question 2, Middle School #1, Student Three

Research Question 2 Summary

The EAD intervention showed an overall increase in verbal communication utterances. Four of the six students (67%) for whom data were collected showed an increase in their verbal communication utterances when comparing their baseline data to their end-of-year data. One student’s (17%) end-of-year score remained the same as their baseline score, and one student’s

(17%) end-of-year score declined from his baseline score. See Table 8 below for a summary of the data from Research Question 2.

Table 8:
Summary of Student Communication Data

	Declined	Remained the Same	Increased
Elementary School #1			
One			√
Four	√		
Elementary School #2			
One			√
Two			√
Middle School #1			
Two			√
Three		√	

Of the students who showed an increase in their verbal communication utterances, one was from elementary school #1, two were from elementary school #2, and one was from middle school #1. Therefore, each school had at least one student whose verbal communication utterances improved.

Student one at elementary school #1 began with a baseline score of three and finished with an end-of-year score of twelve. He averaged eight verbal communication utterances per month during the treatment period. This is an average increase of verbal communication utterances of 293%.

Students one and two at elementary school #2 showed increases in their verbal communication utterances, as well. Student one began with a baseline score of twenty-two and

concluded with an end-of-year score of sixty-eight. He averaged thirty-five instances of verbal communication utterances during the treatment period. This is an average increase of verbal communication utterances of 185%.

Student two at elementary school #2 started with a baseline score of twenty and finished with an end-of-year score of forty-six. He averaged thirty-two verbal communication utterance per month during the treatment period. This is an average increase of verbal communication utterances of 174%.

Finally, student two at middle school #1 demonstrated an increase in verbal communication utterances. She began with a baseline score of seven and concluded with an end-of-year score of eighteen. She averaged nine verbal communication utterances per month during the treatment period. This is an average increase of verbal communication utterances of 149%.

One student remained the same in verbal communication utterances. Student three at middle school #1 began with a baseline of three instances of verbal communication utterances and concluded the study with the same score of three. She averaged two instances of verbal communication utterance per month during the treatment period. This indicated a decline in verbal communication utterances of 33%. Thus, student three's end-of-year score of three verbal communication utterances trended higher than indications of her performance throughout the middle of the school year.

Elementary school #1 had one student whose verbal communication utterances declined from his baseline score. Student four began with a baseline of two verbal communication utterances and concluded with an end-of-year score of zero. He averaged .625 instances of

verbal communication utterance during the months in between. This was a decline in verbal communication utterances of 72%.

Overall, 67% of students in the study showed an increase in verbal communication utterances. Student one from elementary school #2 showed the greatest numerical gain between his baseline and end-of-year score with an overall gain of forty-six verbal communication utterances, representing a 209% increase.

Research Question 3: What is the relationship between the presence of an EAD on the instances of maladaptive behaviors exhibited by special education students enrolled in a self-contained classroom?

Elementary School #1

The teacher in elementary school #1 collected data for four targeted students identified as having autism spectrum disorder. The education assistance dog (EAD) assigned to this class began in September of 2018, while the school year began for students in August. Thus, the data collected by the teacher during the month of August represented the baseline for students by which the data from subsequent months was compared. Maladaptive behaviors were not a primary concern for student one, however the teacher collected monthly data for all four students beginning in August of 2018 and concluding in May of 2019. See Table 9 below.

Table 9:
Student Behavior Data for Elementary School #1

Student	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
One	0	0	0	0	0	1	0	0	1	0
Two	6	11	1	1	2	9	8	9	27	37
Three	23	15	14	0	3	7	5	0	1	0
Four	0	4	1	0	1	0	0	0	2	0

Student One

As noted above, student one did not display substantial concerns with maladaptive behaviors. His baseline score was zero, where it remained until January of 2019. During January, student one showed one instance of maladaptive behavior. He returned to zero occurrences during both February and March. Student one showed one instance of maladaptive behavior during April then concluded the year with zero in May. See Figure 17 below.

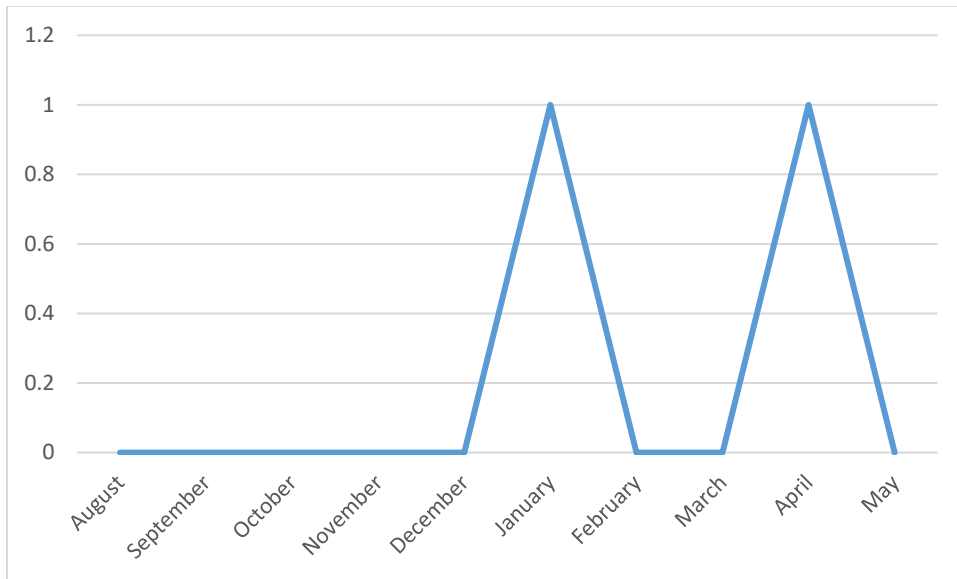


Figure 17. Line Graph for Research Question 3, Elementary School #1, Student One

Student Two

Student two represented one of the extenuating circumstances mentioned during chapter one in the limitations section. He experienced numerous changes within his personal life, as reported to the teacher by his parent. Student two began with a baseline of six instances of maladaptive behaviors during the month of August of 2018 before the EAD arrived in his classroom. These instances grew to eleven during September but dropped to one during both October and November. During December, student two's maladaptive behaviors began climbing. The teacher documented two instances during December, nine during January, eight during February, and nine during March. Student two experienced the loss of a grandparent in April and during the same month, his maladaptive behaviors at school spiked to twenty-seven. His instances of maladaptive behavior remained elevated at thirty-seven in May, coinciding with the move to a new house, and the addition of a grandparent into his household. All of these

factors could have caused an elevation in student behaviors unrelated to the EAD. See Figure 18 below.

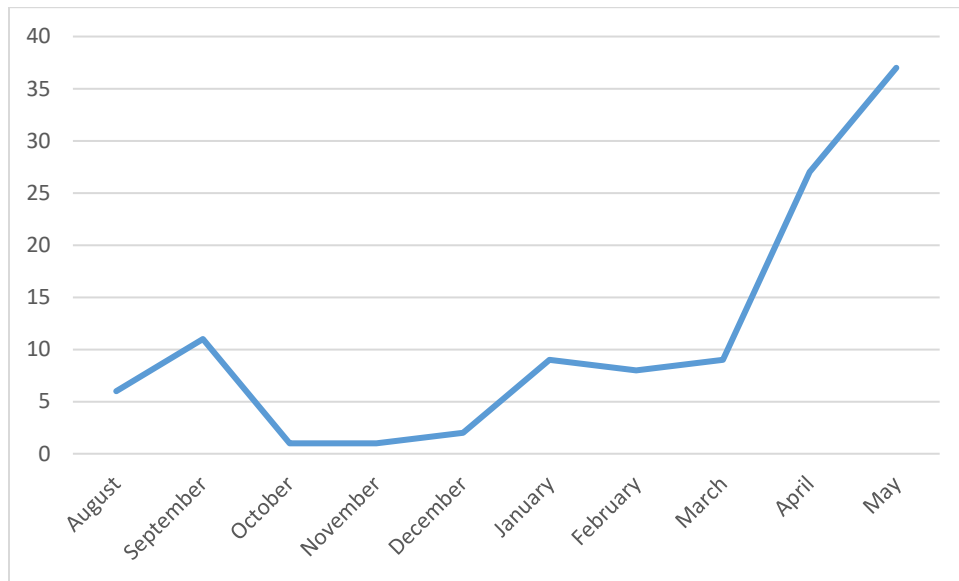


Figure 18. Line Graph for Research Question 3, Elementary School #1, Student Two
Student Three

Student three began with an elevated baseline of twenty-three maladaptive behaviors during August of 2018. When the EAD began in September, student three’s documented maladaptive behaviors dropped to fifteen. They reduced again in October to fourteen. During November, student three showed zero instances of maladaptive behavior. These instances rose to three in November and seven in December. In January, student three’s maladaptive behaviors began declining. He showed five instances in February, zero in March, one in April, and zero in May. See Figure 19 below.

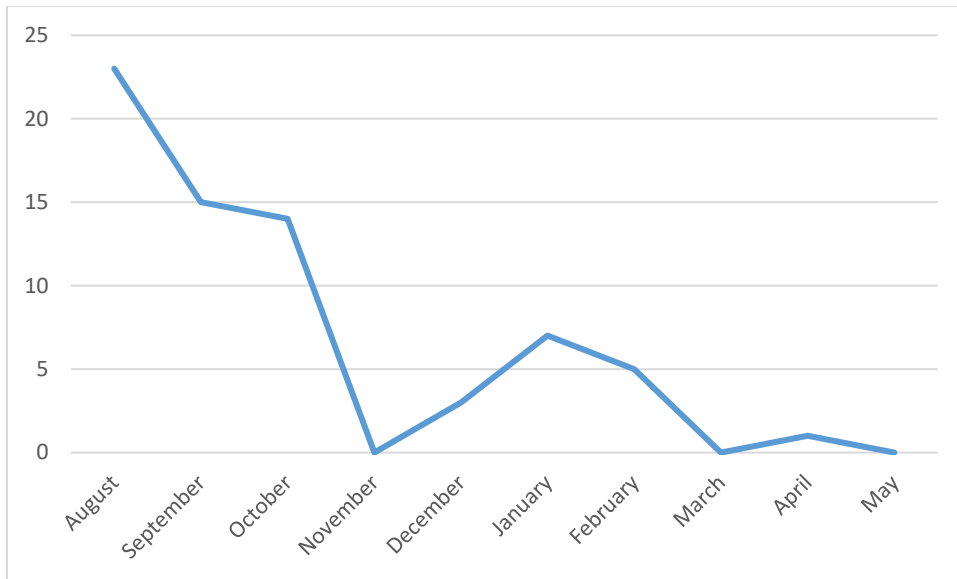


Figure 19. Line Graph for Research Question 3, Elementary School #1, Student Three

Student Four

Student four represented the second of the extenuating circumstances mentioned in chapter one within the limitations section. According to the teacher, the student was the subject of a custody dispute between his parents. Although his home life was likely impacted, the personal upheaval did not seem to impact his maladaptive behaviors in the school setting.

Student four began with a baseline of zero during the month of August of 2018. His documented maladaptive behaviors grew to four during the first month of the EAD’s presence in September. From October on, student four’s instances of maladaptive behaviors remained consistently low. He exhibited one instance during October, zero during November, one during December, zero during January, February, and March, two during April, and zero during May. See Figure 20 below.

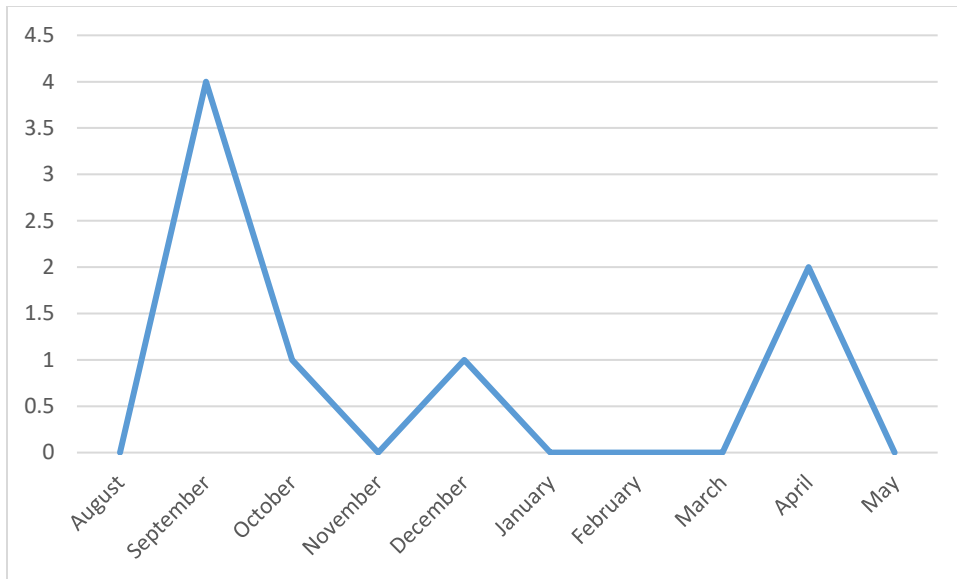


Figure 20. Line Graph for Research Question 3, Elementary School #1, Student Four

Elementary School #2

The teacher in elementary school #2 collected data for two targeted male students identified as having intellectual disabilities. The EAD assigned to this class began in January of 2019, so baseline data for the students was collected in December of 2018. The data collection period extended from December of 2018 to May of 2019.

Maladaptive behaviors were an explicit concern for both targeted students in this classroom. One possible explanation for this was mentioned in chapter one in the limitations section. The provision of adult assistance available to the students was reduced from three to two. Each self-contained classroom typically had one teacher and two paraprofessionals. In the instance of this classroom, one of the paraprofessionals was removed for another assignment in February, thereby lessening the amount of time that was dedicated to working with the students, in conjunction with the EAD, on the dependent variables. The paraprofessional returned to the

classroom during the last month of school in May. The student data is displayed in Table 10 below.

Table 10:
Student Behavior Data for Elementary School #2

Student	December	January	February	March	April	May
One	31	19	16	18	28	0
Two	88	71	160	3	105	17

Student One

Student one recorded an elevated baseline score of thirty-one maladaptive behaviors during the month of December. After the EAD was introduced to the classroom in January, student one's maladaptive behaviors dropped to nineteen. His maladaptive behavior declined again during February to sixteen. They elevated again during March and April when maladaptive behaviors were documented to be eighteen and twenty-eight, respectively. Student one recorded a low for the year of zero instances of maladaptive behaviors during the last month of school in May, coinciding with the return of the paraprofessional to his classroom. See Figure 21 below.

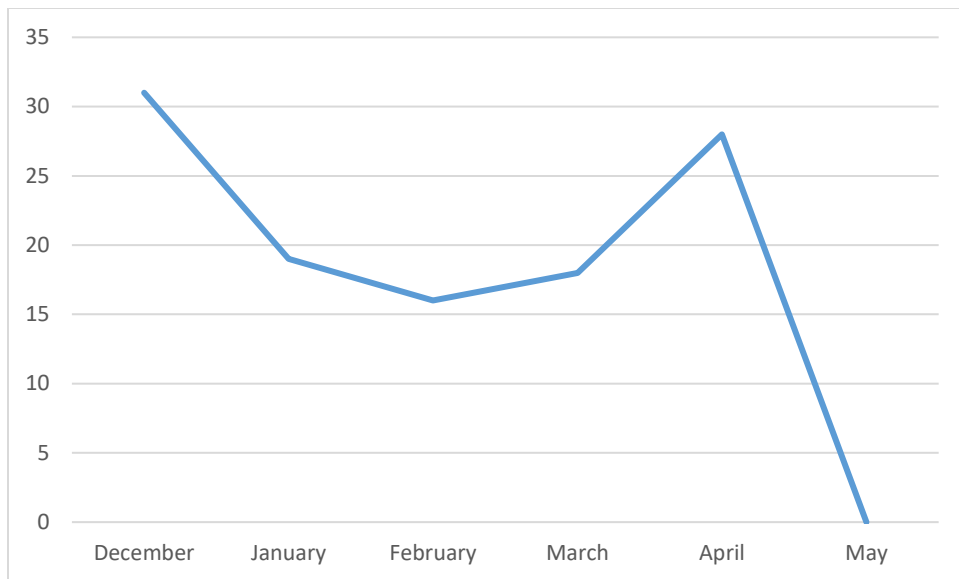


Figure 21. Line Graph for Research Question 3, Elementary School #2, Student One
Student Two

Student two also began with an elevated baseline score of eighty-eight maladaptive behaviors in December of 2018. When the EAD joined the classroom in January, student two's maladaptive behaviors declined, however remained elevated at seventy-one. When the paraprofessional was removed from his classroom in February, student two's maladaptive behaviors spiked to one hundred sixty. The teacher recorded only three instances of maladaptive behaviors during the month of March, however student two's score spiked again in April to one hundred five. When the paraprofessional returned to the classroom in May, student two's maladaptive behaviors dropped to seventeen. See Figure 22 below.

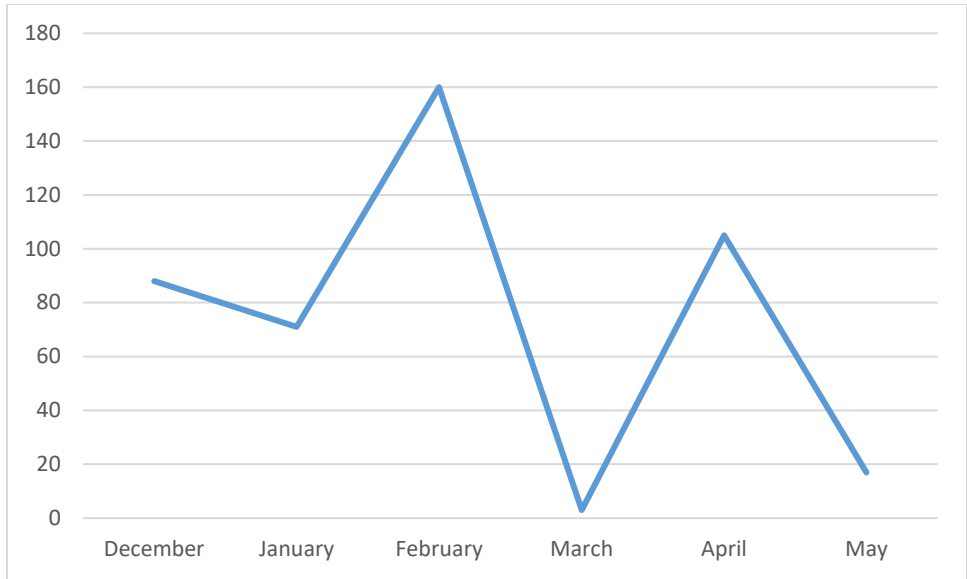


Figure 22. Line Graph for Research Question 3, Elementary School #2, Student Two

Middle School #1

The teacher in middle school #1 collected data for three targeted female students identified as having intellectual disabilities. The EAD assigned to this class began in January of 2019, so baseline data was collected during December of 2018. Maladaptive behaviors were only a concern for two of the students, however the teacher collected monthly data for all three students. See Table 11 below.

Table 11:
Student Behavior Data for Middle School #1

Student	December	January	February	March	April	May
One	0	0	0	0	0	0
Two	9	9	6	5	0	0
Three	5	5	3	0	0	0

Student One

Student one began with a baseline of zero maladaptive behaviors during the month of December of 2018. After the EAD began in her classroom during January of 2019, her maladaptive behavior score remained at zero. Student one maintained a score of zero throughout all of the months for the remainder of the school year. See Figure 23 below.

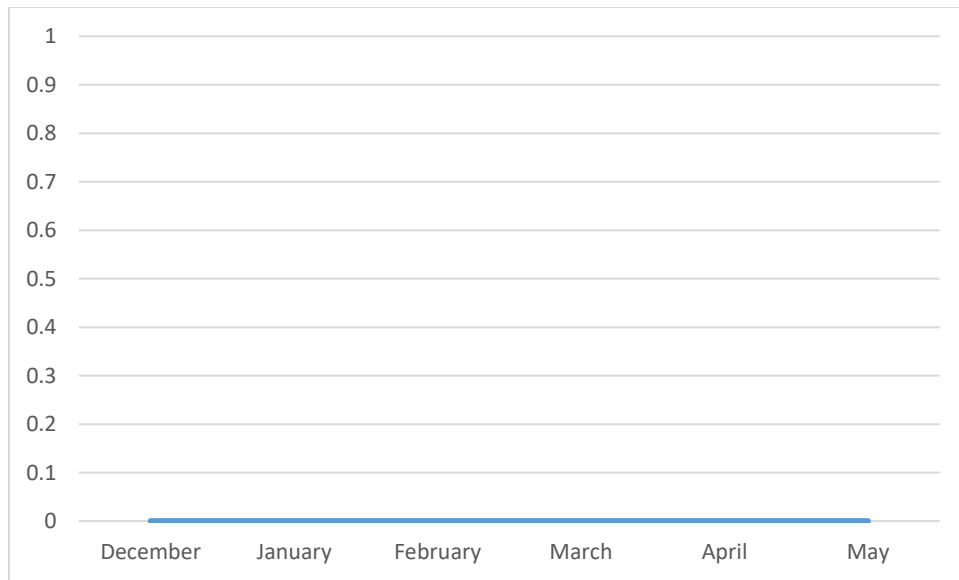


Figure 23. Line Graph for Research Question 3, Middle School #1, Student One

Student Two

Student two began with a baseline score of nine maladaptive behaviors during the month of December of 2018. During January, when the EAD joined her classroom, student two also recorded nine maladaptive behaviors. Data indicated that her maladaptive behaviors began to decline in subsequent months. The teacher recorded six maladaptive behaviors for student two in February, five in March, and zero in both April and May. See Figure 24 below.

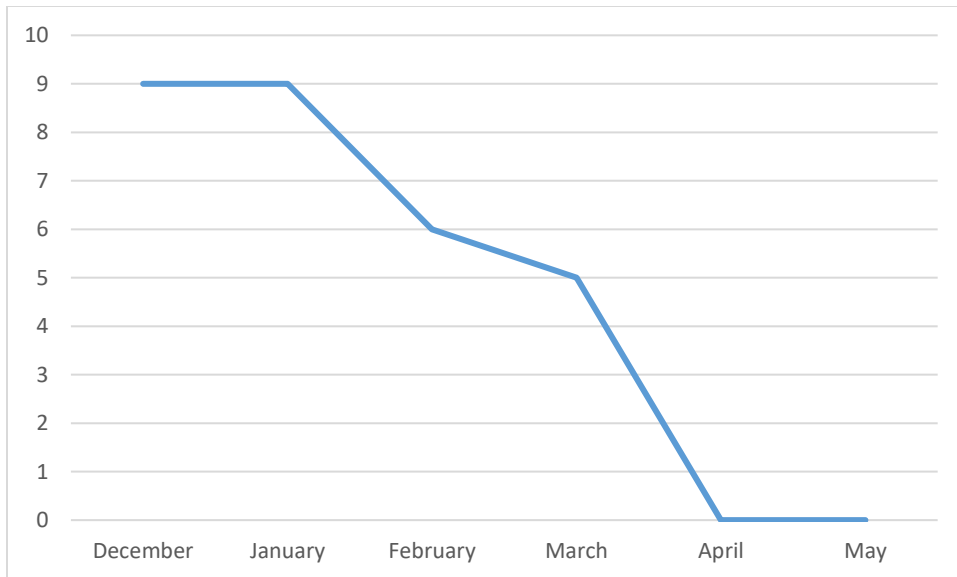


Figure 24. Line Graph for Research Question 3, Middle School #1, Student Two

Student Three

Data collected by the InD teacher at middle school #1 indicated that student three began with a baseline score of five maladaptive behaviors during December of 2018. Her score remained at five after the EAD began in January of 2019. Beginning in February, student three's maladaptive behaviors began to decline. She recorded three instances of maladaptive behaviors in February and zero during March, April, and May. See Figure 25 below.

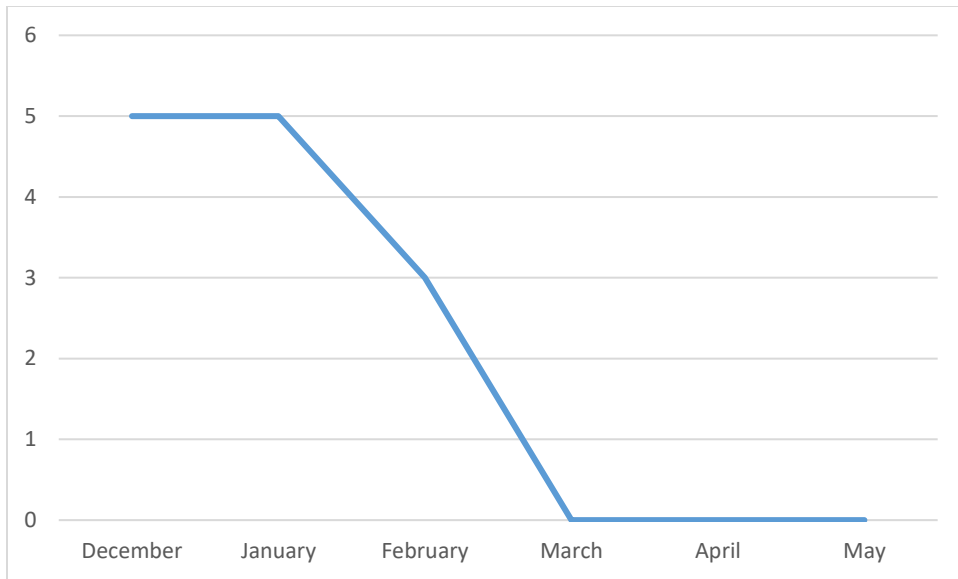


Figure 25. Line Graph for Research Question 3, Middle School #1, Student Three

Research Question 3 Summary

There was an overall decrease in maladaptive behaviors after the provision of the EAD treatment, with greater than half of the student participants at the three targeted schools demonstrating a decline. Five of the nine (56%) students who were monitored showed a decrease in maladaptive behaviors when comparing their baseline data to their end-of-year data. Three students' end-of-year scores remained the same as their baseline score. One student's end-of-year score increased from his baseline score. See Table 12 below for a summary of the data from Research Question 3.

Table 12:
Summary of Student Maladaptive Behavior Data

	Declined	Remained the Same	Increased
Elementary School #1			
One		√	
Two			√
Three	√		
Four		√	
Elementary School #2			
One	√		
Two	√		
Middle School #1			
One		√	
Two	√		
Three	√		

Of the students who showed a decline in maladaptive behaviors, one was from elementary school #1, two were from elementary school #2, and two were from middle school #1. Therefore, each school had at least one student whose maladaptive behavior decreased.

Student three at elementary school #1 began with a baseline of twenty-three instances of maladaptive behaviors and concluded with an end-of-year score of zero. Student three averaged six instances of maladaptive behavior during the treatment period. This represented an average decline of 78% in the instances of maladaptive behaviors.

Student one at elementary school #2 began with a baseline score of thirty-one and finished with an end-of-year score of zero. He averaged twenty instances of maladaptive behavior per month during the treatment period. This represented an average decline of 48% in

the instances of maladaptive behaviors. Student one's end-of-year score trended much lower than the average of his scores throughout the study period would otherwise indicate.

Student two at elementary school #2 also demonstrated a decrease in instances of maladaptive behaviors. He started with a baseline score of eighty-eight instances of maladaptive behavior and concluded with an end-of-year score of seventeen. Student two showed an average of eighty-five instances of maladaptive behavior during the treatment period. This represented an average decline of 19% in the instances of maladaptive behaviors. Like student one at elementary school #2, his end-of-year score trended much lower than the average of his scores throughout the study period would otherwise indicate.

Student two at middle school #1 began with a baseline score of nine and finished with an end-of-year score of zero. She averaged five instances of maladaptive behavior during the treatment period. Her lowest two months were April and May, at the end of the school year, where she showed zero instances of maladaptive behaviors. This represented an average decline of 56% in the instances of maladaptive behaviors.

Finally, student three at middle school #1 also showed a decline in maladaptive behaviors during the study period. She began with a baseline score of five and concluded with an end-of-year score of zero. She averaged two instances of maladaptive behavior per month during the treatment period. This represented an average decline of 68% in the instances of maladaptive behaviors. Like student two at middle school #2, her lowest scores came at the end of the school year, where she demonstrated zero instances of maladaptive behavior during March, April, and May.

Three students remained the same in terms of their maladaptive behaviors when comparing their baseline scores to their end-of-year scores. Two of these students were enrolled at elementary school #1 and one was enrolled at middle school #1.

Student one at elementary school #1 began with a baseline score of zero and concluded with an end-of-year score of zero. He averaged .25 instances of maladaptive behavior during the treatment period. This represented an average increase of 22% in the instances of maladaptive behaviors. Overall, student one only demonstrated two instances of maladaptive behavior during the entire school year. These instances occurred during the months of January and April.

Student four at elementary school #1 also remained the same from his baseline score of zero to his end-of-year score of zero. He averaged one instance of maladaptive behavior per month during the treatment period. This represented an average increase of 89% in the instances of maladaptive behaviors. Relative peaks in his maladaptive behaviors occurred during September, where he demonstrated a score of four, and April, where he showed a score of two.

Student one at middle school #1 began with a baseline score of zero and finished with an end-of-year score of zero. He averaged zero instances of maladaptive behavior during the treatment period. This represented a 0% change in the instances of maladaptive behaviors.

Elementary school #1 had one student whose maladaptive behaviors increased dramatically from his baseline score. Student two began with a baseline score of six and grew to an end-of-year score of thirty-seven. He averaged nine instances of maladaptive behaviors per month during the treatment period. This represented an average increase of 194% in the instances of maladaptive behaviors. His average score trended much lower than his end-of-year score would otherwise indicate. His highest scores occurred during the two months preceding

the end of the school year, where he demonstrated twenty-seven maladaptive behaviors during April and thirty-seven during May.

Overall, 56% of students showed a decline in maladaptive behaviors. Student two at elementary school #2 showed the greatest decrease in maladaptive behaviors with an overall drop of seventy-one instances of maladaptive behaviors. Student two began with a baseline score of eighty-eight in December of 2019 and ended with a score of seventeen in May of 2019, thereby showing an 81% decline in maladaptive behaviors.

Summary

In chapter four, the researcher reintroduced the research questions, shared demographic information regarding the population and sample, provided a detailed summary of the data for each of the research questions, and analyzed the data shared by the teachers in each of the three targeted schools. For research question 1 regarding attendance, the results were mixed when comparing students from all three targeted schools. Three of the nine participants demonstrated a decline in their absences from their baseline score to their end-of-year score, while three stayed the same, and three showed an increase (see Table 4). The results for research question 2 indicated that four of the six students (67%) who were targeted for data collection showed an increase in their verbal communication utterances (see Table 8). Finally, research question 3 showed that five of the nine students (56%) demonstrated a decrease in their instances of maladaptive behaviors (see Table 12). A discussion of the results is presented in chapter five.

CHAPTER FIVE: SUMMARY, DISCUSSION, AND IMPLICATIONS

Introduction

Chapter five of this dissertation summarizes the current study and examines the implications of the results, as well as considering possibilities for future research. The researcher examined the compiled data for each research question to consider implications for education assistance dogs and students taught in self-contained, special education classrooms within the targeted large, urban, Central Florida school district. She then discussed ways in which the results might be useful for future research including replication studies or examination of new areas in which EADs could potentially be beneficial. Chapter five consists of a summary of the study, a discussion of the findings for each research question, implications and recommendations for practice, and recommendations for future research.

Summary of the Study

Statement of the Problem

The researcher sought to determine if Education Assistance Dogs (EADs) would improve the attendance, verbal communication utterances, and maladaptive behaviors of students enrolled in three self-contained, special education classrooms within one large, urban, Central Florida school district. These dependent variables were selected because baseline data indicated that these areas presented the greatest need for intervention throughout the three classes.

Population

The participants in this study were students who were on behavior intervention plans (BIP) in three different self-contained, special education classrooms. These classrooms served students who had intellectual disabilities (InD) or autism spectrum disorder (ASD). The first

class was an ASD unit at the elementary school level (Elementary School #1) where four students were tracked. The second class was an InD unit at the elementary level (Elementary School #2) where two students were followed. Finally, the third class was an InD unit at the middle school level (Middle School #1) where three students were monitored. In total, the sample was made up of nine students between third and eighth grade in two types of self-contained, special education classrooms at three different schools.

Data Collection

Teachers in each of the classes were provided data sheets (see Appendix A) to track the instances of absences, verbal communication utterances, and maladaptive behaviors of the targeted students. The teachers began by establishing a baseline for each of the students prior to the introduction of the EAD, then collected monthly data on each of the variables after that point. The EAD began in September of the 2018-2019 school year in the ASD elementary classroom (elementary school #1). Baseline data was collected for the students during August of 2018. The EAD began in January of 2019 in each of the InD classrooms (elementary school #2 and middle school #1). Baseline data were collected in each of these classrooms during December of 2018. The teachers submitted the data sheets to the researcher at the end of each month so that she could compile the data and examine it for trends.

Methods

The researcher utilized a quantitative single subject research design for each of the nine targeted students. After the three teachers submitted their data sheets to the researcher, she charted the data points individually for each participant. The researcher then examined the separate line graphs, exhibited in Chapter 4, to determine if any trends emerged. The use of this

research design gave a pictorial representation of the differences between the baseline scores and final scores of the targeted students after the introduction of the EAD.

Discussion of the Findings

The following sections will discuss the findings for each of the three research questions in the study. The researcher will address the findings of each research question individually.

Research Question 1

What is the relationship between the presence of an EAD on the attendance of special education students enrolled in a self-contained classroom?

The results were mixed in terms of attendance when comparing students from all three targeted schools. Three of the nine (33%) participants demonstrated a decline in their absences from their baseline score to their end-of-year score. Three (33%) of the participants stayed the same in terms of their attendance, with their baseline score matching their end-of-year score. Finally, three (33%) of the participants showed an increase in their number of absences when comparing their baseline score to their end-of-year score. As a result of the data being split equally into thirds, any evidence of a relationship between the presence of the EAD and student attendance was inconclusive.

Research Question 2

What is the relationship between the presence of an EAD on the instances of verbal communication utterances exhibited by special education students enrolled in a self-contained classroom?

The EAD intervention showed that verbal communication utterances increased at a higher rate than observed with attendance. Teachers did not collect data for three of the nine

targeted students, because these three students were fully verbal and verbal communication utterances were not a concern in these instances. Four of the six students for whom data were collected showed an increase in their verbal communication utterances when comparing their baseline data to their end-of-year data. One student's end-of-year score remained the same as his baseline score, and one student's end-of-year score declined from his baseline score. Four of the six students (67%) who were targeted for data collection showed an overall increase in their verbal communication utterances.

Research Question 3

What is the relationship between the presence of an EAD on the instances of maladaptive behaviors exhibited by special education students enrolled in a self-contained classroom?

There was an overall decrease in maladaptive behaviors during the implementation period of the EAD. Five of the nine students who were monitored showed a decline in maladaptive behaviors when comparing their baseline data to their end-of-year data. Three students' end-of-year score remained the same as their baseline score. It is possible that scores for student four at elementary school #1 could have been the result of the extenuating circumstances discussed above. Finally, one student showed an increase in his end-of-year score when compared to his baseline score; although again, this could have been the result of the extenuating circumstances detailed previously. Ultimately, 56% of the students who were targeted for data collection showed a positive trend toward declining instances of maladaptive behavior in their results.

Implications and Recommendations for Practice

The study results showed positive trends in the data between the presence of an education assistance dog (EAD) and increases in verbal communication utterances and decreases in maladaptive behaviors among students who had behavior intervention plans in self-contained, special education classrooms. The results were inconclusive in terms of increasing student attendance, however, did not indicate a downturn in student outcomes. These results suggest that the large, urban, Central Florida school district may want to consider continuation of the EAD program to gather additional data.

The targeted district established a feeder pattern during the 2019-2020 school year consisting of an elementary school, a middle school, and a high school, where students enrolled in self-contained classes for autism spectrum disorder or intellectual disabilities may progress throughout their school career, having an EAD present in their classroom at each level. This faith in the EAD program demonstrated by the targeted school district, as well as the results of the current study, indicate that the EAD program is worthy of continuation and could potentially show long-term results.

Recommendations for Further Research

The researcher noted multiple opportunities for improved study or additional research as she was completing the various phases of this dissertation. Multiple features were unavoidably deficient in the current study due to constraints within the large, urban, Central Florida school district in which the research took place. These deficiencies were also largely present in the current research field, as evidenced through the literature review. These included a lack of shared guidelines and terminology, and a lack of precision in research design.

Guidelines for Practice and Shared Terminology

Boris Levinson (1969), the seminal researcher in the field of animal-assisted therapy (AAT) initially feared that the practice of AAT would have difficulty gaining acceptance and support. In accordance with Levinson's fear, the research team of Kruger, Tractenberg, and Serpell (2004) concluded that animal-assisted interventions and therapies were limited by the absence of unifying guidelines for practice and a lack of shared terminology. In 2013, Parenti, Foreman, Jean Meade, and Wirth attempted to solidify the terminology utilized in AAT by proposing a concise taxonomy for classifying assistance animals. However, the efforts of Parenti et al. (2013) and other likeminded researchers failed to unite the field of haphazard studies on animal-assisted interventions and therapies.

This lack of shared guidelines and terminology was a factor in the current study, particularly when searching for literature. Numerous search terms were needed to locate information that was all relative to the same topic. For example, the search terms: "service dogs" or animals, "sensory signal dogs," and "autism assistance dogs," were used across multiple databases and online libraries to locate peer-reviewed journals, articles, books, and dissertations relating to the topic of assistance dogs.

Future research would likely be aided by adhering to greater precision in these areas. Animal-assisted therapies (AAT) are likely to become more widespread and uniformly accepted only after overall guidelines for practice and a shared terminology are established.

Greater Precision in Research Design

The predominance of previous research efforts to establish efficacy in the field of AAT have been plagued by ineffective study designs (Kazdin, 2017). For example, one of the ways in

which research designs associated with animal-assisted interventions and therapies have fallen short is through inadequate sample sizes, which tend to be heterogeneous and unrepresentative (Kazdin, 2017). In addition, it is rare to locate a study on AAT that utilizes a true experimental design with an adequate control group. To date, many of the studies in the field of AAT have been descriptive in nature and, as a result, lack the ability to address causal relationships between AATs and outcomes on behavior, communication, or other areas of study (Kazdin, 2017). Kazdin (2017) also noted that when AAT studies were conducted using experimental or quasi-experimental designs, concerns remained regarding short duration times and use of cross-sectional designs. These studies were also prone to having methodological issues which undermined their validity and generalizability, and made replication studies challenging to complete (Kazdin, 2017).

The current study was hindered by a small sample size and a relatively short duration time, especially for the two classes of students with intellectual disabilities where the education assistance dog did not begin until midway through the school year. The study was also descriptive in nature, drawing upon a single subject research design, which as a result, could not fully address causal relationships between Education Assistance Dogs and student attendance, verbal communication utterances, and maladaptive behaviors outcomes. According to Fraenkel and Wallen (2006), single subject research designs are, “weak when it comes to external validity. Studies involving single-subject designs that show a particular treatment to be effective in changing behavior must rely on replication across individuals rather than groups, if such results are be found worthy of generalization” (p. 318).

In sum, future research in the field of AAT would be aided by studies conducted using a true experimental design with an adequate control group. Sample sizes need to be increased in order to address causal relationships between AAT and variables such as student attendance, maladaptive behaviors, verbal communication utterances, or other areas of study. The duration time of future studies also needs to be lengthened to a scope longer than a few weeks or months. Only when these factors are met can studies begin to have generalizability beyond the scope of a single study and make replication research possible.

Continuation or Replication of the Current Study

The current researcher found value in examining the relationship between education assistance dogs and the attendance, verbal communication utterances, and maladaptive behaviors associated with students who had behavior intervention plans and were enrolled in self-contained, special education classrooms. The researcher hopes to see future studies focus on the same areas in which the current study focused.

Since the targeted large, urban, Central Florida school district expanded the education assistance dog program during the 2019-2020 school year to include six schools with eight EADs, the researcher would like to see replication research into the attendance, verbal communication utterances, and maladaptive behaviors associated with students enrolled in special education classes. In addition, the expansion of the EAD program during the 2019-2020 school year included dogs into two areas in which they had previously not participated. One dog began working with a guidance counselor to assist the entire student body with mental health concerns at elementary school #1. Another EAD began working in a high school within a classroom known as a Life Lab, where all of the students in self-contained classrooms for autism

spectrum disorder, emotional and behavioral disabilities, and intellectual disabilities rotate through to learn life skills, such as maintaining an apartment or caring for a pet. Additional research would be beneficial in these two new areas of focus for the EAD program in the large, urban, Central Florida school district.

Summary and Conclusion

This study questioned if there was a relationship between the placement of an education assistance dog (EAD) and the attendance, verbal communication utterances, and maladaptive behaviors of students with autism spectrum disorder or intellectual disabilities in self-contained, special education classrooms in one large, urban, Central Florida school district. Each of the targeted students was also assigned a behavior intervention plan (BIP) due to concerning behaviors.

After all data were collected, the three teachers reported it to the researcher, who utilized a single subject design to analyze the data for trends. For research question 1 the data was split equally into thirds, making any evidence of a relationship between the presence of the EAD and an increase in student attendance inconclusive. For research question 2, 67% of the participants showed an increase in their results, demonstrating evidence of a positive relationship between the presence of the EAD and an increase in verbal communication utterances. Research question 3 showed that 56% of the targeted students demonstrated an increase in their results, thereby indicating a positive relationship between the presence of the EAD and a decline in maladaptive behaviors.

The study could have been made stronger by utilizing a true experimental design with a control group and a larger sample size. These factors would have helped to address a causal

relationship between the presence of an EAD and student attendance, verbal communication utterances, and maladaptive behaviors. The duration of the study also needed to be a period longer than the six months allotted to the two classrooms for students with intellectual disabilities. Rectifying these shortcomings in the research design may increase the generalizability of the current study beyond the scope of three special education classrooms in a single school district.

The researcher hopes to see a replication study of the education assistance dog program completed, examining the same variables of student attendance, verbal communication utterances, and maladaptive behaviors. Since the results of the study were positive in terms of research questions 2 and 3, and inconclusive for question 1, the researcher hopes to see if additional study could confirm the current results or continue the research to produce better clarity. There is also opportunity to further the research into the next phase of implementation of the EAD program in the targeted school district. The EAD program was expanded during the 2019-2020 school year to include six schools and eight dogs, with additional areas of focus being life skills at the high school level, and mental health at the elementary level. Additionally, future research could concentrate on following a cohort of students as they progressed from elementary school through high school having an EAD present at each level.

Since Boris Levinson introduced the concept of animal-assisted therapy in 1969, anecdotal evidence has supported predominantly positive associations for interventions between humans and animals. Although a predominance of the literature, including the current study, have had limitations in research design, animal-assisted therapy remains a field ripe with research possibilities.

In conclusion, a quote from the American actress, singer, and animal rights activist, Doris Day, sums it up, “I have found that when you are deeply troubled, there are things you get from the silent devoted companionship of a dog that you can get from no other source.”

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL



UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board

FWA00000351

IRB00001138

Office of Research

12201 Research Parkway Orlando, FL 32826-3246

NOT HUMAN RESEARCH DETERMINATION

July 12, 2019

Dear [Heather Lucas](#):

On 7/12/2019, the IRB reviewed the following protocol:

Type of Review:	Initial Study
Title of Study:	AN ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATION ASSISTANCE DOGS AND THE ATTENDANCE, VERBAL COMMUNICATION UTTERANCES, AND MALADAPTIVE BEHAVIORS OF SELF-CONTAINED SPECIAL EDUCATION STUDENTS IN ONE FLORIDA SCHOOL DISTRICT
Investigator:	Heather Lucas
IRB ID:	STUDY00000707
Funding:	None
Grant ID:	None
IND, IDE, or HDE:	None
Documents Reviewed:	<ul style="list-style-type: none"> • IRB Faculty Advisor Review Form.pdf, Category: Faculty Research Approval; • IRB Not Human Subject Form.docx, Category: IRB Protocol;

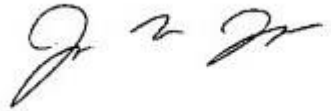
The IRB determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations.

IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are research involving human in which the organization is engaged, please submit a new request to the IRB for a determination. You can create a modification by clicking **Create Modification / CR** within the study.

If you have any questions, please contact the UCF IRB at 407-823-2901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.

Page 1 of 2

Sincerely,

A handwritten signature in black ink, appearing to read 'Racine Jacques', is centered below the text 'Sincerely,'.

Racine Jacques, Ph.D.
Designated Reviewer

Page 2 of 2

APPENDIX B
SCHOOL DISTRICT IRB APPROVAL

THE SCHOOL DISTRICT [REDACTED] FLORIDA

December 9, 2019

Heather Lucas
[REDACTED]

Dear Ms. Lucas:

This letter is to inform you that we have received your request to conduct research in our School District. Based on the description of the research you intend to conduct, I am pleased to inform you that you may proceed with your work as you have outlined. Please be advised that this approval is based on the understanding that a school's participation is completely voluntary and left to the discretion of each building administrator. Please also be advised that the district office will not be able to assist you with any aspect of your research (e.g. sending emails, obtaining data, locating students, providing addresses, etc.).

Finally, be reminded that all information obtained for the purpose of your research must be dealt with in the strictest of confidentiality. At no time is it acceptable to release any student or staff identifiable information. Upon completion of your research, please provide our office with a copy of your results.

I wish you the best of luck in your future endeavors. If I can be further assistance, please do not hesitate to contact me.

Sincerely,



Dr. Leah Torres, Director
Research, Evaluation & Accountability

APPENDIX C
DATA SHEET CREATED BY HEATHER LUCAS AND UTILIZED BY
TEACHERS FOR THE EAD PROGRAM

Student Code:

Teacher:

Student will interact with the classroom Educational Assistance Dog (EAD) to demonstrate improvement upon baseline scores in Behavior (defined per student), attendance, and verbal communication utterances.				
Date/Progress	Date/Progress	Date/Progress	Date/Progress	Comments:

DATES

OBJECTIVES										COMMENTS
Student will improve behavior of ____ from baseline of ____.										
Student will improve attendance from current baseline of __ dates in attendance per month.										
Student will improve instances of verbal communication utterances from current baseline of __.										

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[332cc9a898b9%40pdc-v-sessmgr05](https://web-b-ebshost-com.ezproxy.net.ucf.edu/ehost/pdfviewer/pdfviewer?vid=7&sid=f2abef16-b0f7-489d-ac68-332cc9a898b9%40pdc-v-sessmgr05)

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[com.ezproxy.net.ucf.edu/doi/full/10.1111/j.1750-8606.2011.00175.x](https://srcd-onlinelibrary-wiley-com.ezproxy.net.ucf.edu/doi/full/10.1111/j.1750-8606.2011.00175.x)

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