PURDUE UNIVERSITY
GRADUATE SCHOOL
Thesis/Dissertation Acceptance

This is to certify that the thesis/dissertation prepared

By Laura A. Bassette

Entitled
READING WITH MAGGIE: THE EFFECT OF THE PRESENCE/ABSENCE OF A
CLASSROOM PET DOG IN A READING INTERVENTION PACKAGE

For the degree of   Doctor of Philosophy

Is approved by the final examining committee:

Teresa Taber-Doughty   Alan Beck
_____   _____
             Chair

Emily Bouck
_____   _____

Sydney Zentall
_____   _____

Colleen Brady
_____   _____

To the best of my knowledge and as understood by the student in the *Research Integrity and Copyright Disclaimer (Graduate School Form 20)*, this thesis/dissertation adheres to the provisions of Purdue University's "Policy on Integrity in Research" and the use of copyrighted material.

Approved by Major Professor(s): Teresa Taber-Doughty
_____

_____

Approved by: Ala Samarapungavan   06/21/2011
_____
                  Head of the Graduate Program   Date

PURDUE UNIVERSITY
GRADUATE SCHOOL

Research Integrity and Copyright Disclaimer

Title of Thesis/Dissertation:

READING WITH MAGGIE: THE EFFECT OF THE PRESENCE/ABSENCE OF A CLASSROOM
PET DOG IN A READING INTERVENTION PACKAGE

For the degree of ___Doctor of Philosophy_____ ▼

I certify that in the preparation of this thesis, I have observed the provisions of *Purdue University Executive Memorandum No. C-22,* September 6, 1991, *Policy on Integrity in Research.**

Further, I certify that this work is free of plagiarism and all materials appearing in this thesis/dissertation have been properly quoted and attributed.

I certify that all copyrighted material incorporated into this thesis/dissertation is in compliance with the United States' copyright law and that I have received written permission from the copyright owners for my use of their work, which is beyond the scope of the law. I agree to indemnify and save harmless Purdue University from any and all claims that may be asserted or that may arise from any copyright violation.

Laura A. Bassette
_____
Printed Name and Signature of Candidate

08/06/2011
_____
Date (month/day/year)

*Located at http://www.purdue.edu/policies/pages/teach_res_outreach/c_22.html

READING WITH MAGGIE: THE EFFECT OF THE PRESENCE/ABSENCE OF A
CLASSROOM PET DOG IN A READING INTERVENTION PACKAGE

A Dissertation

Submitted to the Faculty

of

Purdue University

by

Laura A. Bassette

In Partial Fulfillment of the

Requirements for the Degree

of

Doctor of Philosophy

December 2011

Purdue University

West Lafayette, Indiana

UMI Number: 3507210

UMI®

Dissertation Publishing

ProQuest®

ACKNOWLEDGEMENTS

I would like to acknowledge and offer my sincerest gratitude to everyone who assisted me along the way throughout my doctoral program. The patience, guidance, and encouragement I received from my peers, friends, and professors greatly contributed to my personal development, the completion of my program, and this project.

I would like to extend my sincerest thanks to my advisor Dr. Teresa Taber-Doughty for her guidance, mentorship, encouragement, and feedback throughout this process. She was always willing to support my interests and provide me with the freedom to pursue my research interests and for that I am incredibly thankful.

I would also like to thank all of my committee members, Dr. Alan Beck, Dr. Emily Bouck, Dr. Colleen Brady, and Dr. Sydney Zentall. Each of you has provided me with guidance, input, direction, patience, and support throughout my graduate school journey. A would like to offer a special thanks to each of you for all of your help, constructive feedback, expertise, and support in accomplishing this goal. I would further like to thank Dr. Mark Russell and Professor Sarah Templin for all of their support and encouragement throughout my graduate career.

I would also like to give a special thanks and warmest appreciation to all of my friends and family who believed I could accomplish this goal and never stopped providing me with encouragement. I want to extend my thanks to Megan, Kinsey, Angie,

Gauri, John, Chrystal, and Cara for all of your support throughout this process. I would like to offer special thanks to Kinsey Tom for helping me with my data. Lastly, I would like to thank Julie Koebcke for allowing me to come into her classroom, use her dog Maggie, and provide me with all of the supports I needed to complete this project.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Bassette, Laura A. Ph.D., Purdue University, December 2011. Reading with Maggie: The Effect of the Presence/Absence of a Classroom Pet Dog in a Reading Intervention Package. Major Professor: Teresa Taber-Doughty.

The purpose of this study was to examine if the presence/absence of a classroom pet dog impacted reading skills in four 5th grade middle school students with emotional/ behavioral disabilities. An alternating treatment design was used to assess the fluency and comprehension measures in students during reading a reading intervention package implemented in a dog present condition (dog and researcher) and a dog absent condition (researcher only). The reading intervention consisted of repeated readings, error correction, and performance feedback during which students read readability level matched passages. All participants improved reading performance during intervention conditions compared to baseline. Similarities in reading measures were observed across participants in both treatment conditions. During social validity interviews, three students indicated they preferred the dog present condition and the fourth student indicated he equally enjoyed both conditions. The results of this study demonstrate that a reading intervention that incorporates a classroom pet dog may potentially impact student motivation in reading activities.

CHAPTER 1: INTRODUCTION

Reading is a critical component for all children to be successful in school and

have access to additional knowledge (Bursuck & Damer, 2007). A report by the National

Assessment of Educational Progress (NAEP) found 38% of fourth graders and 29% of

eighth graders in urban areas are reading below their grade levels (National Center for

Education Statistics, 2005) indicating a disturbing rate of illiteracy in the United States.

Reasons for these high rates of illiteracy include: children raised in poverty, parents not

reading to the children at an early age, students experiencing learning disabilities, English

not being the first language for many students, and children being born prematurely

(Bursuck & Damer, 2007).

As a means to address illiteracy rates in the United States, the National Reading

Panel (NRP) was created to investigate research-based interventions that are effective for

teaching children to read (NRP, 2000). The panel reviewed various components of

reading including: alphabetics, fluency, comprehension, teacher education, computer

technology, and reading instruction in over 1,115,000 articles. Their review revealed five

areas of reading pertinent to literacy education: phonemic awareness, alphabetic principle

(phonics), fluency, vocabulary, and comprehension. The panel determined that to be most

effective in addressing students who are at-risk for reading failure, reading interventions

should be systematic and explicit and should focus on the five factors they identified as critical to reading instruction. Additionally, the panel emphasized the need for researchers to examine multiple reading measure outcomes when conducting literacy researching. The panel suggested reading was needed in all content areas and thus, research should examine various techniques to improve these skills (Kostewicz & Kubina, 2008).

Further attempts to address the high rates of illiteracy were made by Congress with the passage of the No Child Left Behind (NCLB) Act (2001) which aimed to increase accountability, hold children to high academic standards, and ensure adequate reading instruction be provided to all students (NCLB, 2002). This law stated all children should read at grade level by 2013-14 and teachers must implement evidenced-based instruction in teaching academic content including reading (NCLB, 2002). While the law attempts to address reading instruction for students of all ages, older students continue to demonstrate deficiencies with reading (Edmonds et al., 2009).

Secondary students who struggle with reading are not frequently a focus of research (Edmonds et al., 2009). When examining reading performance of older students, the National Assessment of Educational Progress (NAEP) found reading scores did not improve for 13-year-old students between 1999-2004 indicating adolescents were not being adequately prepared in reading (Edmonds et al., 2009). Teachers expect secondary students to read fluently and comprehend challenging material (Alvermann, 2002) however, instruction in fluency and comprehension are typically absent from reading instruction at the secondary level (Allington, 1983). Fluency is defined by three main components including quick and accurate recognition of words (Jenkins, Fuchs, van den

Broek, Espin, & Deno, 2003), correct use of prosody (including knowing how to use phrasing, intonation, and having awareness of punctuation) (Cowie, Douglas-Cowie, & Wichmann, 2002; Schwanenflugel, Hamilton, Kuhn, Wisenbaker, & Stahl, 2004), and comprehension (ability to get meaning from the text) (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Wolf & Katzir-Cohen, 2001).

Fluency and comprehension are important to reading as they indicate a students' ability to take elements of oral language and apply them to written text (Dowhower, 1991; Schreiber, 1991). Fluency is particularly important to reading ability as it relates to speed, accuracy, comprehension (National Reading Panel) and motivation (Mathes, Simmons, & Davis, 1992; Skinner, 1998). Since all individuals have limited resources when completing cognitive tasks, students who struggle with decoding and fluency when reading have less attention to focus on comprehension (Kintsch, 1998; Stanovich, 1984). Thus, it is important to improve fluency and comprehension skills in students struggling with reading (Bursuck & Damer, 2007; Therrien, Gormley, & Kubina, 2006).

Older students with emotional behavioral disorder (EBD) are particularly prone to difficulties with fluency and comprehension (Coleman & Vaughn, 2000; Vaughn, Levy, Coleman, & Bos, 2002). They demonstrate moderate to severe deficits in academics as compared to students without disabilities (Mattison, Spitznagel, & Felix, 1998) and frequently struggle in school with disruptive behaviors and emotional regulation impacting their ability to learn in school environments (Lane, Barton-Atwood, Nelson, & Wehby, 2008; Nelson, Benner, Lane, & Smith, 2004; Wehby, Lane, & Falk, 2003). The importance of reading instruction is of particular importance as these students tend to

display difficulties with reading and are less likely to respond to reading interventions (Nelson, Benner, & Gonzalez, 2005).

Several factors may contribute to the reading struggles faced by students with EBD. Levy and Chard (2001) reported students' problematic behaviors impeded teachers' ability to effectively provide instruction impacting the student-teacher dynamic. Teachers tended to focus on student behavior problems rather than academic and other school outcomes (Levy & Chard, 2001). Additionally, teachers were less likely to engage in academic instruction when students responded to instruction with inappropriate behaviors resulting in the teacher avoiding instruction due to students resulting behavior (Gunter, Jack, DePaepe, Reed, & Harrison, 1994; Wehby, Symons, Cannale & Go, 1998). Recently, increased research focused on improving academic and reading instruction for students with EBD (Kostewicz & Kubina, 2008). A review of the NRP's findings on instruction in reading for students with EBD found a five-fold increase in studies examining reading interventions since the year 2000; however, additional research is needed (Kostewicz & Kubina, 2008). Findings continually suggest students with EBD struggle in reading (Kostewicz & Kubina, 2008; Lane, Barton-Atwood, Nelson, & Wehby 2008; Levy & Chard, 2001) and a lack of consensus exists regarding effective reading interventions for this population (Barton-Arwood, Wehby & Falk, 2005; Wehby, Falk, Barton-Atwood, Lane, & Cooley, 2003). Thus, there is a need to develop effective literacy interventions for these students (Nelson, Benner, Lane, & Smith, 2004).

Research indicates literacy interventions for students with EBD may be effective in the short term but improvements are not maintained over time (Barton-Arwood, Wehby & Falk, 2005; Wehby, Falk, Barton-Atwood, Lane, & Cooley, 2003). While

behavior is a concern when providing instruction to these students, the most effective way to instruct them may be to implement interventions addressing behavioral problems, enhancing learning, and providing ways to improve social interactions (Landrum, Tankersley, & Kauffman, 2003). Additionally, reading interventions should address fluency, oral retell, and reading motivation (Landrum et al., 2003) as these are associated skills with which students with EBD may struggle (Coleman & Vaughn, 2000; Vaughn et al., 2002).

<center>Repeated Reading</center>

Repeated reading is one intervention found to be particularly effective in improving fluency and comprehension in older students with EBD (Alber-Morgan, Ramp, Anderson, & Martin, 2007; Strong, Wehby Falk, & Lane, 2004). Repeated readings are considered a best practice intervention for students with reading problems (Joseph, 2007) and involve a student reading a selected passage on their instructional level until a satisfactory level of fluency is reached (Therrien, 2004). Since this method involves students reviewing materials multiple times, students with and without disabilities have increased oral reading rates, accuracy, and comprehension after participating in a repeated readings intervention (Mastropieri, Leinhart, & Scruggs, 1999; Therrien). The effectiveness of this strategy was documented for both elementary students with EBD (Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004) and learning disabilities (Nelson, Alber, Gordy, 2004) as well as middle school students with EBD (Alber-Morgan et al., 2007; Scott & Shearer-Lingo, 2002; Strong et al., 2004). Scott and Shearer-Lingo (2002) compared two reading programs using a multiple baseline design and found both programs improved fluency indicating repeated readings and

progress monitoring were important instructional strategies for reading interventions for students with EBD. They concluded repeated readings allowed students to be successful because it was delivered at their level, provided multiple practice opportunities, involved monitoring their own progress, and included direct student-teacher interactions. Students experienced immediate and consistent success and were thus more motivated to engage in academics as a result (Scott & Shearer-Lingo).

Nelson et al. (2004) examined repeated reading for students with learning disabilities using a multiple baseline design on words read correctly and words read in error. The first phase included error correction (EC) only, the second included error correction and repeated readings (EC+RR), and the third included error correction and repeated readings with previously read materials. Accuracy and proficiency increased when error correction and repeated readings were used. This differed from the error correction only condition where students demonstrated only a decrease in errors per minute but minimal change in the words read correctly per minute indicating the repeated readings component was an important factor.

Chafouleas et al. (2004) examined the effectiveness of repeated readings when 1) presented alone, 2) with performance feedback and 3) with performance feedback and contingent reward for students who struggled with reading. The purpose of this study was to expand the research on repeated readings and included a performance feedback and contingent reward component. The results indicated fluency increased in all conditions but varied across students. Specifically, repeated reading alone was most effective in the two students who demonstrated high accuracy levels but low fluency scores. However, for the student with low fluency and high errors, repeated readings with performance

feedback yielded the greatest reading gains. Thus, feedback may be an important component for students who experience low reading and high errors as it can help increase student focus on reading text accurately resulting in more fluent reading. In contrast, students who read with high levels of accuracy may be able to increase fluency solely from repeated practice.

When examining the effect of repeated readings on middle school students with EBD, Strong et al. (2004) examined the effect of repeated reading in addition to *Corrective Reading* (an empirically valid reading program) using a multiple baseline design. Corrective Reading is a reading program for older students involving direct instruction, word attack, group reading, and workbook exercises (Engelmann, Hanner, & Johnson, 1999). When adding the repeated reading intervention to the Corrective Reading program, Strong et al. (2004) found fluency increased allowing for the authors to determine the impact of repeated readings on fluency in isolation from typical gains resulting from student participation in Corrective Reading alone. Gains were seen in four of the six students both at their instructional reading level as well as in the materials at their grade level.

Alber-Morgan et al. (2007) also examined the impact of a repeated reading intervention and included a systematic error correction and performance feedback with a prediction component with students experiencing EBD. Following intervention, fluency greatly increased and comprehension increased moderately. They noted comprehension gains were based on the materials students read multiple times and did not address the transfer of information. They suggested repeated readings be used to supplement an

evidence-based reading program and include systematic error correction, performance feedback, and a comprehension strategy.

<div align="center">Animals in Educational Settings</div>

One way to improve upon reading interventions for children with EBD may be through the incorporation of animals during reading activities. There is increasing interest in the ways animals can be used to benefit children with disabilities in educational settings (Rud & Beck, 2003). Preliminary reports found animals can decrease behavioral problems and increase engagement in children with disabilities (Katcher & Wilkins, 2000; Rud & Beck, 2000) including children with emotional and behavioral disabilities (Anderson & Olson, 2006). While the benefits of animal assisted activities/therapies (AAA/T) are increasingly reported, little empirical data exists supporting the benefits of these interventions (Melson, 2001).

Pet visitation programs are one way animals are shared in educational settings. In these programs, volunteers bring their pets (e.g, cats, dogs) to community sites (e.g, schools, nursing homes, libraries) allowing people to engage in therapeutic interactions with the animals (Delta Society, 2010). Interactions are referred to as animal-assisted activities (AAA) where the interaction consists of a "meet-and–greet" between animals and students compared to animal assisted therapies (AAT) involving licensed professionals incorporating animals into specific treatment goals for clients (Delta Society, 2010). Anecdotal reports of AAA programs indicate a variety of potential benefits (e.g., improve self-esteem, increase social interactions, improve behavior) . These programs are implemented in schools to address academic, behavioral, and social goals in schools. Recently, pet visitation programs are increasingly prevalent in schools

where students interact socially and engage in academic tasks in the presence of visiting pets (Chandler, 2005). Sample activities include: reading to animals, learning how to provide human care for animals, learning to train animals, learning to nurture animals, or working on motor or physical skills through interacting with the animal (Chandler, 2001).

Dogs in Schools

As a result of anecdotal reports and increased interest in AAA/T, research systematically noted the impact of therapy dogs on children in schools (Anderson & Olson, 2006; Katcher & Beck, 2006) as well as the positive impact of dogs in classrooms for students without disabilities (Hergovich, Monshi, Semmler, & Zieglmayer, 2002; Kotrschal & Ortbauer, 2003). In general, study results indicate the presence of a dog in a classroom improved behaviors for students in general education classrooms. For example, after a month of incorporating a therapy dog into a first grade classroom, students were found to be less aggressive and more empathetic (Hergovich et al, 2002). Similarly, elementary students exposed to a therapy dog in school showed decreases in aggression and hyperactivity with concurrent increases in prosocial behaviors (Kotrschal & Ortbauer, 2003).

For students with disabilities, other positive results were observed. When comparing a live dog to a toy dog, students with Down Syndrome were found to be more social in the condition with the live dog (Limond, Bradshaw, & Cormack, 1997). Specifically, in the condition with the live dog, the children had more non-verbal responses and more verbal responses when prompted by the handler. Also, the live dog condition resulted in children engaging in a higher frequency of initiative behavior towards the dog. Anderson and Olson (2006) specifically examined the impact of a dog

on children with EBD and reported the dog's presence in the classroom had a positive emotional effect on the students and provided opportunities to learn lessons in respect, responsibility, and empathy. Students learned to care for the dog and ensure the dog's needs were met. The authors also reported student's behavior tended to deescalate when the dog was present and demonstrated greater self-reflection and emotional self-awareness skills.

<div align="center">Presence of Dogs on Children's Behavior/Performance</div>

Prior research examined the impact of a dog's presence on children when placed in stressful situations (Friedmann et al., 1983; Hansen, Messinger, Baun, & Megel, 1999; Nagengast, Baun, Megel, & Leibowitz, 1997). Hansen et al. (1999) and Nagengast et al. (1997) examined behavioral distress (e.g., screaming, flailing, crying for help) in children during a doctor's physical examination and both studies reported children exhibited less signs of behavioral distress when a dog was present during the examination. Friedmann et al (1983) found children had lower blood pressure and heart rate when asked to read aloud when a dog was present.

More recently, the impact of a dog's presence on preschoolers was examined in regards to social measures (Esteves & Stokes, 2008), motor skill tasks (Gee, Harris & Johnson, 2007), and a cognitive task involving object categorization (Gee, Church & Altobelli, 2010). Esteves and Stokes (2008) used a multiple baseline across participants design to examine the impact of a dog's presence on social behaviors in children with intellectual disabilities. Behaviors were identified as positive/negative, verbal/non-verbal, and initiations/responses and behaviors recorded included interactions with both the teacher and the dog. Results indicated children engaged in more positive initiated

behaviors both toward the teacher and the dog and negative interactions decreased. Gee et al. (2010) used a within subject design to compare three conditions including a real dog, a toy dog, and the researcher. Preschoolers were asked to match a picture with an animate object. Results indicated they made significantly fewer irrelevant choices when the dog was present than during the conditions in which the toy dog and researcher were present.

<div align="center">Reading to Dog Programs</div>

Several descriptive reports indicate reading to dog programs can increase student confidence and motivation (Bueche, 2003; Hughes, 2002; Jalongo, 2005; Jalongo, Astorino, & Bomboy, 2004; Newlin, 2003). One program anecdotally describing the benefits of dogs in educational settings is the *Reading with Rover* program. An examination of the *Reading with Rover* program reported improved learning outcomes for students with below grade level reading scores when they read to the dogs (Snider, 2007). Reported benefits of the program for students include: not feeling judged during reading, increased confidence during reading activities, and finding enjoyment in reading to the dogs (Snider, 2007). A higher rate of student attendance was also reported by teachers indicating students had an increased interest in attending school possibly due to the opportunity to read to the dogs (Snider, 2007). Similarly, the Reading Education Assistance Dogs (R.E.A.D.) program promotes reading with dog programs for children in libraries and schools. Teachers and reading specialists specifically select children identified as poor readers for the program. Trained dog handler volunteers then assist students during reading activities (Jalongo, 2005).

Smith (2009) was the only empirical article found which examined a dog-reading program. The impact of the dog-reading program was conducted over a 6 week

timeframe with homeschooled third grade children. A between groups design was used to compare an experimental group who read aloud to a dog and hander to a control group who read aloud to themselves. The experimental group increased rate of reading however no significant differences were observed in fluency or comprehension scores. The author noted the difference may have been a result of the additional prompting and interaction given to the children in the experimental group and recommends future research provide equal levels of prompting between (Smith, 2009).

Purpose of Study

Despite the increasing popularity of dog-reading programs, only one preliminary study was located which empirically examined the impact of these types of programs on struggle readers. Additionally, no previous research examined the impact of students reading to a classroom pet dog. Previous investigations indicate the presence of a dog can positively affect cognitive tasks in preschoolers; however, no study to date examined the presence of a dog during reading activities in middle school students with EBD.

Thus, the purpose of this study was to examine if the effects previously found when using a treatment package of repeated readings, error correction, and performance feedback previous research (i.e., Alber-Morgan et al., 2007) were replicated when used with upper elementary students with EBD in the presence/absence of a classroom pet dog. Additionally, the study served to expand work in the field of AAA by addressing the limitations found in Smith, 2009 by incorporating the presence/absence of a classroom pet dog into the reading intervention package for upper elementary school children with emotional/behavioral disabilities.

Definition of Terms

Emotional Behavioral Disability: A condition exhibiting one or more of the following characteristics over a long period of time and to a marked extent, which adversely affects educational performance: An inability to learn which cannot be explained by intellectual, sensory, or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate behaviors or feelings under normal circumstances, a general pervasive mood of unhappiness or depression and a tendency to develop physical symptoms or fears associated with personal or school problems (Smith, Polloway, Patton, & Dowdy, 2008)

Classroom pet dog: The dog "Maggie" who is owned by the teacher and brought to the class. Maggie was an 11 year old yellow lab. She is not a certified therapy dog however the principal approves her being brought into the class.

Words read in error:

    Omitted words – A word is left out entirely or if the student omits an entire line, the evaluator will redirect the student to the line and mark one error. If the student cannot be redirected, the omission will count as a single error not an error for each word missed

    Substitutions – This will be marked if the student says the wrong word, says anything not written on the page, or deletes prefixes or suffixes and will be counted as an error.

    Mispronunciations - If the student mispronounces the word and the evaluator corrects them it will count as an error and the student will be prompted to go to the next word

    Repetition – If a child repeats words it will not be counted as an error.

Self corrects – Self-corrections within 3 second will not be counted as an error

Pause or not state within 3 seconds - If a student reads a word incorrectly or hesitates for more than 3 seconds, the researcher will orally tell the student the word and have the student keep reading

Words read correctly: Words the student independently states within 3 seconds of having their eyes on the word and without prompting. If the student says the word incorrectly but self corrects within 3 seconds, the word will be counted as correct.

Dog-absent condition: During this condition, all error corrections and feedback will be given to the student from the adult's perspective. For example, when the student makes an error, the adult will read the word correctly and prompt the student to read the word (i.e., say "Can you tell me what this word is?"), and provide verbal reinforcement if the student reads it correctly (i.e., "I think you did a great job").

Dog-present condition: During this condition, the same procedures will be used as during the dog absent condition. However, the perspective of the error corrections and feedback will be shifted to the dog. Specifically, when the student is prompted to read the word the adult will say, "Can you tell Maggie (dog's name) what this word is?" and for the feedback component the adult will say, "Maggie says great job".

Repeated Reading: A reading intervention that involves having students read a passage multiple times within a given session (Alber-Morgan, et al., 2007).

Error Correction (EC): Systematic review of words read in error where the researcher asks the student the word. If the student says the word correctly the researcher moves on to the performance feedback component. If not, the researcher provides the correct word

followed by the student repeating the word and rereading the entire sentence and then moves on to the performance feedback condition (Alber-Morgan, et al., 2007).

EC - dog absent condition: During this condition, the adult read the word correctly to the student and then prompted the student to read the word (i.e., say "Can you tell me what this word is?"). After the student said the word correctly, the adult provided verbal reinforcement (i.e., "I think you did a great job").

EC - dog present condition: During this condition, the same procedures were used as used during the dog absent condition. However during reading, the perspective of the correction and feedback was shifted to the dog. Specifically, when the student is prompted to read the word the adult said, "Can you tell Maggie (dog's name) what this word is?" and for the praise component the adult said "Maggie thinks you did a great job".

Performance Feedback (PF). Systematic praise and summary of words read correctly following the reading of the passages.

PF -dog absent condition. After the second reading, the researcher said, "You had trouble with _____ (number of errors) words correctly this time compared to _____ (number of errors) the first time. This time it took you _____ (amount of time) compared to _____(amount of time) the first time you read the story. This is your last chance and I think you can do even better this time".

Then, after the third reading the student was praised and the amount of time and words read in error were then compared to the two previous readings. The researcher said, "This time you only had trouble with _____ (number of words) compared to _____ from the last reading and _____ from the first time. And this time it only took you

_____ (amount of time) compared to _____ (amount of time) during the second reading and _____ (amount of time) during the first reading. Additionally, after the third (final) reading, the researcher shared the difference between the reading rate from the current session and that of the previous session. The researcher said, "You had trouble with _____ (number of words) yesterday and today you only had trouble with _____ (number of words) and would say "Good job, I'm very proud of you!". If the rate did not increase, the researcher said "I know you can do better next time". After the third reading, the student was instructed to complete the oral retell. The researcher said, "Can you tell me what you remember from the story in your own words?" Then following the retell the researcher said "Now I have some questions for you. Can you tell me _____ (insert comprehension questions)" and the number of questions the student answered correctly would be noted.   Performance feedback would then be given regarding the number of comprehension questions the student answered correctly for that session compared to the previous session. The researcher said, "This time you got _____ (number of questions correct) and last time you got _____(number of questions correct) and would say "Good job, I'm very proud of you! Good work today!"

PF- dog present condition. After the second reading, the researcher said, "Maggie says you only had trouble with _____ (number of errors) words correctly this time compared to _____ (number of errors) the first time. This time it took you _____(amount of time) compared to _____(amount of time) the first time you read the story. This is your last chance and Maggie thinks you can do even better this time".

Then, after the third reading the student was praised and the amount of time and words read in error were then compared to the two previous readings. The researcher

said, "Maggie says, this time you only had trouble with _____ (number of words) compared to _____ from the last reading and _____ from the first time. And Maggie says, this time it only took you _____ (amount of time) compared to _____ (amount of time) during the second reading and _____ (amount of time) during the first reading. Additionally, after the third (final) reading, the researcher and Maggie shared the difference between the reading rate from the current session and that of the previous session. The researcher said, "Maggie says, you had trouble with ____ (number of words) yesterday and today you only had trouble with _____(number of words) and would say "Good job, Maggie's very proud of you!". If the rate did not increase, the researcher said "Maggie knows you can do better next time". After the third reading, the student was instructed to complete the oral retell. The researcher said, "Can you tell Maggie what you remember from the story in your own words?" Then following the retell the researcher said "Now Maggie has some questions for you. Can you tell Maggie _____ (insert comprehension questions)" and the number of questions the student answered correctly would be noted.   Performance feedback would then be given regarding the number of comprehension questions the student answered correctly for that session compared to the previous session. The researcher said, "Maggie says, this time you got ____ (number of questions correct) and last time you got _____(number of questions correct) and would say "Good job, Maggie's very proud of you! Maggie says good work today!"

Research Questions

The research questions were: 1. Does the presence/absence of the classroom pet dog during the reading intervention package impact oral reading fluency as measured by

words read correctly and words read in error?, 2. Does the presence/absence of the classroom pet dog during the reading intervention package impact comprehension as measured by oral retell abilities and literal comprehension questions?, and 3. Does the presence/absence of the classroom pet dog during the reading intervention package impact student motivation/interest of reading activities?

Research Hypotheses

1. Word read correctly will be highest in the dog present condition.

2. Words read in error will be lowest in the dog present condition.

3. Oral retell scores will be highest in the dog present condition.

4. Comprehension questions scores will be highest in the dog present condition.

5. Student motivation in reading will be higher on average during the dog present condition.

CHAPTER 2: REVIEW OF THE LITERATURE

Children with disabilities frequently struggle in school often as a result of difficulties with literacy, language, and communication (Bursuck & Damer, 2011). Children who struggle in these areas may be identified as at-risk, labeled with a learning disability, and/or experience difficulties in school without being identified with a disability (Bursuck & Damer, 2011). Furthermore, research indicates students who struggle early with reading will never develop natural reading skills and most will continue to have difficulties with reading acquisition (Bursuck & Damer, 2011). The impact of illiteracy is not only an issue throughout a person's K-12 career but influences society as a whole. Specifically, it is estimated over 90 million adults lack basic reading skills costing them over 200 billion dollars every year (Bursuck & Damer, 2011). This alarming statistic needs to be addressed by leaders in the education field. Educators must prepare children for success in adulthood (Polloway, Patton, & Serna, 2008).

One skill children need to be taught is effective communication. Defined as "the interchange of ideas, beliefs, thoughts, and feelings, and emotions" (Polloway, Patton, & Serna, 2008, p. 121), communication is achieved through a variety of different avenues (e.g., reading, writing, speaking) and involves important components of language and literacy. Language can be defined as, "an arbitrary set of abstract symbols governed by a

set of rules that determine how sounds, words, and words parts, and phrases can be connected to make meaning" (Polloway et al., 2008, p. 121) while language literacy is defined as "how well children read, write, speak, compute, and solve problem…[and] the abilities and skills requisite to speaking, reading, writing, and listening in interactions presented by teachers, textbooks, peers, families, and the media" (Polloway, et al., 2008, p. 122).

The importance of language skills is vital to a child's success in school (Polloway, Patton, & Serna, 2008). While these skills are pertinent to school success, a number of factors can affect development including: lack of access to health care, malnutrition, lower educational level of parents, lack of language stimulation as an infant/young child, lower socio-economic status (Roseberry-McKibbon, 2003). For students exposed to these factors, oral language abilities may require language-based interventions (Polloway, Miller, & Smith, 2004). Furthermore, children who struggle with oral language often also have impediments in literacy areas including reading, writing, and spelling (Polloway et al., 2004). Deficits in literacy skills impede all other areas of education and restrict a students' ability to be successful in math, English, science, and social studies (Polloway et al., 2008). In addition to school, literacy is necessary for positive post school outcomes including employment opportunities, personal and social adjustment, and success in community activities (Polloway et al, 2008).

Reading skills differ from oral language because reading is identified as an unnatural process (Shaywitz, 2003). Reading development involves three stages: emergent, beginning, and fluent. Children in the emergent stage show interest in books, pretend to read, identify some letter names, notice print, and recognize 5-20 familiar

words. During the beginning stage children identify letter names and sounds, match spoken words to written words, self correct while reading, read orally, point to words when reading, make reasonable predictions, and recognize 20-100 high-frequency words. Students at the fluent stage of reading identify most words automatically, read with expression, read at a rate of 100 words per minute or more, enjoy reading silently, recognize 100-300 high-frequency words, read independently, use a variety of reading strategies, and use knowledge of text structure and genre to support comprehension (Tompkins, 2006).

Children who struggle with reading may experience shortcomings throughout all developmental phases. As students fail to meet reading development milestones, the gap between grade placement and achievement increases and results in the "Matthew's Effect" (Stanovich, 1986). This is often described in terms where the rich get richer and the poor get poorer. In regards to reading, this explanation describes the phenomenon where children who are strong readers are apt to read more and increase vocabulary and learn additional word meanings resulting in them reading even better. On the other hand, children who are poor readers may develop a lack of motivation for reading, believe they will fail at reading, and will continue to have difficulties resulting in an exponential growth of reading difficulties (Stanovich, 1986).

<div align="center">Motivation Theories</div>

Motivation is identified as a key factor to student learning (Ormrod, 2006). Motivation can be defined as "a state that energizes, directs, and sustains behavior" (Ormond, 2006, p. 364). Student motivation is often observed through personal investment and cognitive engagement in an activity (Ormrod, 2006). Different things can

motivate students in schools. For example, subject matter, social interactions, extracurricular activities, and athletics can enhance motivation while disability or personality traits (shyness) may result in avoidance of academics. While personal traits can greatly impact motivation, the environment and the teacher can also impact a student's given motivation level (Ormrod, 2006).

Motivation is directly linked to learning in a variety of ways through impacting behavior, thought processes, and performance. Specifically, motivation can direct behavior towards a goal and therefore impact student choices in engaging in a particular activity (Maehr, 1984). Motivation also impacts the level of effort and energy for a task as well as initiation and persistence in an activity (Wigfield, 1994). Motivation influences to what students decide to pay attention and what and how information is processed (Pintrich & Schunk, 2002). Furthermore, it determines what will be reinforcing or punishing to a given student and a combination of these factors may ultimately result in improved performance (Gottfried, 1990).

Factors influencing individual motivation include self worth, relatedness, need for affiliation, and need for approval (Ormrod, 2006). Self-worth or an individual's level of competence influence motivation and some children who fear failure engage in self-handicapping behaviors simultaneously allowing their failure to be justified while maintaining their self worth (Covington, 1992). Relatedness is often considered from an evolutionary perspective and can impact a child's interacting with peers (Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991) as well as prosocial behavior (Dowson & McInerny, 2001). Relatedness can also impact how a child expresses his or her need for

affiliation or how one seeks out relationships with others as well as the need for approval or a desire to be accepted and receive positive judgment from others (Ormrod, 2006).

In addition to these needs, motivation was also influenced by affect, anxiety, culture/ethnicity, gender, socioeconomic status, and/or disability (Brophy, 2004). Affect is linked to motivation due to students experiencing an emotional response to a given piece of information or academic subject matter (Brophy, 2004). Emotional response can also impact a student's level of anxiety and may result in anxiety about physical appearance, new situations, judgment by others, subject matter that is difficult, excessive classroom demands, tests, violence/physical safety, situations when self-worth could be threatened, and the future (Ormrod, 2006). How this anxiety may impact motivation and how these feelings could potentially impact performance is important to consider.

Motivation characteristics and an individual's qualities led theorists to identify four major areas that typically impact motivation: a trait perspective, a behaviorist perspective, a social cognitive perspective, or a cognitive perspective. These theories each propose a different view in an attempt to understand human motivation and the implications of motivation in educational settings (Ormrod, 2006). The first, trait theories of motivation, suggests motivation is based on individual personality characteristics and is impacted by an individual's personal needs. Frequently considered under this theory is achievement motivation, defined as a need for excellence without external rewards (McClelland, Atkinson, Clark, & Lowell, 1953). Initially achievement motivation was considered to be an enduring trait consistently observed across tasks (Ormrod, 2006); however, cognitive factors may also play a role in motivation.

A second motivation theory is the behaviorist perspective, which indicates people engage in behaviors that were reinforced in the past (Ormrod, 2006). Behaviorists originally suggested motivation was reinforced through a drive needed to obtain a primary function (e.g., food) (Ormrod, 2006). More recently, behaviorists suggest motivation levels and the behaviors that follow are a result of function and the consequence achieved through engaging in a given behavior (Ormrod, 2006). Furthermore, behaviorist theories of motivation suggest human behavior is often a result of an individual's long-term goals (e.g., a doctoral student actually finishing a dissertation to obtain his/her doctoral degree) (Ormrod, 2006).

The social cognitive theory of motivation suggests motivation is driven by goals, choices, and behaviors and proposes people learn by watching others and internalizing learning (Ormod, 2006). Additionally, this theory suggests people set goals and depending on their motivation level, will then engage in the necessary behaviors to achieve the goal. This theory also proposes motivation is impacted by a person's ownership in learning and the standards they set for themselves (Ormrod, 2006). Finally, the cognitive theory of motivation submits a person's motivation is dependent upon how they think about things and their mental processes. Motivation is therefore influenced by new information a person receives and previously held beliefs and these factors contribute to a person's intrinsic motivation (Ormrod, 2006).

<div align="center">Cognitive Factors and Intrinsic Motivation</div>

The noted motivation theories suggest a variety of factors potentially impacting a student's performance in school; however, self-perception must be a primary consideration in examining motivation, particularly intrinsic motivation. Intrinsic

motivation is an individual's internal desire to complete a task (Ormrod, 2006). While intrinsic motivation is frequently high when children are in early elementary school, this tends to decrease as children progress through school and can be particularly lacking in children with disabilities (Ormrod, 2006).

Two important factors regarding intrinsic motivation and self-perception are self-efficacy and self-determination. Self-efficacy is a person's belief they can successfully accomplish a task (e.g., the level of belief a doctoral student has about their capability in completing a dissertation). Self-efficacy can be promoted through mastery of challenging tasks, increasing pride and satisfaction and ultimately increasing intrinsic motivation (Shernoff, Knauth, & Makris, 2000). An increase in intrinsic motivation can lead to persistence despite having difficulties in a task and increased interest even when errors are made (Deci, 1992). The cyclical link between challenging tasks and intrinsic motivation can be supported through feedback and environments that provide students with opportunities to make mistakes (Clifford, 1990). Similar to self-efficacy, self-determination is the idea that a person has some choice and control regarding his/her future. Self-determination influences motivation because it relates to a person's sense of autonomy and ability to feel a sense of control in ones life (Deci & Ryan, 1992).

Additional motivation theorists suggest expectancies and values are important variables that effect motivation level (Wigield & Eccles, 2000, 2002). Expectancy is directly linked to self-efficacy as student's history (e.g., success or failure) at completing a task as well as perceptions, instruction, and level of support can all be impacted if a child believes he will successfully achieve a task. Additionally, value is the idea there is a benefit to completing an activity (Ormrod, 2006). Previous research in motivation

identified importance, utility, interest, and cost as considerations in determining the

perceived value of something (Wigfield & Eccles, 2000). Interest can be defined as "a

feeling that a topic is intriguing or exciting" (Ormrod, 2006, p. 400) and therefore is

directly linked with intrinsic motivation. Research found a correlation between interest

and cognitive engagement (Wigfield, 1994) as well as connections to increased

knowledge, greater memory of content, and higher performance (Garner, Brown, Sanders,

& Menke, 1992).

<div align="center">Motivation and Reading Theories</div>

Motivation theories and associated variables are important to consider when

examining literacy instruction, student motivation in reading activities, and the impact of

these variables for children with disabilities. As noted, motivational factors greatly

impact intrinsic motivation for students. For those who struggle with reading, the impact

of "The Matthews Effect" can not only impact student motivation but also creates a

challenge for teachers. This effect can inhibit children's progression from "learning to

read" to being able to "read to learn" (Good, Simmons, & Smith, 1998). Researchers

identified a number of root causes of reading difficulties including: complexity of English

language, lack of understanding of the alphabetic principles, difficulty in transferring

spoken language to reading, and a lack of motivation or appreciation of reading activities

(Mathes & Torgesen, 1998). Furthermore, for children in grades 3-5, motivation in

reading is connected to achievement on standardized tests (Gottfried, 1985) and school

grades (Sweet, Guthrie, & Ng, 1998).

While motivation is identified as a key component in reading success, middle

school students frequently report a lack of motivation in reading activities and may

demonstrate negative attitudes and resistance towards reading (McKenna, Kear, & Ellsworth, 1995). Reasons for a lack of motivation during middle school includes a lack of consideration of personal individuality and interest of students (Ivey & Broaddus, 1999), a lack of adequate time to read materials interesting to the reader (Worthy & McKool, 1996), differences in what children want to learn and state standards resulting in a disinterest in material (O'Brien, Stewart, & Moje, 1995; Bean, 2000), and differences in reasons for reading during school (e.g., answer questions, complete assignments) vs. out of school reading (e.g., personal and socially oriented goals).

Theories on reading motivation in students were developed through a synthesis of several motivation theories. Bandura's theory of self-efficacy supports the idea that children's academic achievement is effected by a child's belief in her ability to regulate her own learning (Bandura, 1997). A child's perceived self-efficacy is influenced by academic aspirations, peer relations, vulnerability to depression, and moral self-sanctions (Bandura, 1997). Self-efficacy (task-specific beliefs) along with self-concept (general beliefs about capabilities) contributes to competency beliefs or how well a person feels they can accomplish a given activity (Wigfield, et al., 1997). The idea of competency beliefs is important in considering a child's level of motivation (Eccles, Wigfield, & Schiefele, 1998). Specifically, children who experience task mastery will have a higher perception of competence and motivation while children who have failures or a lack of competency in a task will be less motivated. This supports the idea that domain specific motivation (i.e., reading motivation) is directly linked to competency beliefs (Morgan & Fuchs, 2007).

In addition to competency beliefs, intrinsic motivation and goal orientation theories are indicative of reading motivation levels in children (Morgan & Fuchs, 2007). Intrinsic motivation is where the activity itself is inherently pleasurable (Gottfied, 1985). Goal orientation is identified as a "set of behavioral intentions that determines how students approach and engage in learning activities" (Meece, Blumenfeld, & Hoyle, 1988, p. 514). A child's level of goal orientation can be influenced by classroom behavior and reading performance (Morgan & Fuchs, 2007). Similarly to competency beliefs, goal orientations can be domain specific (Salonen, Lepola, & Niemi, 1998) and can positively or negatively impact a students' academic performance. Positive goal orientations may result in a student being task-oriented while maladaptive behaviors could result in a student avoiding tasks (Ames, 1992; Poskiparta, Niemi, Lepola, Ahtola, & Laine, 2003).

The engagement perspective of reading comprehension development expands upon the previously discussed reading motivation theories and identifies factors critical to improving not only reading motivation but also engagement and comprehension during reading activities (Guthrie & Wigfield, 2000; Guthrie et al., 2004). The engagement perspective on reading comprehension theory is based on the following: 1) Engagement in reading involves simultaneous motivated and strategic interactions with text, 2) Engaged reading correlates with comprehension achievement, 3) Motivation and cognitive strategies are components of engaged reading and instructional practices can be focused on increasing these areas, and 4) Instruction focused on motivation and cognitive strategies in reading will increase engagement and reading comprehension (Guthrie & Wigfield, 2000).

This theory is based on the idea that readers who are engaged are intrinsically motivated, seek to gain knowledge from text, use cognitive strategies, and attempt to learn from the text. Engagement includes components such as sustaining cognitive effort (Berliner, 1979, Stipek, 2002), affective aspects (e.g., interactions with the environment) (Furrer & Skinner, 2003), cognitive aspects (e.g., level of processing), and activity components (diversity of reading activities in and out of school) (Guthrie, Schafer, & Huang, 2001). Overall, engagement is based on the idea that students are active, involved in reading tasks, and exhibit effort focused on gaining information from the text (Guthrie et al., 2004). Furthermore, this theory is based upon the idea that instructional practices can be used to increase motivation.

Intrinsic motivation and self-efficacy in reading is improved when students are taught specific reading strategies and are given opportunities for success (Schunk & Pajares, 2002). Content goals are also important factors to improve motivation and comprehension during reading. Specifically, when fifth grade students were taught to focus on meaning and build knowledge during reading activities, motivation and comprehension increased (Grolnick & Ryan, 1987). Student motivation can also increase when they are given in choice in their reading materials or when provided with opportunities to collaborate on reading activities (e.g. read with a partner) (Guthrie, et al., 2004). For example, in controlled settings, motivation and comprehension was higher in students who were allowed to choose their texts and provided opportunities for social collaboration (Reynolds & Symons, 2001). Similarly, in classroom settings, research found engagement and motivation level in reading was impacted by content goals, choice, collaborations, effective scaffolding, and hands-on activities (Bogner, Raphael, &

Pressley, 2002; Guthrie, Wigfield, & VonSecker, 2000). Other instructional strategies found to impact motivation included the level of teacher involvement with students (Skinner, Wellborn, & Connell, 1990; Wentzel, 1993), use of extrinsic reinforcers (Nolen & Nicols, 1994), focus on emphasizing mastery goals (Ames, 1992), and increasing self-determination in learning (Ryan & Deci, 2000).

In addition to specific instructional practices, the engagement perspective indicates using cognitive strategies are important to reading motivation and comprehension. Cognitive strategies examined previously in reading include activating background knowledge to help understand text (Dole, Valencia, Greer, & Wardrop, 1991), developing questions based on the information in the text (Rosenshine, Meister, & Chapman, 1996), summarizing the text (Armbruster, Anderson, & Ostertag, 1987), using texts to find information (Dreher & Brown, 1993), using graphs to organize information from the readings (Armbruster, Anderson, & Ostertag, 1987), understanding how stories are typically structured (Fitzgerald & Spiegel, 1983) and themes are developed (Williams, et al., 2002), and including comprehension based activities during reading (Baker & Zimlin, 1989).

Strategy training is an important component used to support the engagement perspective, because it has the potential to improve self-efficacy during reading tasks thus improving motivation (Bandura, 1997; Schunk & Zimmerman, 1997). Strategy training is also important in improving comprehension in both typically developing children and children with learning disabilities (Gersten, Fuchs, Williams, & Baker, 2001). Specifically, students who are taught to use a specific strategy can gain a better

understanding of using a given strategy and improve comprehension (National Reading Panel, 2000).

The theoretical perspective on engagement is based on the idea that students who are motivated and use cognitive strategies during reading activities will be more engaged and have increased comprehension. Research on this theory examined the importance of incorporating stimulating tasks as an important factor to increase motivation during academic activities (Guthrie, et al., 2006). Previous research on stimulating tasks examined increasing student situational interest (Hidi & Harackiewicz, 2000). This framework suggests educators who successfully increase student involvement in content areas will increase motivation in a given content area (e.g., reading) and thus increase learning (Hidi & Harackiewicz, 2000).

Previous research examining teachers' perspectives on student situational interest focused primarily on providing students with stimulating tasks (Hidi & Harackiewicz, 2000; Nolen & Nichols, 1994; Zahorik, 1996; Hootstein, 1995; Sweet et al., 1998). Stimulating tasks were identified as giving students tasks that made them think in different ways (Nolen & Nichols, 1994) as well as engaging in hands-on activities (Hidi & Harackiewicz, 2000). Previous surveys of teachers report stimulating tasks were the best method to maintain student motivation and were rated highly as a method to motivate unmotivated students (Zahorik, 1996). In addition, concrete projects improved student motivation (Hootstein, 1995) and student motivation in low-achieving students increased when it was connected to extracurricular activities (Sweet et al., 1998). Stimulating tasks must provide opportunities to impact motivation and comprehension long-term (Guthrie et al., 2006). In order for this to occur during reading activities,

students must be actively engaged, have interest in the task, and be provided with support (Guthrie et al., 2006). Students provided with reading instruction within this framework (i.e., an interest based reading episode) will have a greater level of intrinsic motivation in reading tasks and higher levels of comprehension (Guthrie et al., 2006).

An expansion of situational interest in a stimulating activity is the idea of individual interest (Hidi & Harackewicz, 2000). Individual interest is indicative of enhanced participation in a task as well as pursuit of further information (Hidi & Harackewicz, 2000). Individual student interest can also be impacted by environmental conditions (Mitchell, 1993) as well as "internalization and identification" (Krapp, 2002, p. 398). Specifically, interest development is based on experiences that consist of positive interactions and emotional satisfaction (Krapp, 2002). Environmental supports that encourage competence, autonomy, and social relatedness (Ryan & Deci, 2000) provide a mechanism to convert a situational interest into an individual interest.

Reading Motivation and Students with Disabilities

For students with disabilities, the need to improve reading motivation is significant. The impact of reading difficulties on children is far reaching particularly for students with disabilities and it is estimated 85% of these children have reading difficulties (Polloway et al., 2008). A lack of task persistence and motivation is frequently observed in students with disabilities due to previous failure (McKinney, Osbourne, & Schulte, 1993). Research in special education emphasizes the importance of task persistence as a key component to comprehension and identified reinforcement, intrinsic motivation, and socially mediated instruction as methods resulting in increased task persistence in students with disabilities (Gersten, Fuchs, Williams, & Baker, 2001).

Children with emotional/behavioral disabilities (EBD) are one group of students who experience significant difficulties with reading (Nelson, Benner, & Gonzalez, 2005). Reasons include teachers' inability to effectively provide instruction to students who engage in ongoing problematic behaviors (Levy & Chard, 2001) and teachers' avoiding academic instruction when students respond with ongoing inappropriate behaviors (Gunter, Jack, DePaepe, Reed, & Harrison, 1994; Wehby, Symons, Cannale & Go, 1998). Additionally, while behavior is a concern when providing instruction to these students, the most effective instruction addresses behavioral problems, enhances learning, provides ways to improve social interactions, and increases reading motivation (Landrum, Tankersley, & Kauffman, 2003).

The impact of the "Matthew Effect" (poor reading skills and motivation impact involvement in reading activities) is particularly problematic for students with EBD. These students are less motivated to engage in academic tasks than peers without disabilities (Chapman, 1988; Fulk, Brigham, & Lohman, 1998) and have poor fluency and comprehension skills (Coleman & Vaughn, 2000; Vaughn, Levy, Coleman, & Bos, 2002). In order to address poor literacy skills and lack of motivation in students with EBD, previous research suggests interventions should address fluency, retell, and motivation (Coleman & Vaughn, 2000; Landrum, Tankersley, & Kauffman, 2003; Vaughn et al., 2002).

In their synthesis of the literature, Coleman and Vaughn (2000) found relatively few studies examining reading for students with EBD and the eight studies meeting criteria for inclusion lacked cohesion regarding methods to improve reading skills. In addition to their review, the authors met with eight special education teachers in a focus

group and identified several pertinent themes for teaching reading to students with EBD including emotional variability of students, fear of failure and trust issues, keeping students engaged, instructional practices, assessment and monitoring, and daily reading (Coleman and Vaughn, 2000). Specifically, teachers indicated they should avoid putting students in situations where they feel they may fail, engage students in reading through games, use explicit curriculum, provide ways for students to monitor their own progress, and provide time for students to engage in reading activities they enjoy (Coleman & Vaughn, 2000)

A second synthesis of the literature examined reading instruction in students with both LD and EBD (Vaughn, et al., 2002). The review found teachers devote a large amount of time to reading instruction, and the amount of time spent on reading instruction was dependent on the number of settings in which the student was taught reading with students receiving more instruction in special education classrooms. However a large amount of time in reading instruction involves having the students wait on someone or something (e.g., a student who is off-task that distracts the teacher), the quality of reading instruction was considered to be poor with limited direct instruction, and instruction often consisted of independent seatwork and worksheets (Vaughn et al., 2002). The authors suggested reading instruction include flexible groupings of students as well as systematic and explicit instructions (Vaughn, et al., 2002).

In a review of special education services for students with EBD, Landrum et al. (2003) identify several key areas for interventions in academic instructions for these students including direct instruction incorporating frequent corrective feedback and time to practice. Additionally, attention to task, monitoring performance, and social skill

interventions were recommended strategies to improve academic learning. The authors

conclude that due to the nature of their disability, students with EBD require intensive

interventions that are typically beyond the services provided in general education

classrooms (Landrum, et al.)

<p style="text-align:center">Repeated Reading Interventions and Students with EBD</p>

Repeated reading is an intervention addressing many motivational theories on

reading and instructional strategies. Repeated reading interventions are increasingly

prominent in the literature and for students with reading problems, it is considered a best

practice (Joseph, 2007). This intervention involves a student reading a selected passage

multiple times to improve fluency (Therrien, 2004; Mastropieri, Leinhart, & Scruggs,

1999). Repeated reading was effective in improving literacy outcomes for elementary

students with EBD (Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004),

elementary students with learning disabilities (Nelson, Alber, Gordy, 2004) as well as

middle school students with EBD (Alber-Morgan et al., 2007; Scott & Shearer-Lingo,

2002; Strong et al., 2004). Repeated reading interventions for secondary students have

important implications in regards to improving both motivation and reading skills (e.g.,

fluency and comprehension). They incorporate key strategies identified as important in

the engagement perspective on reading comprehension including factors that influence

intrinsic motivation such as supporting student autonomy, facilitating social interactions,

and maintaining positive student-teacher relationships during reading activities (Guthrie

& Wigfield, 2000; Guthrie et al., 2004).

Scott and Shearer-Lingo (2002) conducted a study using repeated readings and

determined the following factors were important: delivering content at the student's

instructional level, giving the student multiple opportunities to practice, incorporating opportunities for the student to monitor their own progress, and including direct student-teacher interactions. The intervention resulted in increased on-task behavior during reading activities as well as improvements in the student's reading abilities and increased motivation in reading (Scott & Shearer-Lingo, 2002).

Nelson et al. (2004) examined repeated reading for students with learning disabilities using a multiple baseline design and incorporated an error correction component. Performance was best during the error correction and repeated readings condition compared to the error correction only condition. Chafouleas et al. (2004) expanded upon the repeated readings research but incorporated a performance feedback component. Results indicated the performance feedback component was an important consideration particularly for struggling readers who experienced a high number of errors during reading while students who read accurately could increase fluency through repeated readings alone. Similarly, Strong et al. (2004) examined a repeated reading intervention with direct instruction compared to direct instruction only and found the repeated reading addition improved fluency in student's instructional reading level and grade level.

Alber-Morgan et al. (2007) also examined the impact of a repeated reading intervention on students with EBD. The intervention incorporated both a systematic error correction and a performance feedback component. The results found fluency increased after intervention. This study illustrated how treatment packages incorporating repeated reading, error correction, and performance feedback components address both motivation and reading outcomes in students with EBD (Alber-Morgan et al., 2007).

The recommended instructional practices described in the literature are addressed through a variety of ways in a repeated reading intervention that includes error correction and performance feedback components. Specifically, this treatment package addresses direct instruction principles through providing error correction on words a student reads incorrectly. It minimizes a student's fear of failure by allowing him/her multiple opportunities for practice and improvement through reading the same passage several times. Lastly, it provides students opportunities to monitor their own progress as well as receive timely and specific feedback.

By addressing these instructional strategies, this treatment package also encourages important intrinsic motivational factors such as self-efficacy through providing feedback to students on their performance levels and addressing self-determination by verbally reinforcing the student for their accomplishments as well as providing the student multiple opportunities to improve reading. Performance feedback delivered in this manner is effective as it offers students information they cannot get on their own, focuses on the student's strengths and notes methods to improve weaknesses, and enables the student to maintain his/her sense of self-efficacy and self-esteem (Kluger & DeNisi, 1998; Pintrich & Schunk, 2002; Turnstall & Gipps, 1996). Furthermore, this intervention addresses a student's need for relatedness because he/she interacts directly with the teacher and addresses a student's need for approval because he/she receives praise through performance feedback. The connection between self-efficacy and self-determination to intrinsic motivation may result in this treatment package being particularly beneficial for improving overall reading motivation in students with EBD.

Use of Animals to Increase Reading Motivation

Reading motivation theories provide evidence that there are benefits in reading

acquisition and motivation levels when interventions for students with EBD target on-

task behavior and social interactions. One area that may enhance opportunities for

academic engagement and social interactions, particularly for students with EBD, is the

incorporation of animals into reading activities through animal assisted activities.

Specifically, previous research investigating human animal interactions supports the idea

of improving student motivation through the incorporation of animals into academic

activities (Fawcett & Gullone, 2001). Including an animal into an educational

intervention can be considered a complementary intervention (Kruger & Serpell, 2006).

Researchers identified an "animal assisted intervention" as "any intervention that

intentionally includes or incorporates animals as part of a therapeutic or ameliorative

process or milieu" (Kruger and Serpell, 2006, p. 25). These activities are commonly

referred to animal assisted activities (AAA) and are defined as "opportunities for

motivational, educational, recreational, and/or therapeutic benefits to enhance the quality

of life. AAA are delivered in a variety of environments by specifically trained

professionals, paraprofessionals, and/or volunteers in associations with animals that meet

specific criteria" (Delta Society, 2010, para. 2). Preliminary support exists for the use of

animal-assisted interventions for adolescents with internalizing and externalizing

behavior disorders (RHMSS, 2003).

Human-Animal Interaction Theories

Several theoretical perspectives provide a foundation for animal assisted

interventions. The biophilia hypothesis (Wilson, 1984) suggests, "humans have an innate

tendency to focus on life and lifelike processes" (Wilson, 1984, p. 1). This theory is supported with research indicating humans have less stress (e.g., self report, muscle tension, skin conductance) when exposed to natural settings after viewing a stressful movie (Ulrich, 1993) and research supports the idea that human contact with animals improves physiological health and emotional health (Kahn 1997). The biophilia hypothesis was examined in research focused on the presence of an animal and the impact on an individual's level of anxiety and arousal (Kruger & Serpell, 2006). While results are mixed, the overall conclusion is that the presence of certain animals can have a calming effect on some people in certain situations (Kruger & Serpell, 2006). Further investigations of the biophilia hypothesis suggest the positive effects of AAA can also be explained through alternative frameworks (Fawcett & Gullone, 2001; Joye & DeBlock, 2011; Kruger & Serpell, 2006).

A second theoretical framework on AAA is the theory that animals serve as a means of social mediation between humans providing opportunities to build rapport (Kruger & Serpell, 2006). This theory proposes the presence and behavior of animals serves as an external social catalyst for humans to interact with one another (Fine, 2000; Levinson, 1969). Additional research examining the role of animals in therapy settings suggest clients are more likely to reveal or discuss their perspective, feelings, motivations, and/or conflicts when an animal is incorporated in the treatment (Mason & Hagen, 1999; Reichert, 1998; Reimer, 1999, Serpell, 2000; Wells, Rosen, & Walshaw, 1997). This theory is also supported by research illustrating people are perceived more positively by others when animals are present (Lockwood, 1983; Rossbach & Wilson, 1992; Wells & Perrine, 2001) and people have more positive interactions in the presence of dogs (Eddy,

Hart, & Boltz, 2001; Mader, Hart, & Bergin, 1989, Messent 1983). Kruger and Serpell

(2006) suggest interactions between a therapist or educator and client/student may benefit

through the incorporation of animals. Specifically, the client may perceive the clinician

more positively consequently increasing their comfort and opportunities to build rapport

(Kruger & Serpell, 2006).

Attachment theory (Triebenbacher, 1998) also supports AAA and individuals'

interactions with animals (Kruger & Serpell, 2006). Attachment theory is based on the

idea that people have a biological need to interact socially and this is achieved through

interactions with specific figures (primary and/or supplemental), which provide a

reciprocal relationship (Triebenbacher, 1998). Similarly, the "transitional object"

phenomenon states young children can find comfort in an object (e.g., blanket, toy) when

the child is apart from someone to whom they are attached (Winnicott, 1951; Cwik,

1991). Animals used in AAA often are considered to be objects that decrease client

stress particularly during early interactions (Katcher, 2000; Levinson, 1970, 1978, 1984,

Mallon, 1994a, Reichert, 1998, Triebencher, 1998). While these theories support AAA,

Kruger and Serpell (2006) caution clinicians to examine the difference between

incorporating animals as an "attachment figure" which indicates a long-lasting bond

compared to a "transitional figure" indicating a temporary use of an animal.

The theory of attachment between humans and dogs was examined in more detail

than other companion animals. Specifically, Nagasawa, Mogi, and Kikusui (2009)

explored the role of Bowlby's attachment theory (Bowlby, 1969) in regards to human-

dog interactions. Bowlby's theory of attachment suggests infants become attached to a

caregiver who cares for them. Attachment can be defined by proximity between the child

and the caregiver as well as the parents and child exhibiting behaviors toward one another in which they do not engage with other animals (Bowlby, 1969). Research on dog behavior found dogs, when interacting with people, respond to pointing (Hare, Brown, Wiliamson, & Tomasello, 2002; Miklosi, Kubinyi, Topal, Gacsi, Viranyi, & Csanyi, 2003) and engage in attention-seeking behaviors (Miklosi, Pongracz, Lakatos, Topál, & Csányi, 2005). Furthermore, the theory of social bonding between dogs and humans is based on an understanding of species-specific cues, gazing behavior (dogs looking at owners and gazing being an important social cue in people), and biological reactions (neuroendocrinological reactions - a correlation between higher levels of oxytocin released and the length of the dogs' gaze) (Nagasaw et al., 2009).

Another related theory, the theory of social provisions (Weiss, 1974) suggests a person's psychological health is met through social relationships. Specifically, this theory indicates people need guidance, assurance of support during stressful times, recognition of worth, attachment to others, the feeling of belonging to a group, and opportunities to nurture others (Weiss, 1974). This theory is related to AAA as these activities are often considered opportunities for people to fulfill their desire to nurture something (Beck & Katcher, 1996; Enders-Slegers, 2000; Lapp & Scruby, 1982; Mallon, 1994b). Furthermore, Rogers' theory of unconditional positive regard suggests therapists must be empathetic to clients and accept them as a person (Rogers, 1961). This theory is relevant to AAA as it suggests animals are commonly perceived as being non-judgmental and empathetic to people (Kruger & Serpell, 2006).

The above theories provide an empirical base for the use of AAA in a variety of capacities. However, Bandura's social cognitive theory of self-efficacy (Bandura, 1997)

is the most relevant theoretical framework for the current study. Bandura's theory is based on the belief in a person's own ability to complete a task successfully. Research in AAA suggests that incorporating animals into activities decrease a participant's feelings of helplessness thus increasing self-efficacy (Kruger & Serpell, 2006). Furthermore, self-efficacy is believed to support AAA because participants are provided with opportunities to learn, be successful at a task, and receive positive feedback (Kruger & Serpell, 2006).

Bandura's theory of self-efficacy included four components including performance outcomes, vicarious experiences, verbal persuasion, and physiological feedback. Performance outcome is identified as significant to self-efficacy because if an individual is successful in a task initially (e.g., during training) he or she is more likely to work harder when asked to complete a similar task. Alternatively, someone who experiences failure in a task may have decreased performance outcomes and efficacy (Bandura, 1977). Efficacy can also be influenced by verbal persuasion. Specifically, when individuals are encouraged positively (e.g., I know you can do it) they are more likely to increase their efficacy. The third component identified as important to Bandura's theory on self-efficacy is physiological feedback. Physiology impacts efficacy as people are influenced by the biological functioning of their bodies and states of anxiety can impact efficacy levels. Lastly, vicarious experiences impact efficacy because watching someone complete a task successfully may impact someone's ability in their belief they can achieve a task (Bandura, 1977).

Bandura's theory of self-efficacy provides a theoretical framework for both literacy instruction and AAA and thus can be used to support the idea of incorporating animals into literacy instruction. Student's self-efficacy is a necessary factor to success

in reading and AAA may improve self-efficacy. Additionally, the incorporation of animals into targeted literacy instruction (i.e., repeated readings) may be particularly beneficial for students with emotional and behavioral disabilities who struggle with reading. The presence of the dog in conjunction with the repeated reading, error correction, and performance feedback targets three of the four areas of Bandura's theory on self-efficacy (performance outcomes, verbal persuasion, and physiological feedback) potentially strengthening the previously used intervention where the dog was not present.

<div align="center">Dogs in Schools</div>

Pet visitation programs focused on reading to animals are becoming increasingly prevalent (Chandler, 2001). Several studies examined the impact of therapy dogs on children in school settings for children with and without disabilities (Hergovich, Monshi, Semmler, & Zieglmayer, 2002; Kotrschal & Ortbauer, 2003) and observed improvements in behavior for typically developing children. Specifically, first grade students were found to be less aggressive and more empathetic after a therapy dog was introduced into the classroom for a month (Hergovich et al., 2002). In another study with elementary aged children, incorporating a therapy dog into the classroom resulted in decreased aggression and hyperactivity (Kotrschal & Ortbauer, 2003). When examining students with EBD, the introduction of a therapy dog into the class also resulted positive effects on behavior. Specifically, Anderson and Olson (2006) found that introducing a dog into the class allowed students have a greater understanding of how their interactions with the dog impacted self-regulating behaviors and empathy (i.e., the children learned their behavior impacted the way the dog responded to them and did not want their behaviors to upset the dog).

Presence of Dogs on Children's Behavior/Performance

Other research examining the impact of a dog's presence on children outside school settings found children were less anxious when a dog was present (Friedmann et al., 1983; Hansen, Messinger, Baun, & Megel, 1999; Nagengast, Baun, Megel, & Leibowitz, 1997). Children's distress behaviors decreased when a dog was present during a physical examination in a doctor's office (Hansen et al., 1999; Nagengast, et al., 1997). In addition, blood pressure and heart rate were lower in children during a reading activity requiring children to read aloud when a dog was present (Friedmann et al., 1983)

Additional research further examined the presence of a dog on young children (Esteves & Stokes, 2008; Gee, Harris & Johnson, 2007; Gee, Church & Altobelli, 2010; Gee, Crist, & Carr, 2010; Gee, Sherlock, Bennett, & Harris, 2009). Esteves and Stokes (2008) found children with intellectual disabilities interacted more positively towards their teacher and the dog when the dog was present. Gee, Crist, and Carr (2010) found when preschoolers were asked to complete a matching task, they required fewer prompts when a live dog was present. Gee et al. (2009) found preschoolers listened better to instructions for modeling tasks (e.g., follow a behavior such as walking on a balance beam) when a live dog was present. Lastly, Gee, Church, and Altobelli (2010) found preschoolers made the fewest errors when students were asked to match an object with a picture when a live dog was present.

Reading to Dog Programs

There is a lack of empirical research examining dog-reading programs, however anecdotal reports suggest these programs influence confidence and motivation in reading

activities (Bueche, 2003; Hughes, 2002; Jalongo, 2005; Jalongo, Astorino, & Bomboy, 2004; Newlin, 2003). The Reading with Rover program reported students improved reading scores after participating in a dog visitation-reading program (Snider, 2007). Specific factors included improvements in confidence, increased enjoyment in reading, and lack of judgment during reading (Snider, 2007). The Reading Education Assistance Dogs (R.E.A.D.) program is another volunteer-based dog-reading program reporting positive effects for struggling readers (Jalongo, 2005).

One pilot study examining the impact of a dog reading program was located (Smith, 2009). This study examined 3rd grade homeschooled children using a between groups design. Children in the experimental groups read aloud over a 6-week period (30-minute one-on-one reading sessions) to a therapy dog and certified handler while children in the control group read aloud to themselves. Post test measures indicate the experimental group had greater increases in reading rate compared to the control group however no differences in fluency, comprehension, or oral reading quotient scores were significant. Several limitations included a small sample size and limited power, short time frame of intervention, and prompting and interaction with the volunteers in the experimental group, which was absent from the control group. The author recommended future studies negate the latter limitation by providing equal prompting and interactions to students in both groups (Smith, 2009).

Relationship of Literature Review to Research Questions

Motivational theories provide the theoretical framework for this study. Previous research indicates motivation is a significant factor in reading acquisition particularly for

students with EBD. Self-efficacy is an important factor and is theorized to impact reading and the impact of animal assisted activities. A theoretical basis and previous research supports the use of a reading intervention consisting of repeated readings, error correction, and performance feedback to improve self-efficacy for students with EBD is provided. Additionally, a theoretical basis, preliminary research, and anecdotal reports suggest animal assisted programs that allow children to read to dogs may similar impact self-efficacy. Individual evidence exists for the reading intervention and preliminary evidence for reading to dog programs. Previous research has not systematically examined the impact of the presence of a dog in this type of reading intervention and therefore this study will seek to examine if the presence/absence of a classroom pet dog impacts reading fluency and comprehension and motivation levels in reading activities for children with EBD?

CHAPTER 3: METHOD

This study examined the role that the presence/absence of a classroom pet dog had on reading (fluency and comprehension) for students with emotional/behavioral disabilities. The research questions were: 1. Does the presence/absence of the classroom pet dog during the reading intervention package impact oral reading fluency as measured by words read correctly and words read in error?, 2. Does the presence/absence of the classroom pet dog during the reading intervention package impact comprehension as measured by oral retell abilities and literal comprehension questions?, and 3. Does the presence/absence of the classroom pet dog during the reading intervention package impact student motivation/interest of reading activities?

<center>Research Hypotheses</center>

1. Word read correctly will be highest in the dog present condition.

2. Words read in error will be lowest in the dog present condition.

3. Oral retell scores will be highest in the dog present condition.

4. Comprehension questions scores will be highest in the dog present condition.

5. Student motivation in reading will be higher on average during the dog present condition.

Participants

Four 5th grade students identified primarily as having behavioral disability served as participants in this study. Students were selected to participate through a purposive sample and a recommendation from their teacher. The criteria for being considered for participation included: being diagnosed with a behavioral disability, functioning below grade level for reading, and/or demonstrating academic and/or behavioral difficulties with reading, agreeing to participate, confirmation of parental/guardian consent, and not being fearful or allergic to the teacher's pet dog. Table 1 presents demographic information for each participant.

Table 1: Participants' Demographic Information

Student	Age/Grade	Ethnicity	IQ	Disability	Secondary
Brian	13/5th	White	83^a	EBD	SLD
Caleb	12/5th	White	87^a	OHI	SLD
Craig	10/5th	Hispanic	76^b	EBD	N/A
Damon	12/5th	White	83^a	EBD	SLD/LI

[a] WISC-IV

[b] K-BIT2

Brian

Brian was a 13-year old male who according to his teacher "had a good sense of humor, was creative, and wanted to impress his teachers." When he enjoyed a task he would focus and try his best however he could become oppositional and refuse to do any work at times. When focused on reading activities (i.e., on-task and engaged), he read

very well and and passed the language arts section of the state assessment the year prior to the study (463/437-passed). Specific accommodations for Brian in Language Arts included extended test time, small group instruction, and having instructions and questions read to him. Other accommodations included one-on-one attention, frequent breaks, and a point sheet with incentives. Brian spent most of his time in the self-contained EBD classroom but did participate in general education classes for 1.5/8.0 classes each day.

Brian received a primary diagnosis of EBD and secondary learning disability. Brian exhibited clinically significant levels (BASC-II) in attention, learning, a typicality, withdrawal, adaptability, study skills, functional community, hyperactivity, behavioral symptoms, aggression, conduct, depression, and somatization. On the Connor's test for ADHD, he received elevated scores (87) indicating a conduct disorder. Behaviors exhibited by Brian included loss of temper, seeking revenge, bullying his peers, feigning sickness, self-mutilation (picking), annoying others intentionally (e.g., making strange noises during class), and arguing when denied his way. In regards to previous experiences with the dog, Brian enjoyed interacting with Maggie however his problem behaviors typically prevented him from earning interaction time with the dog. Brian had a dog at home and also owned two dogs previously.

Caleb

Caleb was a 12-year old male who according to his teacher, demonstrated "a good sense of humor who enjoyed participating in class, being given classroom jobs, had a strong sense of pride, and was friendly with his peers." Caleb struggled with reading (e.g., difficulty with decoding clusters of letters and multisyllable words with irregular

parts - stomach) and did not pass the previous year's standardized test in language arts (421/437- did not pass). His teacher indicated his reading and decoding skills were improving throughout the year the study took place. Accommodations for Caleb during Language Arts included additional breaks, extended testing time, small group instruction, and tests read aloud.

According to educational records, Caleb was primarily diagnosed as having an Other Health Impairment and a secondary learning disability. Caleb received an above average on the Connor's Test for ADHD in cognitive problems/inattention, hyperactivity, ADHD index, restless/impulsive. He also exhibited ADHD symptoms based on the DSM-IV criteria in inattention, hyperactivity, and total score. Caleb was included in general education classes for 1.5/8 classes per day. His teacher Caleb struggled with outbursts, off-task behaviors, and theft of incentive coupons however his behavior was improving. Caleb's demonstrated previous positive interactions with the classroom dog Maggie and enjoyed playing with her and lying next to her on the floor when he earned free time based on his behavioral level. Caleb also had a dog at home.

Craig

Craig was a 10-year old male who according to his teacher was "sweet polite, respectful, friendly." His teacher described him as a model student who put forth his best effort. Craig's test scores indicated he functioned below grade level in reading and did not pass the previous year's standardized test in language arts (385/437 – did not pass). Accommodations for Craig during language arts included extended time, small group instruction, and tests read aloud to him.

Educational records indicated Craig had a primary diagnosis of EBD and would act out if academics were difficult for him. According to his teacher, he would put his head down and shut down if his schoolwork was too hard. Behavioral areas identified as clinically significant (BASC-II) for Craig included externalizing behaviors, adaptive skills, hyperactivity, aggression, conduct disorder, learning problems, atypicality (e.g., sees things that are not there or acts strangely), and withdrawal (e.g., avoids others). In previous years, Craig threatened to hurt others, bullied his peers, hit others, refused to talk, disobeyed and defied his teacher, and act out of control however these behaviors were not reported by his current teacher.   His teacher indicated he had no previous experiences interacting with the classroom dog however access to animals was included in his IEP and she indicated he was particularly interested in getting to read to her at prior to the study. Craig also did not have any pets at home.

Damon

Damon was a 12-year old student who according to his teacher, worked hard to please others, wanted to do well, enjoyed hands-on activities, liked to help others, and enjoyed attention from adults. He struggled greatly with reading (reversed letters – would say "saw" instead of "was", struggled with decoding) and did not pass the standardized test in language arts the year prior to the study (388/437-did not pass). He scored in the lower extreme range on the KTEA-II (reading achievement). Accommodations during language arts included additional breaks, extended testing time, use of computer or other AT, small group testing, tests read aloud by administrator, and access to additional examination examples.

Educational records indicate Damon had a primary diagnosis of EBD and a secondary learning and language disability. Damon participated in general education classes for 1.5/8 periods per day. He described himself as sometimes getting angry or upset when reading was too difficult for him and would sometimes refuse to do work when it was hard. He received clinically significant levels (BASC-II) in aggression, depression, atypical behavioral, withdrawal, hyperactivity, conduct problems, anxiety, somatization, and learning problems. He was also considered to be at-risk for difficulties with adaptability. He had no previous experiences with Maggie but did have two dogs of his own at home.

<div align="center">Research Design</div>

An alternating treatment design was used to determine the effectiveness of the presence of the classroom pet dog on the acquisition of reading measures (i.e. words read correctly, words read in error, oral retell, and reading motivation). An alternating treatment design allows researchers to compare multiple conditions using one participant and involves rapid alternations between conditions (Kennedy, 2005). The alternating treatment design was used in this study to compare two conditions. One condition included repeated readings (RR), error correction (EC), and performance feedback (PF) with an adult only (dog absent condition) while the other consisted of RR, EC, and PF with in the presence of a dog and an adult (dog present condition). This design allowed researchers to determine if a functional relationship existed between the independent and dependent variables. The conditions were counterbalanced to ensure there were no more than two consecutive sessions of the same independent variable (i.e., the student would read passages in the dog present condition for up to two sessions and would then read

passages in the dog absent condition for up to two sessions). Counterbalancing is used to equally distribute potential carry over effects equally across conditions (Kennedy, 2005).

Data Collection

Event recording was used to determine the rate of words read correctly and in error simultaneously using paper/pencil as participants read the passages. Additionally, event recording was used to determine the percentage of change in comprehension through an oral retell measure as well as percentage of change in student motivation when reading. Event recording was selected as it allows a means to record individual occurrences of a response during an observation session (Kennedy, 2005). Specifically, this method allows for the exact number of words read correctly and words read in error to be recorded as the students read each passage aloud. The rate of words read correctly per minute was calculated by dividing the number of words read correctly by the number of seconds it took the student to read the entire passage and multiplying this by 60 (i.e., [Number of words correct/number of seconds read] x 60). Event recording was used to determine comprehension based on the percent of components included in student retell of the story (Shapiro, 2004a) (Appendix A). Lastly, permanent product event recording was used to record student motivation regarding reading activities as determined by the percentage score on the modified Elementary Reading Attitude Survey (ERAS: McKenna & Kear, 1990) (Appendix B).

Operational Definitions

Words read correctly and words read in error were recorded during all phases of the study. Words read correctly were defined as words the student independently states within 3 seconds of having his eyes on the word and without prompting. If the student

said the word incorrectly but self-corrected within 3 seconds, the word was be counted as correct. Words were counted as errors based on the following definitions:

Omitted words – A word was left out entirely or if the student omitted an entire line, the evaluator redirected the student to the line and marked one error. If the student could not be redirected, the omission was counted as a single error not an error for each word missed

Substitutions – This was marked if the student said the wrong word, said anything not written on the page, or deleted prefixes or suffixes it was counted as an error.

Mispronunciations - If the student mispronounced the word and the evaluator corrected them, it counted as an error and the student was prompted to go to the next word

Repetition – If a student repeated words, it was not counted as an error.

Self corrects – Self-corrections within 3 second were not counted as errors

Pause or not state within 3 seconds - If a student hesitated for more than 3 seconds, the researcher orally told the student the word and had the student continue reading and marked the word as an error.

Oral retell involved students retelling the passage in their own words and was collected during all phases of the study. This is a short-term technique that can be useful in monitoring reading (Shapiro, 2004b). Retell is reported to be a preferred method compared to other comprehension measures because it requires a child to be more involved in comprehension behaviors, is less time consuming than cloze formatting, and a child's ability to retell what they read is an important precursor to more advanced comprehension skills (Roberts, Good, & Corcoran, 2005). In the present study, students were asked to complete a non-prompted retell without passage technique (Level A - the

child does not have access to the passage and is stopped when they cannot add anything else to the retell) and all were able to complete retells at this level. A modified version of the "Quantification of Retelling for Narrative Text" (Shapiro, 2004a) (Appendix A) was used to calculate the score of the retell. Specific components assessed included the theme of the story (main idea or moral), goal (what the character wanted to happen), setting (when and where), characters (main characters), initiating episodes, major events (climax), sequence (retell is in sequential order), and end of story.

During the intervention conditions, students also answered five literal comprehension questions. After the questions were developed, two special education teachers reviewed the questions to determine accuracy and consistency of content and difficulty level (Alber-Morgan et al., 2007) and revised until reaching a satisfactory level (i.e., agreement by both teachers that questions were accurate and consistent). Literal comprehension questions were only included during intervention because Alber-Morgan, et al., (2007) found an immediate impact from baseline to intervention thus a precedence for the likely change between baseline and intervention was previously established. Additionally, the authors noted a potential ceiling and practice effect on the students Alber-Morgan, et al., 2007). As a way to address the potential practice and ceiling effect observed in the previous study, questions were only included during intervention in order to more accurately compare the individual intervention conditions impact on comprehension.

Student motivation and self-perceptions regarding reading activities were collected six times at the beginning (after a dog absent and a dog present session), middle (after a dog absent and a dog present session), and end of the study (after a dog absent

and a dog present session). Specifically, students were asked five questions based on the modified Elementary Reading Attitude Survey (ERAS: McKenna & Kear, 1990) (Appendix B) to assess their motivation about reading. The ERAS was developed to assess interest in recreational reading activities for students in grades 1-6 and uses a 4-point picture response system. The pictures include a very happy face (4 points), a slightly smiling face (3 points), a mildly upset face (2 points), and a very upset face (1 point).

The adapted scale used in this study was modified to ask questions about the students' motivation after reading specifically to the researcher or specifically to the dog (Maggie). Survey questions were recorded and students listened to instructions and the subsequent questions and circled the correlating "face" to indicate how they felt while reading during a given session. Response sheets were coded to ensure anonymity and students were instructed to not put their name on their paper and put completed sheets in an envelope.

<div align="center">Variables</div>

Dependent variables: The dependent variables targeted during baseline, intervention, and maintenance sessions were the rate of words read correctly per minute, rate of words read in error per minute, and the percentage of components included in the oral retell as based on the modified "Quantification of Retelling for Narrative Text". Additionally, during intervention and maintenance the level of student motivation in reading based on condition was assessed three times throughout the study (beginning, middle and end) using the adapted Elementary Reading Attitude Survey. In addition, during intervention, students were asked five literal comprehension questions orally after

completing the retell addressing who, what, where, when, and why/how questions (e.g., Who was the boy in the story?, What did the boy in the story want at the store?, Where did the story take place? When did the story take place?, Why did the boy want to save money?)

Independent variables: Students participated in reading activities under two conditions: 1) repeated readings, error correction, and performance feedback with an adult only (RR+EC+PF – dog absent) and 2) repeated readings, error correction, and performance feedback with an adult and a dog (RR+EC+PF – dog present). In the dog-absent condition, the error corrections and performance feedback were given from the person's perspective. In the dog-present condition these were given from the dog's perspective. Both interventions consisted of repeated readings, error correction, and performance feedback. During repeated readings, students read the passage one time and all words read in error were noted. The adult then provided error correction for the words read in error by reviewing those words with the student. The student then read the passage a second time. Following the second reading, the adult compared the length of time and words read in error between the first and second reading and told the student they had one more time to "do even better". After the third reading, the adult provided performance feedback to the student comparing the final reading to the previous two readings as well as that session compared to the prior session.

Dog-absent condition: During this condition, all error corrections and feedback were given to the student from the adult's perspective. For example, during the error correction component, if the student were unable to read a word, the adult would say the

word correctly and prompt the student to read the word (i.e., say "Can you tell me what this word is?").

Dog-present condition: During this condition, the same procedures used during the dog absent condition were implemented. However, the perspective of the error corrections and feedback were shifted to the dog. Specifically, when the student was prompted to read the word the adult might say, "Can you tell Maggie (dog's name) what this word is?" and for the feedback component the adult said, "Maggie says good job".

Setting

All students attended a self-contained classroom, serving students with EBD during the same class period and were overseen by their primary special education teacher. In addition to the teacher, there were typically three paraprofessionals present in the classroom and up to 15 other students in the room. The classroom contained 25 desks lined up in 5 rows of 5 with the teacher's desk at the back of the room. In addition to the rows of desks were several areas available for small group instruction including a separate room with a table and four chairs used by a paraeducator near the teacher's desk. Also behind the teacher's desk was another secluded area used as a time out room. Directly behind the rows of desks was a desk for the paraeducator with several chairs around it for small group instruction. Behind this area was a kitchen area separated by bookshelves from the classroom area. On the right side of the room was another room used as an office and containing a copy machine, two chairs, and a table. On the left side of the classroom was a lounge/"free time" area containing bean bag chairs, a lounge chair, a television, and video game systems for the students to play. To the left of this area was a large round table with eight chairs used for small group instruction.

Directly behind the teacher's desk was a dog bed on which Maggie was able to lie down as desired. During the dog-present intervention sessions, students read to the dog in the area behind the teacher's desk in which the dog was accustomed to laying. Students sat on the floor while reading to the dog. During the dog-absent intervention sessions, students typically read to the researcher in either the office or kitchen area adjacent to the classroom and sat in a chair across from the researcher.

<center>Materials</center>

Classroom Pet. The teacher's pet dog was used as the dog for the intervention. The dog, Maggie, was an 11-year old yellow lab frequently brought to school by the teacher. Prior to the study, the teacher brought Maggie to the school routinely for the previous eleven years. Students did not read to Maggie prior to the study, however all the students in the class were accustomed to her being in the classroom. Previously, the teacher incorporated Maggie as part of the behavior management system in the classroom. For example, students who exhibited good behaviors were eligible to take Maggie for a walk. Maggie was not a certified therapy dog, however the principal approved her being brought to the school and all students in the class were screened to ensure they were not fearful of or allergic to the dog prior to the teacher bringing her to classroom at the beginning of the year.

Reading Passages. A total of 27 reading passages at each student's instructional reading level were used in the study. Sources of passages included easycbm.com and DIEBELS. Readability levels were assessed using the Flesch Reading Ease and Flesch-Kincaid grade levels in Microsoft Word (Tam, Heward, & Heng, 2006). All passages were narrative (fiction) and ranged between 187-291 words depending on the readability

level. A new reading passage was given to each student for each session. Passages were

counterbalanced across each condition (baseline, dog present condition, dog absent

condition, and maintenance) so readability levels and passage length were consistent.

Brian and Craig read passages at a 4th grade readability level and passage length

ranged from 218-291 words and readability level ranged from 4.1-4.9. Average word

length in each phase was 250 and average readability level was 4.5. Caleb read at a 3rd

grade reading level and passage length ranged from 227-280 words and readability

ranged between 3.0-3.6. Average word length in each phase was 252 and average

readability level was 3.4. Damon read at a 1st grade reading level and passage length

ranged from 187-256 words and readability ranged between 1.0-1.8. Average word

length in each phase was 228 and average readability level was 1.5.

Table 2**:** Passage readability level and word lengths

	Brian	Caleb	Craig	Damon
Level	4th	3rd	4th	1st
Level Range/Average	4.1-4.9,	3.0-3.6,	4.1-4.9,	1.0-1.8,
	4.5	3.4	4.5	1.5
Length Range/Average	218-291,	227-280,	218-291,	187-256,
	250	252	250	228

Procedures

Pre-Testing Assessment. Prior to baseline, students completed the Brigance

Diagnostic Inventory of Basic Skills (Brigance, 1983) assessment tool. The Brigance is a

comprehensive reading assessment tool that is nationally normed and easy to administer (Brigance, 1983). The Brigance pre-assessment was used to determine the students' reading skill level and all passages used throughout the study were matched to the level determined through the Brigance assessment. Table 3 presents the results of this assessment.

Table 3: Brigance Pre-Assessment Scores

Student	Word Recognition	Oral Reading	Reading Comprehension
Brian	4th	4rd	3rd (upper)
Caleb	3rd	3rd	4th
Craig	4th	5th	3rd (upper)
Damon	1st	1st (upper)	1st

All materials used in the study were matched based on students' reading level. Therefore Brian and Craig read passages at a 4th grade readability level. Caleb read passages at a 3rd grade readability level and Damon read passages at a 1st grade readability level. During baseline, intervention, and maintenance phases, students were asked to read a passage aloud and all components for the entire session were recorded using a tape recorder. Specifically, each session consisted of the researcher giving instructions to the student, the student reading the passage (i.e., students read the passage one time for baseline and maintenance session 2 and three times for intervention and maintenance session 1), the error correction component, the oral retell given by the

student, the comprehension questions asked by the researcher and student answers, and the performance feedback component.

Baseline. During this condition, students read a passage aloud one time. During the reading, the number of words read correctly and number of errors made was recorded. After the student completed the entire passage, the number of words read correctly and words read in error were recorded. After reading the passage once, students were asked to retell the story in their own words. The dog was not present during the baseline condition.

Intervention. Intervention activities took place over a period of 3 months. Throughout this phase, students read passages to the adult (dog absent condition) or the dog and the adult (dog present condition). A total of 10 trials of each intervention session were counterbalanced and randomized with no more than 2 consecutive trials of the same condition. Repeated readings with error correction and performance feedback procedures took place in both conditions. Two conditions were used: one with an adult only (dog absent condition) and one with an adult and a dog (dog present condition). The student read the entire passage and the rate of words read correctly and rate of words read in error were recorded. Following the completion of the student reading the passage the first time, any words read in error were reviewed with the student through the error correction component of the treatment package.

Error Correction (EC).

EC - dog absent condition: During this condition, the adult read the word correctly to the student and then prompted the student to read the word (i.e., say "Can you tell me what this word is?"). After the student said the word correctly, the adult provided verbal reinforcement (i.e., "I think you did a great job").

EC - dog present condition: During this condition, the same procedures were used as used during the dog absent condition. However during reading, the perspective of the correction and feedback was shifted to the dog. Specifically, when the student was prompted to read the word the adult said, "Can you tell Maggie (dog's name) what this word is?" and for the verbal reinforcement component the adult said, "Maggie thinks you did a great job".

Performance Feedback (PF). After the errors were reviewed, the student read the passage a second time. Following the second reading, the student was told the length of time it took them to read the passage and the number of errors. The time and length for the second reading were also compared to the first reading and the student was then instructed to complete a third reading to try to beat their previous scores (i.e., the first and/or second reading).

PF -dog absent condition. After the second reading, the researcher said, "You had trouble with _____ (number of errors) words this time compared to _____ (number of errors) the first time. This time it took you _____(amount of time) compared to _____(amount of time) the first time you read the story. This is your last chance and I think you can do even better this time".

Then, after the third reading the student was verbally reinforced and the amount of time and words read in error were then compared to the two previous readings. The researcher said, "This time you only had trouble with _____ (number of words) compared to _____ from the last reading and _____ from the first time. And this time it only took you _____(amount of time) compared to _____ (amount of time) during the second reading and _____ (amount of time) during the first reading." Additionally, after

the third (final) reading, the researcher shared the difference between the reading rate from the current session and that of the previous session. The researcher said, "You had trouble with _____ (number of words) words last time and this time you only had trouble with _____(number of words) words" and would say "Good job, I'm very proud of you!" If the rate did not increase, the researcher said, "I know you can do better next time". After the third reading, the student was instructed to complete the oral retell. The researcher said, "Can you tell me what you remember from the story in your own words?" Then following the retell the researcher said "Now I have some questions for you. Can you tell me _____ (insert comprehension questions)" and the number of questions the student answered correctly would be noted. Performance feedback would then be given regarding the number of comprehension questions the student answered correctly for that session compared to the previous session. The researcher said, "This time you got _____ (number of questions correct) and last time you got _____(number of questions correct) and would say, "Good job, I'm very proud of you! Good work today!"

PF- dog present condition. After the second reading, the researcher said, "Maggie says you only had trouble with _____ (number of errors) words correctly this time compared to _____ (number of errors) the first time. This time it took you _____(amount of time) compared to _____(amount of time) the first time you read the story. This is your last chance and Maggie thinks you can do even better this time".

Then, after the third reading the student was verbally reinforced and the amount of time and words read in error were then compared to the two previous readings. The researcher said, "Maggie says, this time you only had trouble with _____ (number of words) words compared to _____ from the last reading and _____ from the first time.

And Maggie says, this time it only took you _____(amount of time) compared to _____ (amount of time) during the second reading and _____ (amount of time) during the first reading." Additionally, after the third (final) reading, the researcher and Maggie shared the difference between the number of errors from the third reading of the current session and compared to the third reading of the previous session (i.e. The number of errors the student had during session 2 would be compared to the number of errors they had in session 1). The researcher said, " Maggie says, you had trouble with ____ (number of words) last time and this time you only had trouble with _____(number of words) and would say "Good job, Maggie's very proud of you!" If the rate did not increase, the researcher said, " Maggie knows you can do better next time." After the third reading, the student was instructed to complete the oral retell. The researcher said, "Can you tell Maggie what you remember from the story in your own words?" Then following the retell the researcher said, "Now Maggie has some questions for you. Can you tell Maggie _____ (insert comprehension questions)" and the number of questions the student answered correctly would be noted. Performance feedback would then be given regarding the number of comprehension questions the student answered correctly for that session compared to the previous session. The researcher said, "Maggie says, this time you got ____ (number of questions correct) and last time you got _____(number of questions correct) and would say "Good job, Maggie's very proud of you! Maggie says good work today!"

Maintenance. Following intervention activities, students completed a cumulative maintenance assessment. During this time, the maintenance of the more effective condition (either dog present or dog absent condition) was assessed. The same procedures

used during intervention were during the maintenance condition. Additionally, one of the maintenance sessions used baseline procedures (i.e., no intervention procedures were implemented - the student only read the passage one time and did not receive error correction or performance feedback).

Social Validity

Social validity is a qualitative measure used to determine how stakeholders involved in the study feel about an intervention and can measure perspectives of importance, effectiveness and appropriateness of the intervention (Kennedy, 2005). Social validity is important in applied research projects because allows researchers to have a greater understanding of the social importance of a research project and better comprehend the effects of the research project (Kennedy, 2005) Social validity was collected to determine how the students and the teacher felt about the intervention package (repeated readings, error correction, and performance feedback in the presence/absence of a dog) and how it impacted their perceptions on the reading activities. Twice during this investigation, prior to intervention and following the maintenance condition, the students and their teacher were interviewed to determine the social validity of the intervention. Interviews were conducted individually and responses were recorded using paper and pencil by the researcher. Questions were used to determine if the students and teacher felt components of the treatment package were valuable for learning and teaching and obtain various perspectives. See Appendix C for social validity questions.

Interobserver Agreement

Interobserver agreement is used to address and ensure integrity and consistency during data collection and involves having second observer independently score the data The second observer's scores are then compared to the primary observer's scores to determine the level of agreement of observations (Kennedy, 2005). For this study, a trained second observer collected interobserver agreement data for a minimum of 33% of the sessions for each student and reviewed the audiotapes to check the words marked as read correctly and in error for each passage. The observer was trained to identify the components that would make a word being read correct (i.e., stated within 3 seconds, self corrections) and in error (i.e., omissions, substitutions, mispronunciations, and pauses longer than 3 seconds). Agreements were scored if both observers marked a response as correct or as an error. A disagreement was noted if the second observer marks a word differently from the primary observer. The total agreement was calculated by dividing agreements by the number of agreements plus disagreements and multiplying this by 100. Audiotapes were also reviewed to check the accuracy of the oral retell score and percent of comprehension questions answered correctly. The second observer was trained on how to complete the modified version of the "Quantification of Retelling for Narrative Text" form using sample retells as well as given an answer key to score responses to the comprehension questions. For the retell, an agreement was scored if both observers marked the student as having the component in the retell. Total agreement for the retell was calculated by dividing agreements by the number of agreements plus disagreements and multiplying this by 100. For the comprehension questions, an agreement was scored if both observers marked the student as answering the question either correctly or

incorrectly. Total agreement for the retell was calculated by dividing agreements by the number of agreements plus disagreements and multiplying this by 100.

Treatment Integrity

Treatment integrity involves collecting data on the implementation of the independent variables (Kennedy, 2005). This includes operationally defining independent variables, providing quantification of the characteristics of the intervention, establishing a recording system to collect information on the treatment, and training observers to use the recording system (Kennedy, 2005). For this study, the independent variables were operationally defined based on the dog-present and dog-absent conditions. Quantification of the treatment conditions was developed. Specifically, a checklist was developed to assess treatment integrity during the intervention condition and ensure procedures were implemented appropriately (Appendix D). An observer was trained to identify the components of the conditions and accurately use the checklist.

CHAPTER 4: RESULTS

The purpose of this study was to investigate if the presence/absence of a classroom pet dog enhanced the effects of a reading intervention package for 5th grade students with EBD. Specifically, the following research questions were addressed: 1. Does the presence/absence of a classroom pet dog during a reading intervention package impact oral reading fluency as measured by words read correctly and words read in error?, 2. Does the presence/absence of a classroom pet dog during a reading intervention package impact comprehension as measured by oral retell abilities and literal comprehension questions?, and 3. Does the presence/absence of a classroom pet dog during a reading intervention package impact student motivation/interest of reading activities?

Data Analysis

This study utilized a single subject methodology therefore; visual data analysis was used to determine the results of the data. Visual analysis involves examining the data for patterns and drawing conclusions based on what the data represents (Kennedy, 2005). Visual analysis is used to determine both within phase patterns and between phase patterns. Level, is the first criteria used in visual analysis. Level refers to the average (mean or median). When examining level it is important to consider the overall

average as well as the average of the last few data points prior to a phase change

(Kennedy, 2005). Trend is the second area that is examined through visual analysis.

Trend is examined through slope (upward or downward slant) and magnitude (rapid or

gradual increase or decrease in the data) (Kennedy, 2005). Lastly, visual analysis

examines the level of variability (degree to which data points deviate from the overall

trend). In addition to level, trend, and variability, immediacy of effect is also used to

examine the impact between phases (e.g., baseline and intervention). Immediacy of

effect refers to how quickly a change in the data pattern is observed after a phase change

and is typically assessed through level or trend changes.

Percent of non-overlapping data (PND) is another method used to analyze data

between phases. PND is determined by finding the highest (or lowest) baseline data

point. This data point is then compared to the data points in another phase (e.g.,

intervention) that are above (or below) it. The proportion of data points in the

intervention phase that do not overlap with the baseline phase are then calculated to

determine the PND (Scruggs, Mastropieri, & Casto, 1987). PND scores above 90 are

indicated of a very effective intervention; scores between 70 and 90 indicate a fairly

effective intervention; scores between 50 and 70 are questionable; and interventions with

scores below 50 are considered ineffective (Scruggs and Mastropieri, 1998).

In addition to PND, single subject alternating treatment designs examine

fractionation or the extent of the effects between the two treatments. Fractionation is

evaluated based on the vertical distance between the two treatments on the dependent

variable. Similar to visual analysis, the ending data points in a phase are useful in

determining trend and effectiveness of an intervention (Coooper, Heron, & Heward, 2007).

Lastly, the Wilcoxon Matched-Pairs Signed-Ranks test is a non-parametric test used to compare intervention data when using an alternating treatment design. This test determines if two groups are significantly different from one another by ranking the data (based on the combination of both groups), then comparing an individual data point to the group, and lastly comparing a sum of the ranks between the groups. Similar to inferential statistics, the calculated critical value determines the p-value and small p-values indicate the groups are significantly different from one another (i.e., $p < 0.05$) (Huck, 2008).

Overall Results

Visual analysis conducted on the data was used to determine whether the effects on literacy measures observed in Alber-Morgan et al. (2007) were replicated and if a difference was found between the intervention conditions (dog present compared to dog absent) on the five dependent measures (rate of words read correctly, rate of words read in error, percent of components in oral retell, percent of comprehension questions answered correctly, and level of interest in reading). Data indicate both intervention packages improved readings skills across all students over baseline levels and improvements were maintained. In general students decreased their rate of errors and increased the rate of words read correctly during both conditions and fluency measures were more stable.

Visual analysis indicated most students demonstrated decreases in the rate of errors and increases in the rate of words read correctly per minute. Additionally, comprehension measures indicated the percent of retell components increased during

both intervention conditions across all students and remained high during maintenance

sessions while percent of comprehension questions answered correctly tended to be

higher in the dog present condition and remained high during maintenance. Lastly, when

examining social validity, students rated their interest in the reading activities

consistently high in both conditions. Additionally, the Wilcoxon test was used to

compare all reading measures (rate of words read in error, rate of word read correctly,

and oral retell) between treatments conditions (dog present and dog absent) and confirm

results of visual analysis. The results of the Wilcoxon test found no significant

differences between the treatments on any of the measures (Table 4).

Table 4: Wilcoxin p-value scores comparing dog present and dog absent conditions

	Brian	Caleb	Craig	Damon
WEPM	0.90	0.32	0.85	0.52
WCPM	0.37	0.90	0.77	0.20
Retell	0.23	0.83	0.23	0.32
Comp Q's	0.770	0.175	0.432	0.432

Overall, three students performed better in dog present condition while one

student performed better in the dog absent condition. A student's higher performance

condition was determined by identifying that in which the student achieved higher

performance levels across the majority of dependent measures. Specifically, Brian

performed better in the dog present condition based on performance scores related to the

rate of words read correctly, retell components, and comprehension questions. Caleb

performed better in the dog present condition based on his performance scores in words

read in error, retell components, and interest in reading responses. Craig performed

better in the dog absent condition based on his performance scores in the rate of errors,

rate of words read correctly, and retell components. Lastly, Damon performed better in

the dog present condition based on his performance scores in the errors per minute, words

read correctly, retell components, and comprehension questions answered correctly. The

length of time between the completion of intervention and maintenance data differed

across students. Specifically, Brian completed maintenance one month after intervention,

Craig and Damon completed maintenance 3 weeks after intervention, and maintenance

for Caleb was collected two weeks after he completed intervention.

<div align="center">Brian</div>

Brian performed better overall in the dog present condition. He read more words

correctly in this condition, answered more comprehension questions correctly, and scored

higher on his retells during sessions he read to Maggie. According to the Brigance pre-

assessment, Brian read at a 4th grade reading level and demonstrated improvements in

both fluency and comprehension measures compared to baseline and results were

maintained.

Fluency

Brian's fluency levels improved during the reading intervention treatments and

remained better during maintenance compared to baseline performance. Figure 1

illustrates the rate of words Brian read in error. During baseline, Brian read words in

error at a rate of 6.5 and this decreased to 2.6 in the dog present condition and to 2.4 in

the dog absent condition. Thus, the dog absent condition yielded a marginal improvement in errors compared to the dog present condition. During the maintenance probe with the reading intervention package (dog present), Brian demonstrated a rate of 4.2 words read in error; however, this decreased to 3.2 during the maintenance probe without the reading intervention package. Brian demonstrated a decrease in errors from baseline to intervention and during the dog absent condition percentage of non-overlapping data (PND) for word read in error per minute (WEPM) was 100% and in the dog present condition PND was 80% . Additionally, fractionation of data on WEPM begins to appear around session 21. Specifically, at this session there is a upward trend in errors in the dog present condition and a decrease in trend of errors in the dog absent condition.
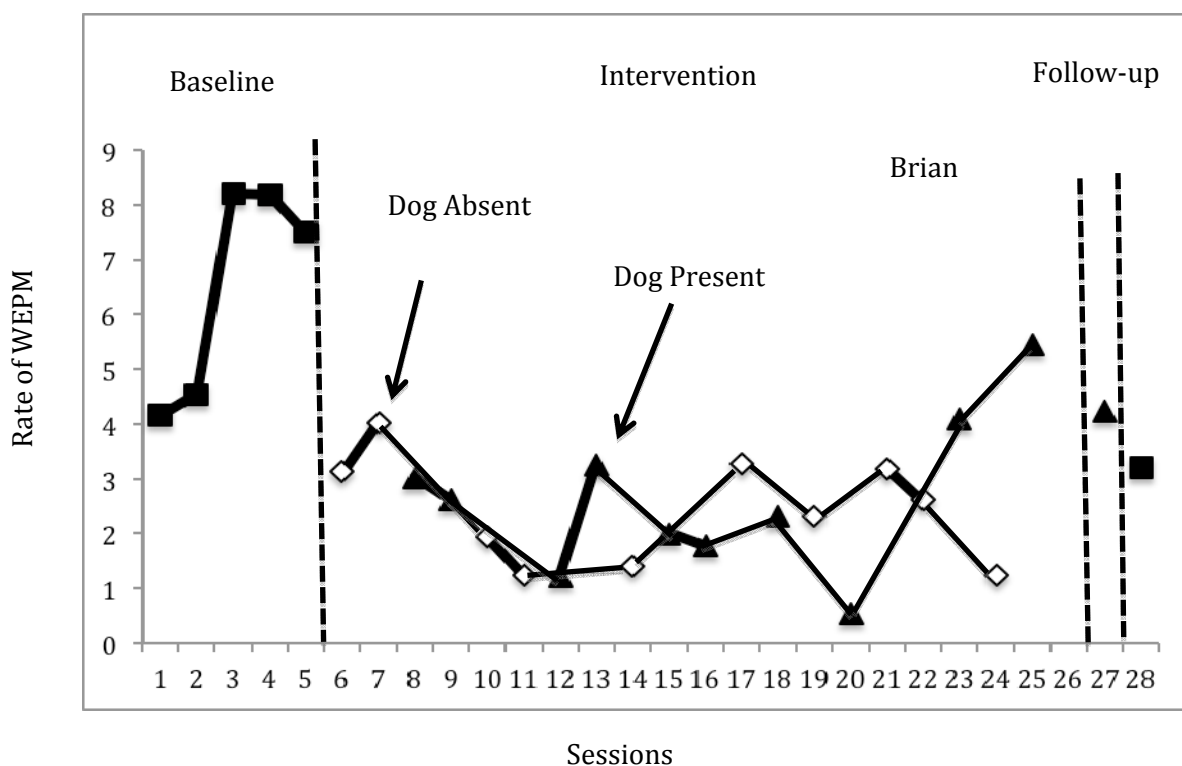
Figure 1: Brian's rate of words read in error

Figure 2 illustrates the rate of words Brian read correctly demonstrating variability in regards to the words he read correctly per minute (WCPM). In regards to the rate of words read correctly, Brian achieved a rate of 116.8 during baseline increasing to 121.0 during the dog present condition and 120.0 during the dog absent condition. During the maintenance probe with the reading intervention package (dog present), Brian's rate of words read correctly was 118.7 decreasing slightly to 114.5 during the probe without the reading intervention package.
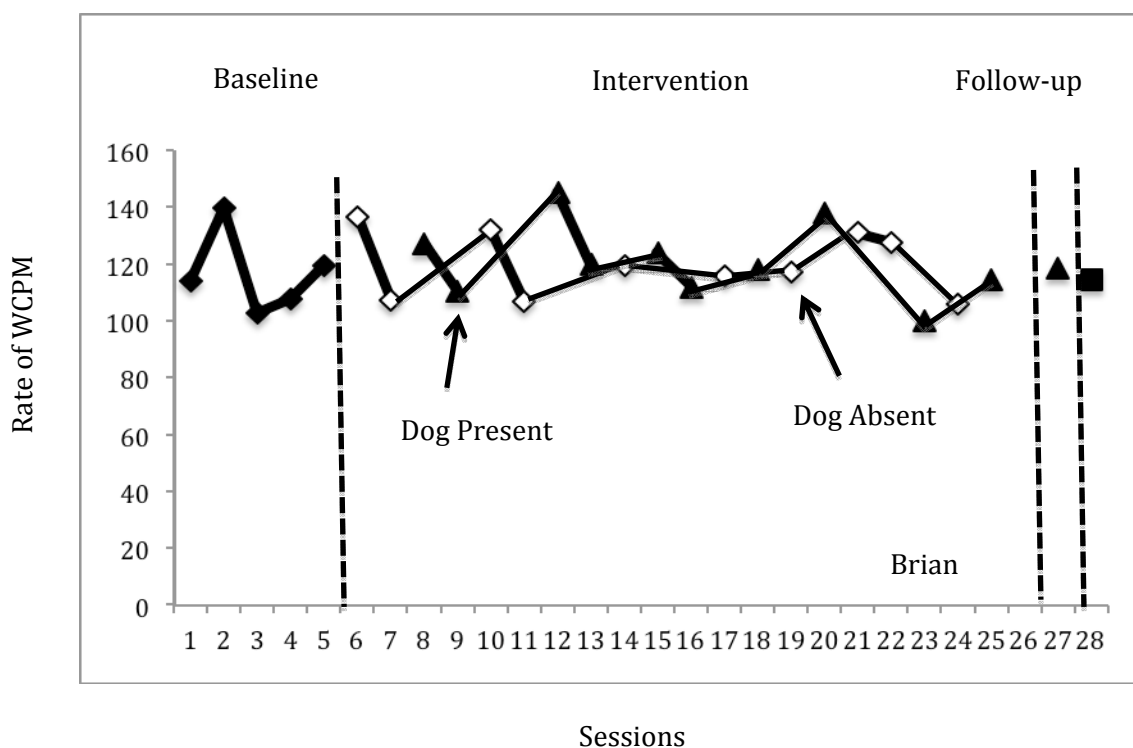
Figure 2: Brian's rate of words read correctly

Comprehension

Figure 3 illustrates the percent of oral retell components Brian included in his retell. The percent of oral retell components addressed by Brian increased during both reading interventions compared to baseline and remained high during maintenance. During baseline, Brian reported 49% of the oral retell components and this increased to 60% in the dog present condition and 50% in the dog absent condition indicating the dog present condition yielded better performance. Brian's percent of retell components (88%) addressed during the two maintenance probes were higher than intervention and baseline. Oral retell scores were significantly higher during maintenance compared to both baseline and intervention scores. Specifically the PND between baseline and maintenance for the oral retell measure was 100% indicating the intervention was highly effective.
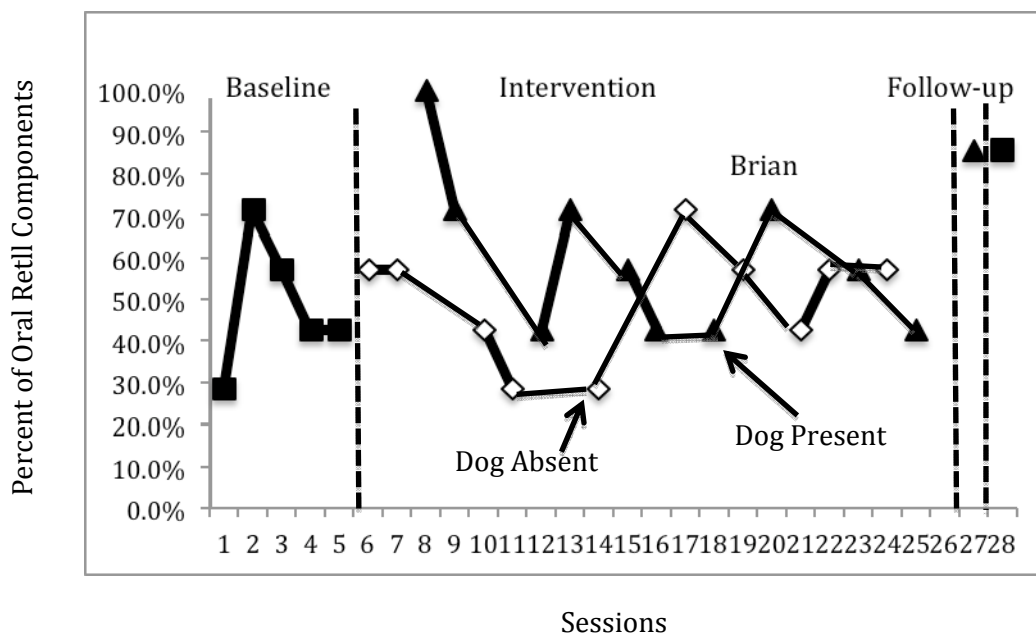
Figure 3: Percent of components identified in Brian's oral retell

During each intervention and maintenance session, students were asked five literal comprehension questions. Figure 4 illustrates the percent of literal comprehension questions Brian answered correctly during intervention and maintenance conditions. Similar to retell scores, the percent of comprehension questions answered correctly were higher in the dog present condition. Specifically, Brian answered 98% of the questions correctly in the dog present condition and answered 94% of the questions correctly during the dog absent condition. During the maintenance probe with the reading intervention (dog present), Brian answered 100% of the comprehension questions correctly, however this decreased to 80% during the probe without the reading intervention.
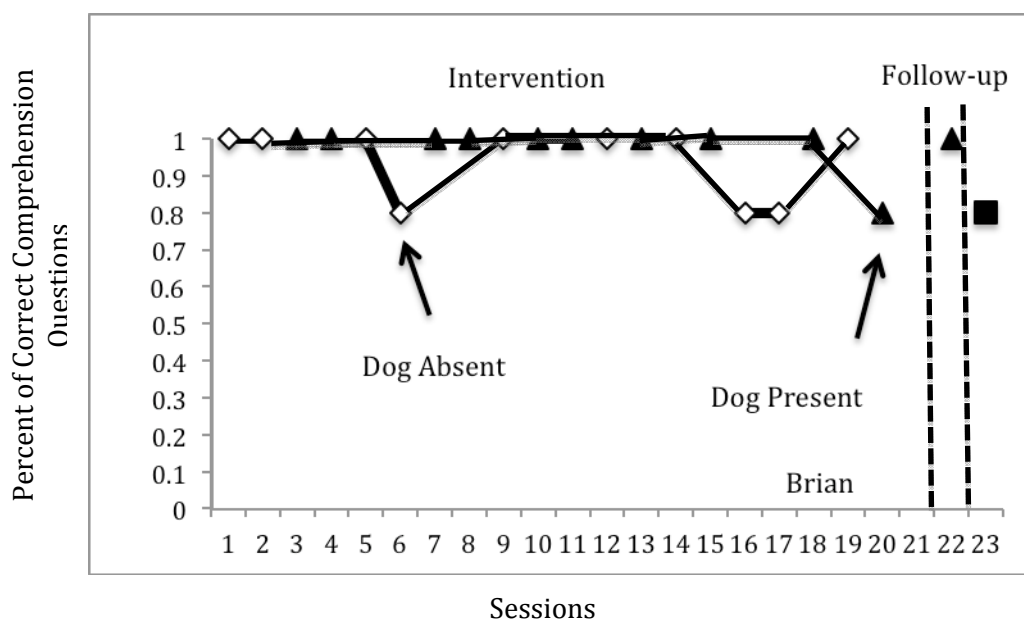
Figure 4: Percent of comprehension questions Brian answered correctly

Caleb

Overall, Caleb performed better in the dog present condition. Caleb obtained

fewer errors, scored better on his retells, and achieved a higher level of motivation based

on the survey when reading with Maggie. Based on the Brigance pre-assessment, Caleb

read at a third grade-reading level and demonstrated improvements in fluency and

comprehension measures during intervention compared to baseline. Follow-up data

indicated he maintained these improvements during the maintenance condition.

Fluency

Caleb's fluency levels improved during the reading intervention treatments and

remained at these higher levels during maintenance compared to baseline. Most notable,

was the decrease in the rate of errors between baseline and intervention conditions.

Figure 5 illustrates the rate of words Caleb read in error. Caleb read words in error at a

rate of 4.5 during baseline and this decreased to 1.3 in the dog present condition and to

1.6 in the dog absent condition. Thus, the dog present condition yielded a marginal

improvement in errors compared to the dog absent condition. During the dog-present

maintenance probe with the reading intervention package, Caleb read words in error at a

rate of 1.1 and this decreased to .98 during the probe without the reading intervention

package. When comparing baseline to the dog present condition, the PND for word error

per minute (WEPM) was 90% and the PND for the dog absent condition was 100%.
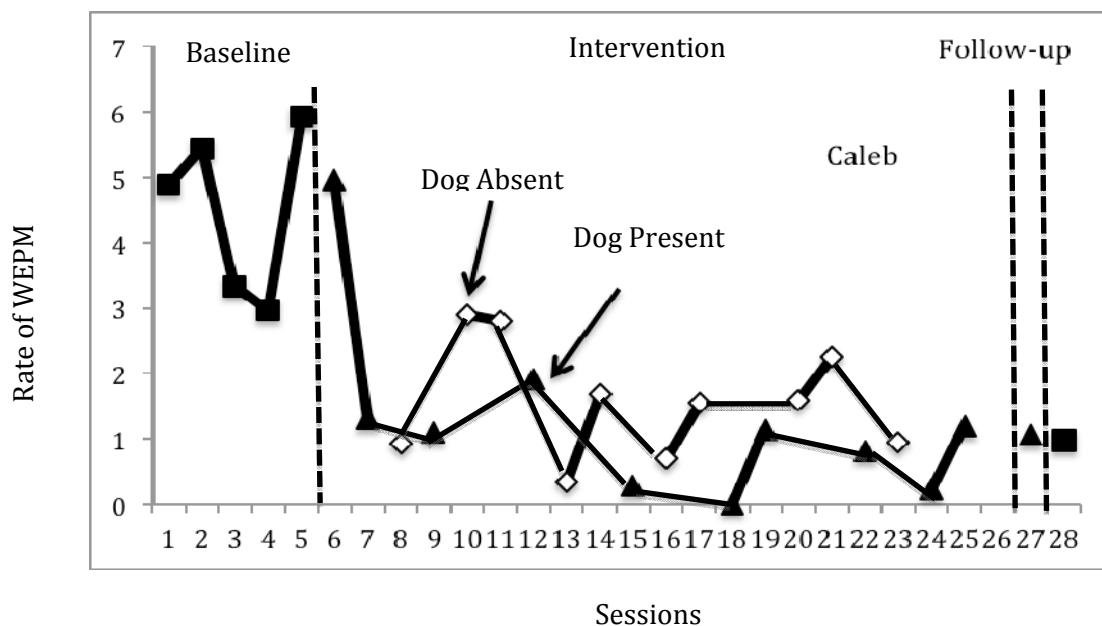
Figure 5: Caleb's rate of words read in error per minute

Words correct per minute (WCPM) scores were more variable for Caleb. On average, he performed at an increased level during intervention compared to baseline Figure 6 illustrates the rate of words Caleb read correctly across conditions. During baseline, Caleb read at a rate of 68.6 words correctly per minute increasing to 90.1 during the dog present condition and 93.3 during the dog absent condition. His results indicated a slightly better performance during the dog absent condition. During the maintenance probe with the reading intervention package (dog present), Caleb's rate of words read correctly was 81.5; however, this decreased to 61.2 during the probe without the reading intervention package.
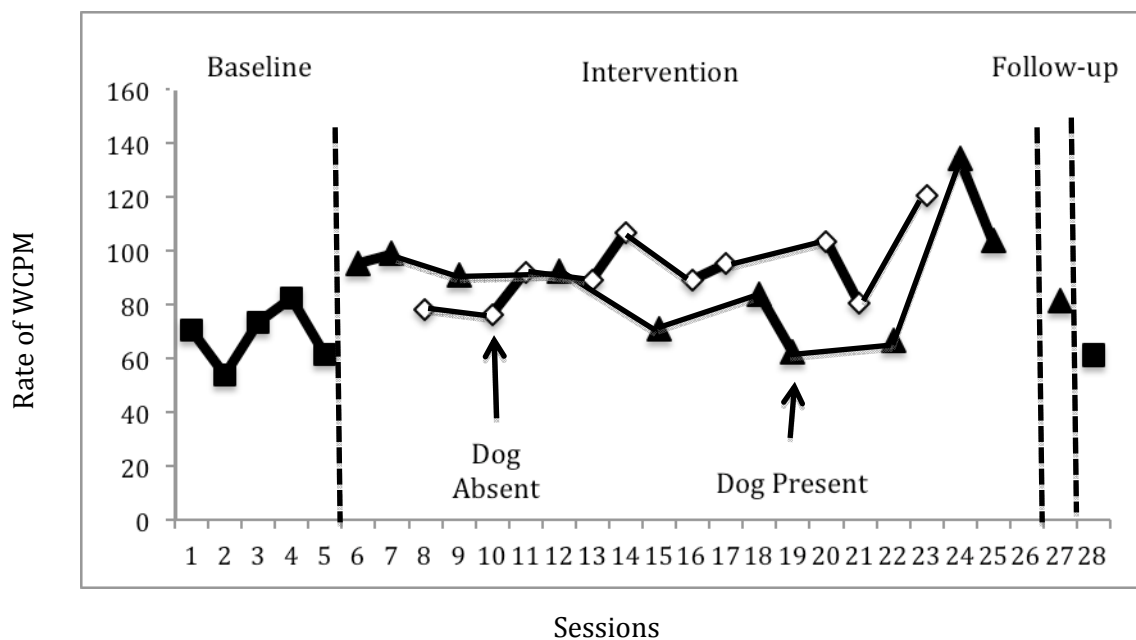
Figure 6: Caleb's rate of words read correctly per minute

Comprehension

Figure 7 illustrates Caleb's percent of oral retell components. Caleb's percent of

oral retell components was higher during the reading interventions compared to baseline

and remained high during maintenance. During baseline, Caleb included 68% of the oral

retell components and this increased to 93% in the dog present condition and 83% in the

dog absent condition indicating the dog present condition yielded increased performance

levels. Oral retell scores were higher during both intervention conditions compared to

baseline with PND equaling 90% in the dog present condition. Caleb's retell maintenance

scores were high during both maintenance probes (100%). These scores were higher than

his scores during intervention and baseline. When comparing maintenance and baseline

PND was 100%.
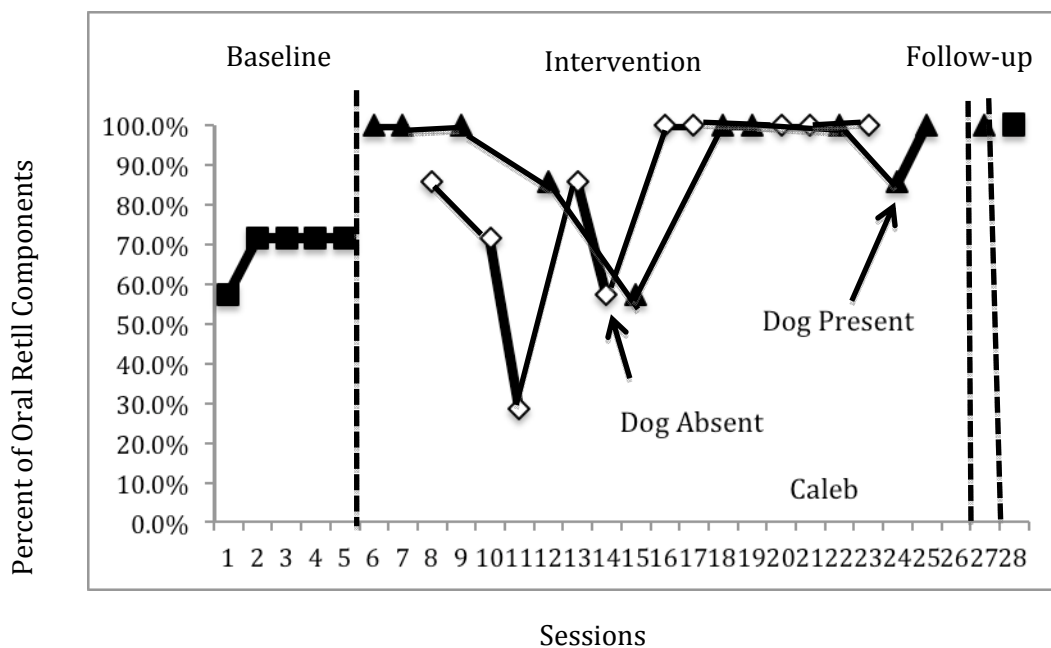
Figure 7: Percent of components identified in Caleb's oral retell

The percent of comprehension questions Caleb answered correctly is illustrated in Figure 8. Caleb answered 96% of questions correctly during both reading interventions and his scores remained high during maintenance. During the maintenance probe with the reading intervention (dog present) and the probe without the reading intervention, Caleb answered 100% of the comprehension questions correctly.
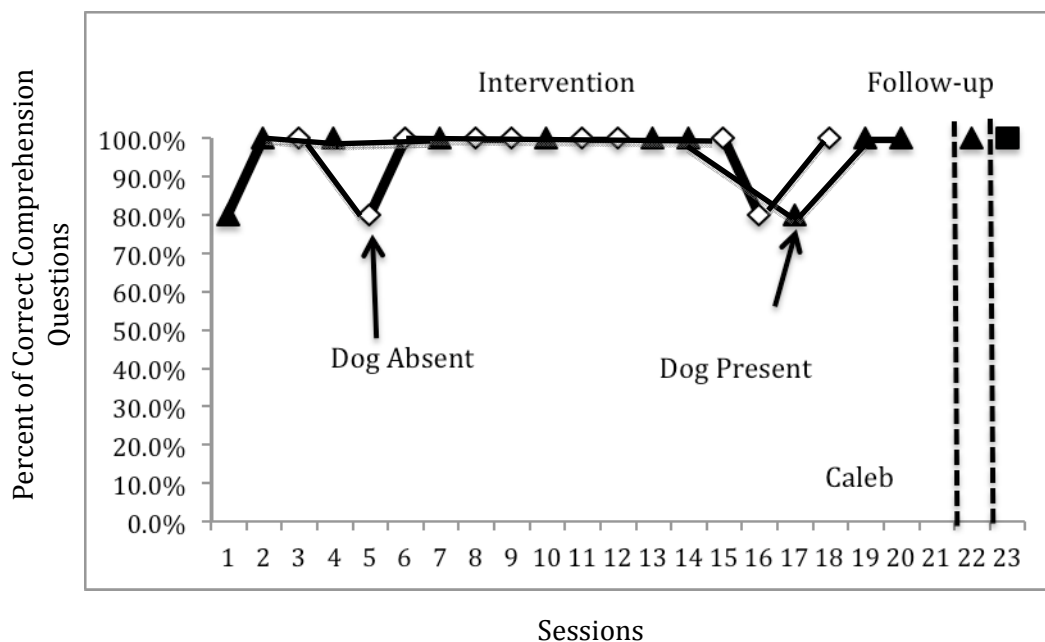
Figure 8: Percent of comprehension questions Caleb answered correctly

Craig

When examining Craig's performance under two intervention conditions, Craig performed better during the dog absent condition. Craig made fewer errors, had more words correct, and higher retell scores during the dog absent condition. Based on the Brigance pre-assessment, Craig read at a fourth grade-reading level. Craig demonstrated decreases in errors and improvements in comprehension measures during intervention compared to baseline. Follow-up data indicated maintenance in the improvement of scores.

Fluency

In regards to fluency, Craig's level of errors improved during the reading intervention treatments and remained lower during maintenance compared to baseline performance. Figure 9 illustrates the rate of words Craig read in error. Craig read words

in error at a rate of 4.1 during baseline decreasing to .97 in the dog present condition and to 0.91 in the dog absent condition. Thus, overall the dog present condition yielded less improvement in errors compared to the dog absent condition. However, differences in data between conditions begin appears around session 18. At this point fractionation begins to appear between the treatments and there is a rapid increase in errors in the dog absent and less variability in the rate of errors in the dog present condition. During the reading intervention package (dog absent) maintenance probe, Craig read words in error at a rate of 1.1 and this decreased to 0.51 during the probe without the reading intervention package. The PND for word error per minute (WEPM) between baseline and both intervention conditions was 90% indicating both interventions resulted in Craig reading fewer words in error.
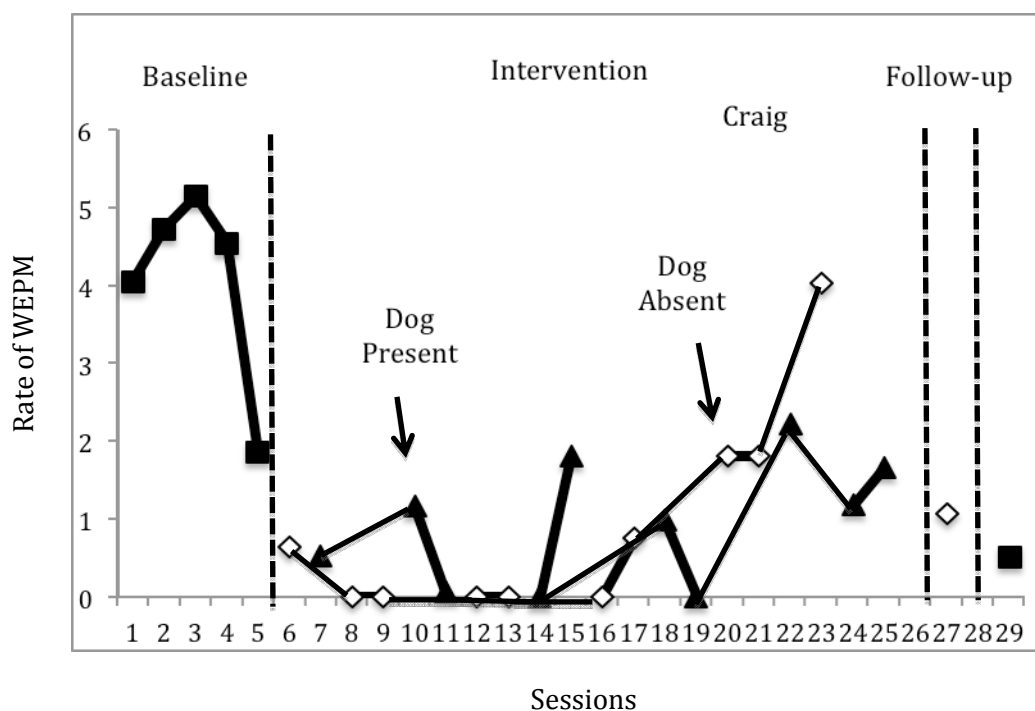
Figure 9: Craig's rate of words read in error per minute

Figure 10 illustrates the rate of words Craig read correctly. During baseline, Craig read an average of 150.3 words correctly per minute, however this decreased to 143.7 during the dog present condition and 146.0 during the dog absent condition. This indicates Craig's reading was slightly faster and more accurate during baseline when compared to intervention. Furthermore, he performed marginally better in the dog absent condition compared to the dog present condition. When assessing words read correctly during the maintenance probe with the reading intervention package (dog absent), Craig's rate of words read correctly was 153.75; however, this decreased to 127.1 during the probe without the reading intervention package.
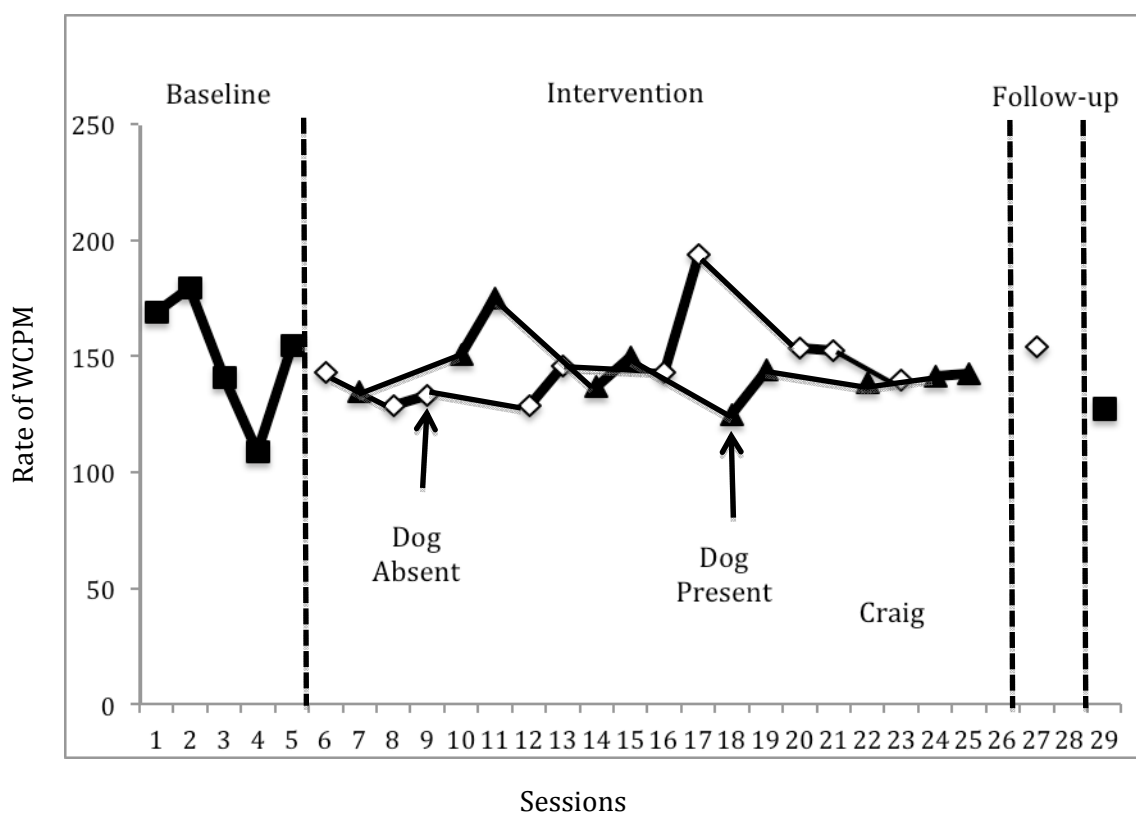
Figure 10: Craig's rate of words read correctly per minute

Comprehension

The percent of oral retell components Craig identified is illustrated in Figure 11 was and resulted in variable data. Craig's percent of oral retell components was higher during the reading interventions compared to baseline and remained high during the maintenance condition. During baseline, Craig addressed 54% of the oral retell components increasing to 66% in the dog present condition and 76% in the dog absent condition. Around session 19, visual analysis indicates fractionation of the retell data. Specifically there is in increase in retell scores in the dog absent condition and a decrease in scores for the dog present condition. Craig included all retell components (100%) during both maintenance probes and these were higher than both intervention and baseline.
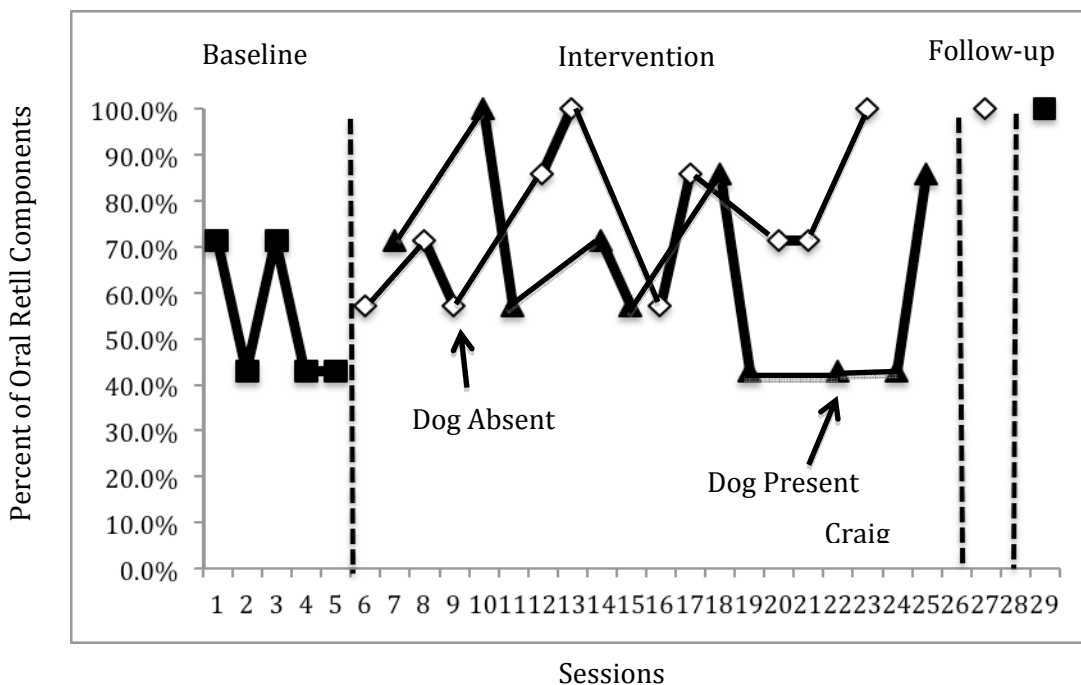
Figure 11: Percent of components identified in Craig's oral retell

The percent of comprehension questions Craig answered correctly is illustrated in Figure 12. Craig answered a higher percent of questions correctly during the dog present condition (96%) compared to the dog absent condition (86%). During the maintenance probe with the reading intervention (dog absent), Craig answered 100% of the comprehension questions correctly; however, this decreased to 80% during the probe the reading intervention was not available.
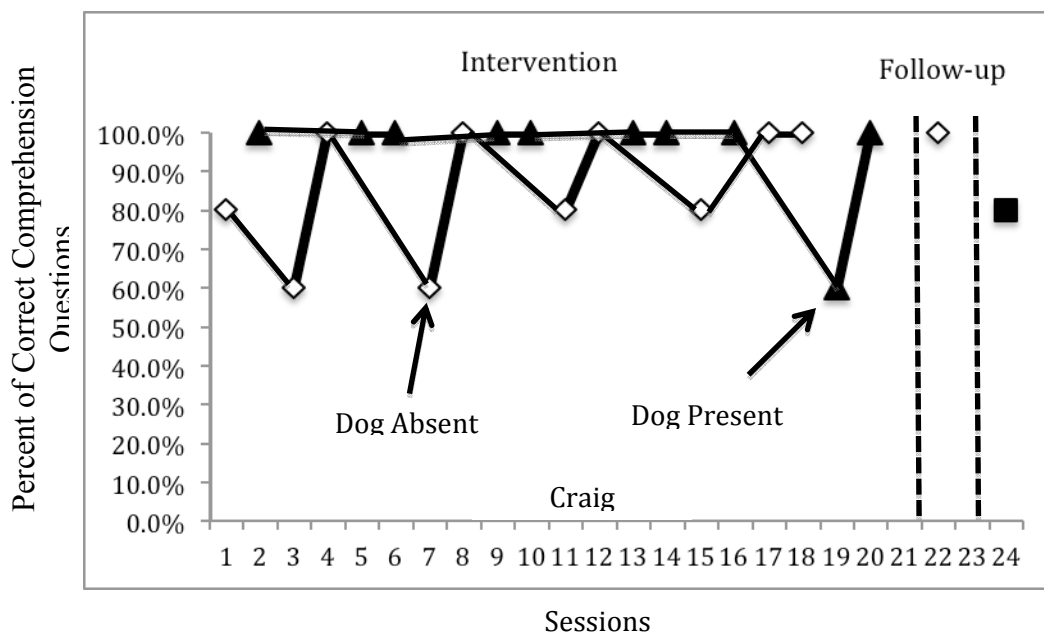

Figure 12: Percent of comprehension questions Craig answered correctly

Damon

Damon performed better overall during the dog present condition. He made fewer errors, demonstrated more words correct, had higher retell scores, and answered more comprehension questions correctly during the dog present condition. Based on the Brigance pre-assessment, Damon read at a first grade-reading level and demonstrated improvements in all reading measures (i.e., decreased errors, increased rate of words read

correctly, and improvements in comprehension measures) between baseline and

intervention. Additionally, improvements were maintained over time.

Fluency

Damon's levels of errors in reading improved during the reading intervention

treatments and remained better during maintenance compared to baseline performance

levels. Figure 13 illustrates the rate of words Damon read in error. During baseline,

Damon read words in error at a rate of 6.1 decreasing to 2.1 during the dog present

condition and to 2.6 during the dog absent condition indicating the dog present condition

yielded a slight decrease in the rate of errors compared to the dog absent condition. The

PND for WEPM between baseline and the both intervention conditions was 70%. During

the reading intervention package (dog present) maintenance probe, Damon's rate of

errors was 3.5, however this increased to 4.8 during the probe without the reading
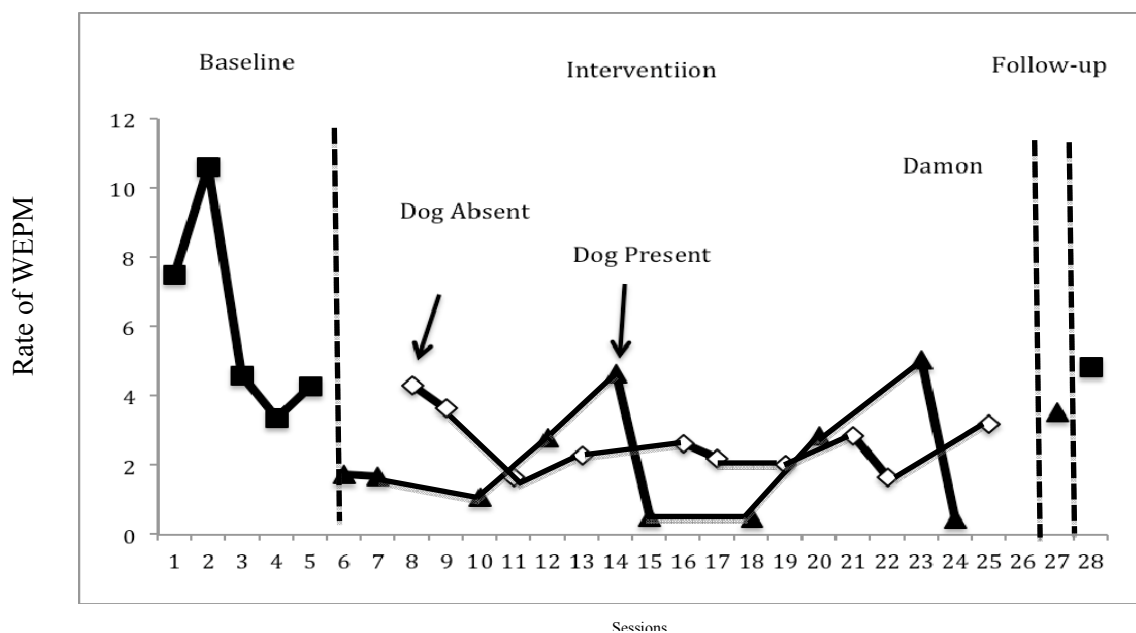
intervention package.

Figure 13: Damon's rate of word read in error per minute

The rate of words Damon read correctly is illustrated in Figure 14. Damon read at a rate of 67.0 words correctly during baseline and this increased to 97.0% during the dog present condition and 88.2% during the dog absent condition. This indicates Damon performed substantially better during both intervention conditions compared to baseline and performed best during the dog present condition. The PND between baseline and the dog present condition is 100%. Damon read words correctly at a rate of 107.2 during the maintenance probe with the reading intervention package (dog present); however, this decreased to 67.0 during the probe without the reading intervention package.
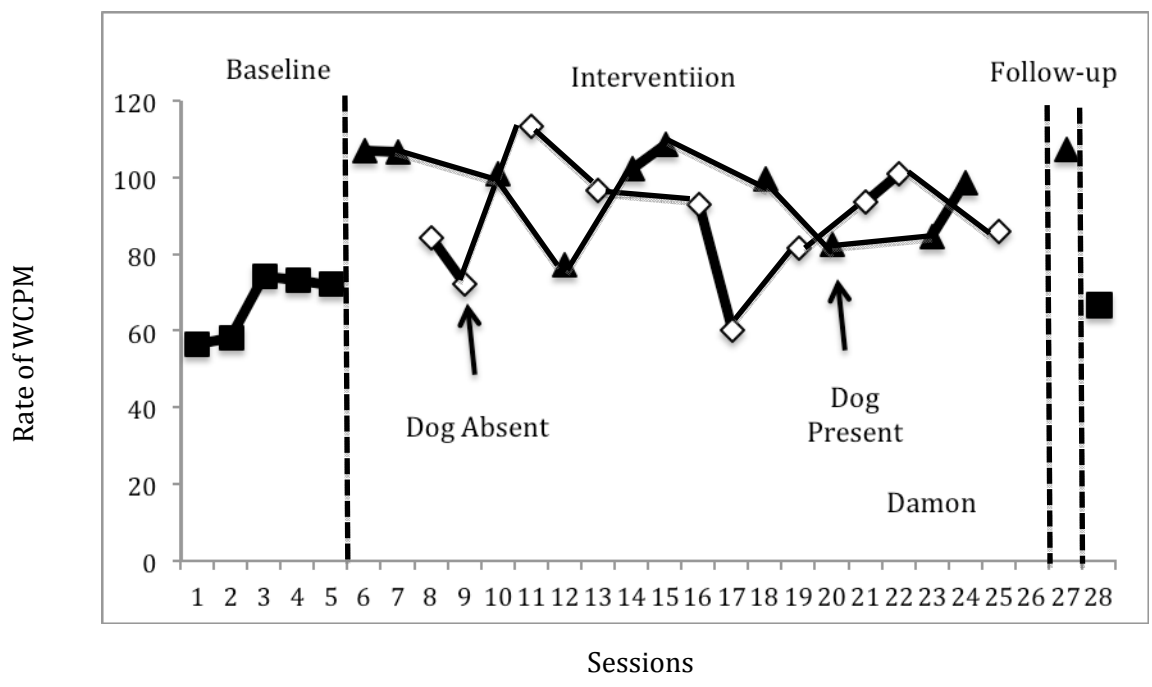

Figure 14: Damon's rate of words read correctly per minute

Comprehension

Damon's percent of oral retell component included is illustrated in Figure 15. Damon achieved a higher percent of retell components included during both reading interventions compared to baseline. Specifically, Damon addressed 49% of the components during baseline and this increased to 86% during the dog present condition and to 71% during the dog absent condition. The PND between baseline and the dog present condition was 80%. During maintenance, Damon included all retell components (100%) during both maintenance probes and these were higher than intervention and baseline (PND=100%).
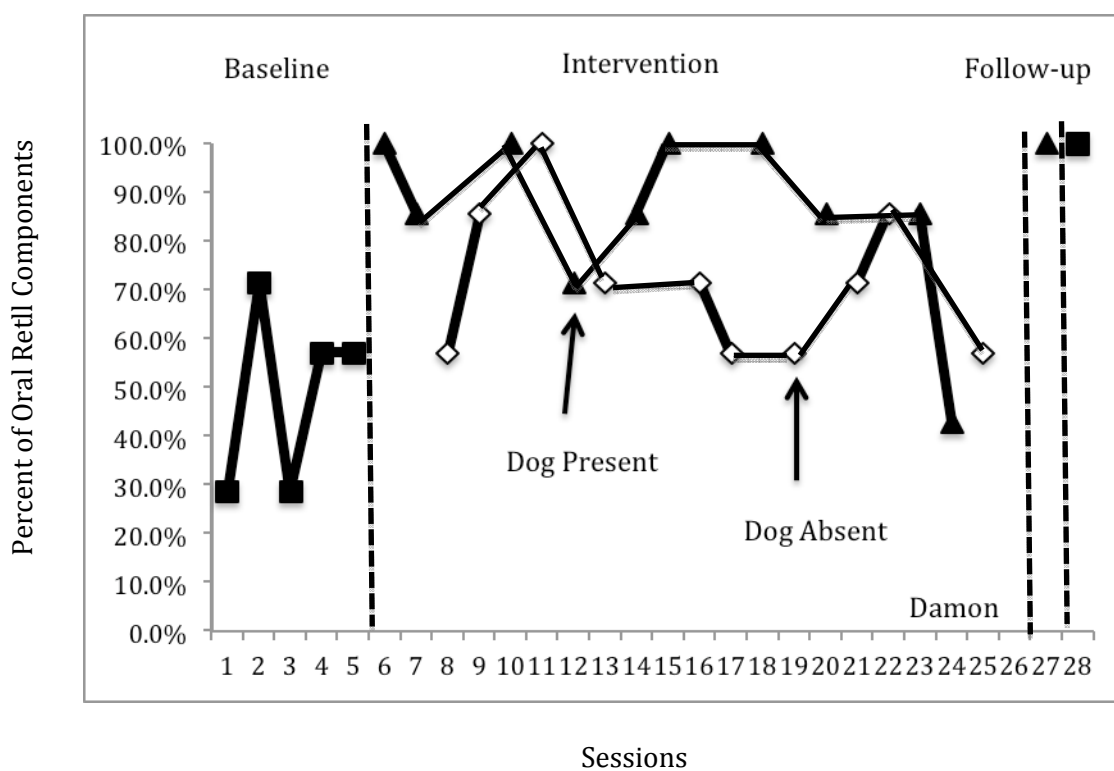

Figure 15: Percent of components identified in Damon's oral retell

Figure 16 illustrates the percent of comprehension questions Damon answered correctly. Damon answered a higher percent of questions correctly during the dog present

condition (98%) compared to the dog absent condition (96%). During both maintenance probes, Damon answered 100% of the comprehension questions correctly.
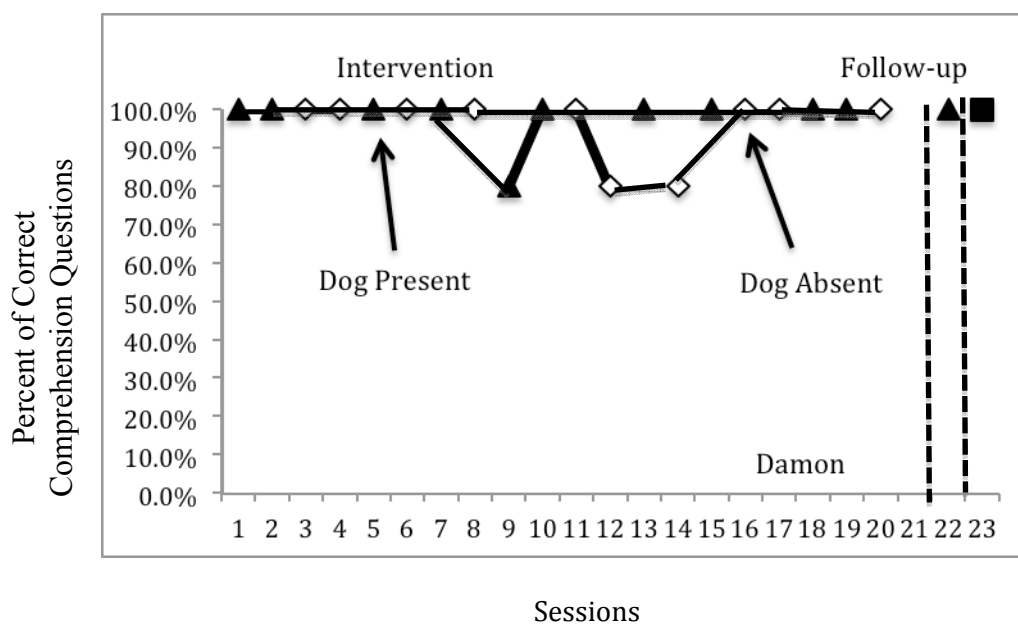

Figure 16: Percent of comprehension questions Damon answered correctly

Social Validity

Social validity was assessed through informal interviews with the teacher and the participants before and after the completion of the study. Prior to baseline, the teacher indicated she thought students may be reluctant to read passages three times, receive error correction, and receive performance feedback. She mentioned she began bringing Maggie (the dog) to the classroom about 11 years ago and previously, Maggie was used to teach responsibility, empathy, and comfort students who were upset. She believed allowing students to read to the dog would increase their attention, motivation, self-confidence, independence in reading activities, and improve fluency.

At the completion of the study, the teacher noted that students enjoyed the reading time and were very well behaved when participating in the reading activities. She was

not sure if the intervention improved the students' reading skills but noted the intervention was better than traditional instruction due to the individual attention. She also indicated students typically seemed excited and willing to participate in the study and were highly motivated to read with Maggie. She indicated she would continue to have her students read to Maggie and also allow them to do their homework by her.

Prior to baseline, all students indicated they liked Maggie and commented "she's a good dog", "she's calm", "I like petting her". Each student also thought he would enjoy reading to Maggie because "I enjoy sitting next to her", "she's a good listener," and, "I like to pet her." The students all indicated they believed reading is important and noted they sometimes struggle with reading when they do not know a word or know what a word means. Each student commented he thought reading to Maggie would help his reading because "I'm reading out loud" and "I'm reading with somebody."

At the end of the study, all of students indicated they enjoyed participating in the study. Additionally, each student was asked which condition they preferred (i.e., dog present or dog absent). Brian, Caleb, and Damon stated they preferred the dog present condition and Craig said he enjoyed both conditions equally. The students who enjoyed the dog present condition noted they enjoyed giving Maggie treats, reading to her, petting her, hugging her, and getting to sit behind the teacher's desk away from other students. Each indicated having Maggie there gave them someone to read to and felt it made reading "more fun." The students said they enjoyed reviewing the words they missed and liked learning how to say words correctly and noted having multiple opportunities to improve gave them the chance to try to do better and work towards a goal. All of the students commented they would like to continue to read to Maggie either with someone

or on their own and believed other children would enjoy similar types of reading

activities.

In addition to the informal interview questions, the students filled out the

modified reading interest survey six times throughout the study (beginning, middle, and

end) three times directly after reading in the dog present condition, and three times after

reading during the dog absent condition. Table 4 illustrates the results of the reading

interest survey. In general, the students reported similar values for both conditions.

Specifically, Craig indicated an equal interest and motivation in both conditions of 77%

and Brian also had an equal level of interest/motivation (100%). In the dog condition,

Damon indicated his interest and motivation level was 85% and this was slightly higher

in the researcher condition with a value of 87%. Caleb indicated his interest level in the

dog present condition was 97% while in the dog absent condition it was slightly lower,

95%.

Table 5: Student interest/motivation during reading activities

		Brian	Caleb	Craig	Damon
Dog Present	Beginning	100%	90%	80%	95%
	Middle	100%	100%	75%	80%
	End	100%	100%	75%	80%
Dog Absent	Beginning	100%	100%	85%	80%
	Middle	100%	100%	75%	100%
	End	100%	85%	70%	80%
Dog Present	Average	100%	97%	77%	85%
Dog Absent	Average	100%	95%	77%	87%

Reliability

Interobserver agreement and treatment integrity data were collected by a trained observer following the completion of the study for 40% of baseline sessions, 40% of each intervention condition, and 50% of maintenance data for each student on the reading measures (words read in error, words read correctly, components included in retell, and percent of comprehension questions answered correctly).

Interobserver Agreement for Fluency (IOAF)

A second trained observer listened to the audio output of the student reading the passage once (baseline and Maintenance 2 condition), or the output for the third reading of the passage (intervention conditions and Maintenance 1). The observer marked copies

of the passage to determine IOAF. An agreement was scored if the second observer scored a word the same as the primary observer. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. Average scores in each condition ranged between 90-100%. The overall average for Brian was 96%, 98% for Caleb, 98% for Craig, and 98% for Damon. Interobserver Agreement for Comprehension (IOAC)

Following the reading, students were asked to retell the passage in their own words from memory and a modified version of the Quantification for Narrative Retell Sheet (Shapiro, 2004) was completed. A second trained observer also completed the quantification sheet for 40% of baseline sessions, 40% of each intervention condition, and 50% of maintenance data for each student by listening to the audio recording of the oral retell. An agreement was scored if the second observer scored the student as including one of the components the same as the primary observer. IOAC was calculated by diving the number of agreements by the number of agreements plus disagreements and multiplying by 100. On average agreement scores ranged between 91-100% for each phase of the study. Mean IOAC for retell was 98% for Brian, 100% for Caleb, 100% for Craig, and 100% for Damon.

Lastly, a second trained observer scored response to comprehension questions from the recorded audio output by comparing students responses to an answer key and marking each answer as correct or incorrect. An agreement was scored if both observers marked an answer as answered correctly or answered in error and a disagreement was marked if answered were marked differently. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and

multiplying by 100. Mean IOA on comprehension questions answered correctly for each student was 100% for all four students.

<center>Treatment Integrity</center>

A treatment integrity checklist was created to determine the correctness of treatment implementation. A second trained observer listened to the audio recordings and completed the checklist for each student during 40% of each intervention condition to (4 sessions- dog present, 4 sessions-dog absent). Treatment integrity was determined to 100% for all sessions assessed.

CHAPTER 5: DISCUSSION

General Results Discussion

Reading is a critical academic content area for all students and those who struggle with reading not only experience difficulties in school but also with post-school outcomes (Bursuck & Damer, 2011). Upper elementary students with emotional and behavioral disabilities (EBD) who struggle with reading may be particularly prone to a poor sense of self-efficacy and lack of motivation. This may be a result of previous experiences where they felt unsuccessful in reading, inappropriate behaviors during academic instruction resulting in decreased focus, or a lack of engagement in reading activities (Bursuck & Damer, 2011). Therefore reading interventions for students with EBD need to target ways to improve motivation, focus, and engagement (Barton-Arwood, Wehby & Falk, 2005; Lane, Little, Redding-Rhodes, Phillips, & Welsh, 2007; Wehby et al., 2003).

Previous research found reading interventions incorporating repeated readings, error correction, and performance feedback could improve fluency in secondary students with EBD (Alber-Morgan et al., 2007; Scott & Shearer-Lingo, 2002; Strong et al., 2004). The purpose of the present study was to replicate and re-examine the results found in the Alber-Morgan et al. (2007) study and determine if the addition of a classroom pet dog into the treatment package would enhance results.

Learning is closely linked to motivation and interventions that address several components of motivation are likely to be more effective. The interventions used in this study targeted the student's intrinsic motivation (i.e., the students wanted to read to the dog) and their self-efficacy (i.e., belief they could perform better each time they read). Previous research shows that increases in self-efficacy can increase pride (Shernoff, Knauth, & Makris, 2000) and this was observed throughout the study as students typically tried to perform better during each reading. Additionally, higher intrinsic motivation is found to increase task persistence even when errors are made (Deci, 1992) and this was also observed in students. They did not appear concerned with how many words they experienced difficulty in reading because they were aware they had two additional opportunities to improve. Additionally, the interventions provided students with feedback and opportunities for them to make mistakes (i.e., the error correction and feedback components of the intervention package). Research indicates that learning environments that incorporate these types of components (e.g., feedback and opportunities for mistakes) are found to increase intrinsic motivation even on challenging tasks (Clifford, 1990).

The dog present condition addressed student's motivation through their individual interest in the dog. All students reported enjoying reading to Maggie and often asked when they would get to read to her during the dog absent condition. Previous research indicates that when student's individual interest is higher, participation and information seeking behaviors are greater (Hidi & Harackewicz, 2000). Previous research found interest can be increased through environment (Mitchell, 1993), positive interactions and satisfaction (Krapp, 2002), as well as competence, autonomy, and social relatedness

(Ryan & Deci, 2000). At the start of the study all students indicated they liked Maggie, It may be that the students' previous positive relationship with Maggie addressed several of these factors (positive interactions, social relatedness). If this was the case, then including Maggie during the reading activities (and thus the environment) may have led to increased student interest in the reading activities.

While three students indicated they preferred the dog-present condition, in general, students performed relatively similarly between conditions indicating both interventions had a similar impact level on fluency and reading comprehension measures. The students who specifically mentioned they preferred the dog-present condition (Brian, Caleb, and Damon) performed slightly better on some measures when reading to Maggie, however their results were marginal. Additionally, there was a lack of differences seen in their responses on the reading interest survey (modified EARS) with Caleb and Damon scoring slightly higher in the dog present condition but Brian and Craig scoring both conditions similarly. It may be the student's overall motivation increased solely through the intervention components (repeated readings, error correction, and performance feedback) or it could be that motivation increased because the student's knew they would get to read to the dog at some point. Many students would ask if they were reading to Maggie early on and quickly learned they only had to read up to two stories in the dog absent condition before reading to her. Due to the nature of this study, it is difficult to determine the potential carryover effects on motivation. Future research employing a group design may be more effective at determining the effect of motivation in a group who does not have any access to a dog.

This study contributes to the field of AAA because although the students enjoyed petting the dog and interacting with her, she did not distract them. Intervention results show both treatments were equal in improving reading scores indicating that incorporating the dog into the treatment package did not have a negative effect on the students and may have increased motivation.

All students improved on one or more reading measure between baseline and intervention conditions. When examining the rate of errors per minute during baseline, results ranged between 4.1-6.5. Both intervention conditions yielded considerably lower errors. During the dog absent intervention condition, errors per minute decreased to .9-2.6 while during the dog present condition errors were .97-2.6 indicating only a very marginal decrease in variability in errors during the dog present condition.

The words read correctly during baseline ranged between 67-150. During intervention, the variability of the rate of words read correctly decreased. Specifically, during the dog absent intervention, words correct per minute (WCPM) ranged between 88-146 and during the dog present condition WCPM levels ranged between 90-143 indicating the students had slightly less variability in the dog present condition on words read correctly. Lastly, oral retell components included during baseline ranged between 49-69%. Retell scores increased during intervention and values observed during the dog absent condition ranged between 50-83% and during the dog present condition levels ranged between 60-93% indicating less variability in the intervention conditions compared to baseline. While all three measures were slightly less variable in the dog present condition, the difference is very marginal.

Comprehension questions answered correctly and motivation level were compared between the two intervention conditions. In regards to comprehension questions answered correctly, results during the dog absent condition ranged between 86-96% answered correctly and during the dog present condition results were less variable and ranged between 96-98%. Both comprehension measures (retell and comprehension questions) had less variability during the dog present condition. Future research should further examine the impact that the presence of a dog during reading activities has particularly on comprehension.   In regards to the student's level of reading motivation during both the dog present and dog absent conditions, scores ranged between 77-100% indicating a similar level of motivation between both conditions as measured by the interest survey. Additionally, when examining the maintenance probes, students tended to demonstrate improvements in fluency and retell components compared to baseline measures and similarity in ability as observed during intervention.

While both intervention conditions resulted in improved reading skills, there was variation across students. For example, Brian, Caleb, and Damon performed better on reading measures or indicated more motivation during the dog present condition while Craig performed better in the dog absent condition. However, some inconsistencies in performance across measures in the different conditions were present for students. For example, Brian performed better in the dog present condition in regards to words read correctly but had fewer errors in the dog absent condition while Craig performed better on the retell scores in the dog absent condition but performed better on the comprehension questions in the dog present condition.   It was interesting to note the condition in which Brian, Caleb, and Damon all performed better (i.e., dog present) was

also the condition each indicated they preferred during the social validity interview. Craig indicated he equally enjoyed both conditions, however he performed slightly better in the dog absent condition.

<p style="text-align:center">Individual Results Discussion</p>

Brian

Overall, Brian performed better in the dog present condition. Brian was a student who frequently demonstrated oppositional behaviors with his teachers, would bully his peers, and refuse to complete assigned work. Although he demonstrated extreme behavioral concerns in class, he never exhibited behavioral problems during the study, was always compliant with directions, appeared to enjoy reading to Maggie, and appeared to take pleasure in receiving individualized attention. Frequently, during regular class time prior to the researcher showing up to work with Brian, Brian would be put in time out due to becoming defiant with his teacher about completing school assignments. However, when his teacher asked him if he would like to read to Maggie and/or the researcher, he would be willing to complete the supplemental reading activities for the study. Brian frequently talked about previous dogs his family owned and enjoyed reading to Maggie, petting her, giving her treats, and brushing her.

Throughout the study, when Brian was informed he would be only reading with the researcher, he would inquire about when he would next be able to read to Maggie. He frequently indicated he would like to continue to read to Maggie at the end of the study. Although Brian performed similarly in both intervention conditions, his increased motivation and interest during the dog present condition may demonstrate that incorporating animal assisted activities during reading activities may be particularly

beneficial for students with similar behavioral characteristics. Furthermore, Brian indicated he enjoyed receiving feedback because it helped him to learn new words and this may be why the rate of errors observed during his readings decreased.

Caleb

Overall, Caleb performed better in the dog present condition. Caleb was diagnosed with ADHD and would often find ways to stimulate himself during reading activities (e.g., stand up, bounce Maggie's tennis ball). Of all the participating, students Caleb seemed to enjoy participating in the most and his teacher mentioned he would often ask when he would get to engage in the reading activities again when the researcher was not in the classroom. He appeared to truly love reading with Maggie and would always ask how many stories he would be required to read without her before he was able to read to her again. He indicated he enjoyed petting Maggie, giving her treats, brushing her and would often lie next to her and pet her while reading. He also enjoyed pretending Maggie was helping give him feedback and once jokingly commented to the teacher about this saying, "Do you know you have a talking dog over here?" It may be that incorporating a classroom pet dog into academic interventions may be beneficial for students with similar ADHD characteristics to Caleb as this allowed him to form a close and special bond.

During the first interest survey with Maggie he scored 90% and indicated the only reason it was low was because it was loud in the classroom and made it difficult for him to focus. Additionally, during the dog present condition, after being asked the five comprehension questions, he asked to be given extra questions. Caleb also appeared to be highly motivated by the performance feedback component of the treatment package.

For example, he always wanted to know the length of time it took him to read and the number of errors for a given passage directly after reading the probes. He frequently recalled exactly how many errors he made during the previous session without the researcher telling him.

Craig

Craig performed better in the dog absent condition. During the study, he was a quiet child who was on-task and focused (e.g., was not easily distracted by neighbors or other student's misbehaving in the class) when completing school work and would often be granted free time due to good behavior. The teacher noted on the few occasions Craig did get upset, he would shutdown, refuse to talk to her, and put his head down on the desk. During the study, Craig was always compliant with directions, seemed to enjoy reading the stories, and appeared to enjoy working to improve his reading scores during the repeated readings. Initially, Craig appeared to demonstrate some hesitation in interacting with Maggie. For example, during early sessions with Maggie, he tended to throw treats to her instead of letting her eat the treats from his hand. Over the course of the study, Craig became much more comfortable with Maggie and indicated verbally and physically that he enjoyed brushing her, reading to her, and giving her treats. His initial uncertainty about interacting with her may have potentially influenced the results. Overall, Craig's level of reading did not change between baseline, intervention, or maintenance based on Fuchs and Deno's (1982) criteria.

In general, Craig differed from the other participants in his behavior (he had fewer externalizing behaviors), reading ability (he read closest to grade level), and previous experiences with dogs (he did not have a dog at home while the other students did).

During the social validity interview, Craig indicated he equally enjoyed both interventions, however he mentioned he liked getting feedback on his reading skills. This feedback may have been more important to him than the presence of the dog. For students with similar characteristics to Craig who are more hesitant in interacting with animals, it may be that the presence of a dog during a reading intervention package does not increase their motivation as much as other students who have a more personal interest in dogs. Craig also differed from the other three students in that he tended to display fewer externalizing behavioral problems and it would be interesting to compare the effects of animal assisted activities for students with internalized compared to externalized behavioral problems.

Damon

According to results, Damon performed better during the dog present condition; however, he struggled the most with reading. He was the farthest below grade level based on the Brigance pre-assessment (i.e., read at a first grade reading level) and indicated he would sometimes get frustrated during typical reading activities. On occasion, he complained about having to read each passage three times and would ask how long the stories were for a given session. Damon indicated he did not enjoy reading in front of his classmates and would occasionally become upset if his classmates corrected him on his reading. Despite his reluctance about reading the passages multiple times, Damon was compliant with directions and appeared diligent about trying to improve his scores. Damon did demonstrate some difficulty focusing on reading activities during times when the classroom was chaotic (e.g., students in the class screaming, becoming oppositional, or angry with the teachers).

Damon was always more willing to read during the dog present condition. Damon appeared to enjoy reading with Maggie, giving her treats, and receiving individual attention. He noted he liked reading to Maggie behind the teacher's desk because it was away from other students. Of all the students, Damon read at the lowest reading level at the start of the study, however he had the greatest gains. He was very fond of Maggie and frequently talked about his own pet dogs and would compare Maggie to them. He enjoyed pretending Maggie was telling him how he did and commented he believed other students would get to enjoy participating in similar activities.

<div align="center">Fluency</div>

Fuchs and Deno (1982) identified placement criteria for students based on grade level of materials (1-2 and 3-6) as well as level (frustration – material is too difficult to complete on own, instructional – ideal level the student should be taught, mastery-material is completely mastered). Specifically, students reading at a 1st or 2nd grade instructional level should read 40-60 WCPM and have 4 or less errors while students reading at a 3-6th grade instructional level should read 70-100 WCPM and have 6 or less errors. Based on these criteria, Brian, Caleb, and Damon all increased in level during intervention; however, Craig did not have a change in level based on the criteria.

In regards to reading progress, Brian's baseline level of errors (6.5) indicate he fell into the frustration level when reading 4th grade materials (>6 errors) (Fuchs & Deno, 1982). The rate of errors considerably decreased during intervention (2.6 dog present and 2.4 dog absent) and maintenance (3.7). Fuchs and Deno (1982) indicated that when errors per minute were 6 or less and WCPM were greater than 100, a student reached a mastery level of material. Based on these criteria, Brian's scores during both

intervention (WCPM=120) and maintenance (WCPM=116) indicated he reached a

mastery level of fourth grade reading materials at the completion of the study.

Caleb's rate of WCPM during baseline (68.6) indicated he was reading at the

frustration level (<70) of 3rd grade materials at the beginning of the study (Fuch & Deno,

1982). During intervention these increased to 90 (dog present) and 93 (dog absent)

indicating he was reading 3rd grade materials at the instructional level during

intervention.

During baseline, Damon's WEPM (6.1) indicated he was reading at a frustration

level (>4 errors/minute) (Fuchs & Deno, 1982). During intervention, his errors decreased

to 2.1 during the dog present condition and 2.6 during the dog absent condition (along

with WCPM >60). These scores indicate he progressed to a mastery level of fluency for

first grade reading materials (Fuchs and Deno, 1982) during intervention.

Fluency - Errors

The present study results are similar to those from the Alber-Morgan et al. (2007)

study, which found the greatest impact of the reading intervention was in fluency (i.e.,

reducing the rate of errors and increasing word read correctly). There was a decrease in

errors between baseline and intervention throughout the current investigation. It appears

a fluency focused treatment package of repeated readings, error correction, and

performance may be effective for reducing the rate of reading errors students make and

this effect was observed across all participating students. The decrease in rate of errors

ranged between 2.9-4.0 for the dog absent condition and from 3.1-4.0 for the dog present

condition. For example, the PND in the dog present condition was found to be fairly

effective (PND is considered to be fairly effective when it is 70%-90%) for Damon,

Craig, Brian, and highly effective (PND is considered to be highly effective when it is higher than 90%) for Caleb. The dog absent condition was highly effective at decreasing errors for Damon, Caleb, Craig, and fairly effective for Damon. As in the Alber-Morgan et al. (2007) study results, all students in the present study exhibited an immediate decrease in errors between the last session of their baseline and the first intervention session. The rate of errors for Caleb was not as noteworthy initially, however a marked decrease in level during intervention was stabilized after the first intervention session.

All students except Damon maintained low levels of errors following intervention. Interestingly, Craig, Caleb, and Brian demonstrated the fewest number of errors during the second maintenance probe when they read the passage a single time. All three of these students had fewer errors during the second baseline probe (no intervention) compared to baseline indicating a highly effective intervention (PND=100%) A lack of similar results for Damon was likely a result of his reading difficulties. The fact that Brian, Caleb, and Craig all had fewer errors during maintenance is of interest as previous research indicates there is typically a lack of maintenance in reading intervention effect observed in students with EBD (Barton-Arwood, Wehby & Falk, 2005; Lane, Little, Redding-Rhodes, Phillips, & Welsh, 2007; Wehby et al., 2003).

Fluency – Words read correctly

All students except Craig increased their rate of words read correctly per minute between baseline and intervention. Furthermore, Brian, Caleb and Damon showed marked increases in words read correctly between the last baseline session and first intervention session. Specifically gains in reading for these students ranged between 3.3-

21 in the dog absent condition and between 4.2-30 in the dog present condition. These results are much less substantial than gains reported in the Alber-Morgan study however this may be attributed to differences in data collection methods. Specifically, the previous study examined number of words read correctly during a 1-minute timed reading while this study examined the rate of words read per minute (noted all words read correctly or in error for the entire passage).

When comparing words read correctly between intervention conditions, students performed similarly. Brian, Caleb, and Craig all performed slightly better in the dog absent condition while Damon performed better in the dog present condition. When examining scores obtained during the second maintenance probe (when students only read the passage a single time), scores revealed students tended to return to baseline levels. This may be a result of a minimal intervention effect on WCPM for the students. It appears that in general the students had a greater rate of decreases in error and less improvements in words read correctly indicating the intervention appeared to be more effective at decreasing errors than increasing words read correctly. This may be due to the performance feedback component only being reported in regards to the number of errors the student achieved during a reading. For example, the student would be told during the first reading they had 12 errors, and in the third reading they only had 1.

<div align="center">Comprehension</div>

Oral Retell Measure

The intervention effect on comprehension was examined through the oral retell measure. All students performed better on the oral retell measure during intervention compared to baseline. Furthermore, each performed better during maintenance on the

retell measure compared to intervention. When comparing baseline performance to maintenance (each individual probe), a highly effective intervention effect was also indicated with the PND (, PND =100%) When comparing performance between the intervention conditions, Brian, Caleb, and Damon all performed better on the retell measure in the dog present condition while Craig performed better in the dog absent condition. This measure was suggested to be an important supplementary component to examining comprehension as it provides an efficient tool that is skill specific (i.e., students can be taught what components to include in a retell) (Roberts, Good, & Corcoran, 2005). The students in this study were not specifically taught by the researcher about which components to include however important story elements were being taught in their language arts curriculum. This measure was not used in the Alber et al. (2007) study and therefore it is difficult to determine the effect of the intervention in the present investigation compared to previous studies; however, the results provide preliminary evidence of an intervention effect for the treatment package on an important comprehension measure.

Literal Comprehension Questions

The findings in this study were similar to the results found in the Alber-Morgan et al. (2007) study that found students performed well on literal comprehension questions. When comparing performance between conditions, Brian, Craig, and Damon performed better in the dog present condition while Caleb performed equally well in both conditions. Maintenance of the intervention effect was observed in all four students when their best intervention method was applied; however, both Craig and Brian

demonstrated decreased performance during the second maintenance probe when they
read the passage once.

Limitations

There were several limitations in this study. To begin, only four students served
as participants in the study limiting the ability to generalize results. Additionally, the
EARS survey was adapted to fit the purpose of the study. However, the adapted survey
was not validated and its results may be limited. Furthermore, the EARS was only
completed by the students three times in each condition and may not accurately represent
student's overall interest/motivation. Additionally, the scale utilized may not have
adequately assessed motivation levels. Future research should examine
motivation/interest following each reading session to obtain a more comprehensive
picture of student opinions about the intervention activities utilizing a measure that is
valid and reliable. Because intrinsic motivation is linked to learning (Ormrod, 2006) and
the students indicated they were motivated to read to Maggie it is important for future
research to better address the role the presence of a dog can play in motivation
particularly for students who are typically unmotivated in academic tasks such as those
with EBD.

Another limitation was the ceiling effect observed on responses to the literal
comprehension questions. As in Alber-Morgan et al. study students performed very well
on the literal comprehension questions (frequently scoring five out of five correct)
indicating that the questions may have been very easy for them. This study attempted to
control for the previously observed effect by not including questions during baseline
however this did not appear to adequately address the effect. Future research may seek to

include both literal and inferential comprehension questions to reduce potential ceiling effects.

An important limitation to this study was the difference in location between the dog present and dog absent conditions. Specifically, the dog present condition occurred directly behind the teacher's desk and was located within the classroom where other students in the class were being instructed. Several students mentioned this was problematic for them because it could be very loud and this was distracting to them when they would be reading to Maggie. The location was not altered because this was the area in which Maggie was accustomed to being and was where she felt most comfortable. The dog absent condition typically took place in the office area of the classroom where the door could be shut to reduce the noise level from the classroom. Although students commented on the noise level, they were always compliant and often excited during the sessions when they read to Maggie. Future research comparing the presence of an animal on reading or other tasks might examine the impact of setting on task performance.

A final limitation was Maggie was not a certified therapy dog and was accustomed to moving freely throughout the classroom. In order to limit her desire to wander, she was given treats periodically to encourage her to stay in the appropriate area during the reading activities. The treats tended to encourage complacency and appropriate behavior; however, on a rare occasion Maggie would get up and readjust or begin to walk away which was distracting to the student reading to her and may have impacted their reading rate. It may be that future research should use certified therapy dogs (however this could create a novelty effect) or provide training to classroom pets who would be used for similar activities.

Implications and Future Research

This work provides preliminary research examining how an animal can be incorporated into a reading intervention package. The results replicate the effects of a reading intervention (Alber-Morgan et al., 2007) and found the presence of a dog within the treatment package yielded similar results to the traditional package on the dependent measures. Although the measures do not show a substantial difference between the conditions (dog absent and dog present), qualitative remarks, teacher comments, student comments/behaviors, and social validity from both the teachers and students indicate an overall preference by students and the teacher for the dog present condition. Three of the four students indicated they preferred the intervention activities when Maggie was involved. For students with behavioral disabilities, particularly those who struggle with reading, it is important to identify ways to increase motivation and involvement in reading activities (Coleman & Vaughn, 2000; Landrum, Tankersley, & Kauffman, 2003; Vaughn et al., 2002). The students in the study were highly motivated to read to Maggie and would frequently ask when they would get to read to her. Additionally, other students in the class would frequently ask if they could read with the researcher and Maggie possibly indicating this was a preferred activity among students.

The four participants all had a behavioral disability (i.e., EBD or ADHD) however there were differences in reading abilities that may have influenced the results. All students showed gains during the interventions compared to baseline, however Damon who started out at the lowest reading level had the greatest gains overall in the dog present condition. It would be of interest for future research to examine the impact of animal assisted interventions on reading measures for students who struggle greatly with

reading (e.g., 4 grade levels behind) compared to those who are close to grade level (e.g., 1 grade level behind), to students who are at grade level and examine if the presence of an animal impacts reading measures.

The theoretical implications of this study are considerable when considering motivational and efficacy factors. Research suggests motivation in reading increases when students have access to a reading partner (Guthrie et al., 2004). In this study, students viewed Maggie as a reading partner and all indicated they would enjoy continuing to read to Maggie at the end of the study. This study provides preliminary results regarding the incorporation of animals into academic interventions. In this study, a person was utilized to facilitate the intervention package both in the dog absent and dog present condition however future research should seek to examine the impact of interventions that only include animals.   Previous research found that human performance is impacted by the presence of other humans (Zajonc, 1965) and it would be of interest to examine how an animal impacts performance when a human is not present/facilitating the interaction.   For example, the utilization of assistive technologies in addition to animals may help better quantify the sole impact of an animal without a human facilitator. For example, a study where students read in the presence of a dog using a reading pen that provides audio output of words they do not know may increase independence as well as better examine the student's level of interest/motivation in reading activities.

The students' intrinsic motivation in reading to Maggie is important for a variety of reasons. First, self-efficacy is directly linked to intrinsic motivation (i.e., people are more likely to be intrinsically motivated if they have a high self-efficacy) (Ormrod,

2006). Students were motivated to read to Maggie and this likely increased their efficacy in their reading abilities when reading to her. This was compounded by the impact of the treatment intervention where students' sense of self-efficacy tended to improve as they saw improvements in their reading skills through the repeated readings, error correction, and performance feedback. This also resulted in some students self-monitoring their reading and becoming motivated to beat their previous scores to show Maggie and themselves that they could perform better.

These implications should be of interest to researchers seeking to identify methods to improve self-efficacy, motivation, and the ways these factors can improve reading performance for children with behavioral disabilities. Children with EBD frequently experience struggles with reading and secondary students are often less responsive to reading interventions and less motivated (Nelson, Benner, & Gonzalez, 2005). The present students were responsive to the intervention and were more self-motivated to read in the dog-present condition. Future research may want to examine how animals can increase motivation and engage students in reading activities. This study found some of the results were maintained for 2-4 weeks following the completion of intervention. This is of particular importance since maintenance of reading interventions are typically not maintained for students with EBD (Lane, Barton-Atwood, Nelson, & Wehby, 2008). Future research should continue to examine the role of animal assisted interventions on increased maintenance for academic interventions for students with behavioral disabilities.

In addition to research in the field of literacy, researchers in the field of AAA may be interested in expanding upon the results of this study by identifying other

opportunities animals can be incorporated into academic interventions. Melson (2001) suggests children have a special bond with their pets. Future research in the field of AAA may be interested in examining the relationship between classroom pets and children and the role these animals have on learning, academics, and behavior. Furthermore, many teachers have classroom pets (Rud & Beck, 2001) yet the role of these pets was not closely examined and future research should seek to gain a better understanding of how classroom pets are used and effective methods of incorporating pets into classroom instruction or interventions.

This study provided individualized instruction directly with the researcher and the students; however, this intense intervention may not possible in a typical classroom setting. Further research might examine ways to increase independence through self-monitoring by teaching students to monitor words they struggle with when reading and ways to learn the words on their own (i.e., text to speech assistive technology devices). The incorporation of self-monitoring strategies could also be connected to AAA where students must then share the correct pronunciation of the word with an animal.

The results of this study also have important clinical implications for teachers. The dog used in this study was a classroom pet dog owned by the teacher. The teacher believed in the importance of exposing her students to animals and the role animals had on teaching responsibility, respect, and improving behavior. The teacher indicated she had not previously incorporated Maggie into academic lessons. At the completion of the study she noted she would continue to have her students read to the dog due to the motivational benefits it provided. This may be of particular importance for other teachers who have classroom pets or are seeking ways to improve motivation in their students.

Conclusions

This study examined whether the effects of a reading intervention treatment package could be replicated and if the presence/absence of a classroom pet dog impacted the effects. The effects of the treatment package were similar to previous research (Alber-Morgan et al., 2007) and were similar in both the dog present and dog absent condition. Anecdotal reports indicate participating students preferred the intervention during the dog present condition; therefore, it is difficult to determine what the intervention effect would be without the dog. It may be students would not be as willing to participate. Future research in the field of AAA that use a between group design where students are given equal prompting between conditions may better assess the impact of the presence an animal on student motivation levels.

Important to the field of AAA was the successful incorporation of an animal into an academic intervention that used systematic prompting and other evidence-based practices. Future research in the field of AAA should continue to examine ways animals can be incorporated into evidence-based practices or best practices. It is important for AAA practitioners to be aware of ways to ensure treatment fidelity when implementing practices. Future research should also seek to identify ways participants in AAA can generalize activities, learned or practiced, with the animals to situations when the animals are not present.

BIBILOGRAPHY

BIBLIOGRAPHY

Alber-Morgan, S. R., Ramp, E. M., Anderson, L. L., & Martin, C. M. (2007).

Effects of repeated readings, error correction, and performance feedback   on the

fluency and comprehension of middle school students with behavior problems.

The Journal of Special Education, 41, 17-30.

Allington, R. L. (1983). Fluency: The neglected reading goal. *The Reading Teacher, 36,*

556-561.

Alverman, D. E. (2002). Effective literacy instruction for adolescents. *Journal of*

Literacy Research, 34, 189-208.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of*

Educational Psychology, 84, 261-27.

Anderson, K. L., & Olson, M. R. (2006). The value of a dog in a classroom of children

with severe emotional disorders. *Anthrozoos, 19,* 35-49.

Armbruster, B. B., Anderson, T. H., & Meyer, J. L. (1991). Improving content-area

reading using instructional graphics. *Reading Research Quarterly, 26,* 393–416.

Baker, L., & Zimlin, L. (1989). Instructional effects on children's use of two levels of

standards for evaluating their comprehension. *Journal of Educational Psychology,*

81, 340–346.

Barton-Atwood, S. M., Wehby, J. H., & Falk, K. B. (2005). Reading instruction for

    elementary age students with emotional and behavioral disorders: Academic and

    behavioral outcomes. *Exceptional Children, 72,* 7-27.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bean, T.W. (2000). Reading in the content areas: Social constructivist conventions. In

    M.L. Kamil, P.B. Mosenthal &, P.D. Pearson (Eds.), *Handbook of reading*

    research, Vol 3 (pp.629-644). Mahwah N.J.: Erlbaum.

Beck, A. M., & Katcher, A. H. (1996). *Between Pets and People: The Importance of*

    Animal Companionship. West Lafayette, IN, Purdue University Press.

Berliner, D. C. (1979). Tempus educare. In P. L. Peterson & H. J. Walber (Eds.),

    Research on teaching (pp. 120 −135). Berkeley, CA: McCutchan.

Bogner, K., Raphael, L., & Pressley, M. (2002). How Grade 1 teachers motivate literate

    activity by their students. *Scientific Studies of Reading, 6,* 135–165.

Bowlby, J. (1969). Attachment and loss. Vol. I. *Attachment*. New York, NY: Basic

    Books.

Brigance, A. H. (1983). *Brigance diagnostic inventory of basic skills.* North

    Billerica, MA: Curriculum Associates.

Brophy, J. E. (2004). *Motivating students to learn* (2nd ed.). Mahwah, N. J., Erlbaum.

Bueche, S. (2003). Going to the dogs: Therapy dogs promote reading. *Reading Today,*

    20(4), 46.

Bullis, M., & Yovanoff, P. (2006). Idle hands: Community employment experiences of

    formerly incarcerated youth. *Journal of Emotional and Behavioral Disorders, 14,*

    71-85.

Bursuck, W. D. & Damer, M. (2007). *Reading instruction for students who are at risk or have disabilities*. New York, NY: Pearson.

Bursuck, W. D., & Damer, M. (2011). *Teaching reading to students who are at risk or have disabilities* (2nd ed.). Indianapolis, IN: Pearson.

Chafouleas, S. M., Martens, B. K., Dobson, R. L., Weinstein, K. S., & Gardner, K. B. (2004). Fluent reading as the improvement of stimulus control: Additive effects of performance-based interventions to repeated readings on students' reading and error rates. *Journal of Behavioral Education, 13,* 67-81.

Chapman, J. W. (1988). Cognitive-motivational characteristics and academic achievement of learning disabled children: A longitudinal study. *Journal of Educational Psychology, 80,* 357-365.

Chandler, C. (2001). Animal assisted therapy in counseling and school settings. ERIC/CASS Digest, ED459404) ERIC Clearinghouse on Counseling and Student Services, Greensboro NC.

Chandler, C. (2005). *Animal assisted therapy in counseling.* New York, N.Y.: Taylor and Francis.

Clifford, M. M. (1990). Students need challenge, not easy success. *Educational Leadership, 48(1),* 22-26.

Coleman, M. & Vaughn, S. (2000). Reading interventions for students with emotional/behavioral disorders. *Behavioral Disorders, 25,* 93-104.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd edition). Columbus, OH: Merrill.

Covington, M. V. (1992). *Making the grade: A self-worth perspective on motivation and school reform*. Cambridge, England: Cambridge University Press.

Cowie, R., Douglas-Cowie, E., & Wichman, A. (2002). Prosodic characteristics of sklled reading: Fluency and expressiveness in 8-10-year-old readers. *Language and Speech, 45,* 47-82.

Cwik, A. J. (1991). Active imagination as imaginal play-space. In M. Schwartz-Salant and M. Stein, (Eds.), *Liminality and Transitional Phenomena* (pp. 99-114). Wilmette, IL, Chiron.

Deci, E. L. (1992). The relation of interest to the motivation of behavior: A self-determination theory perspective. In K. A., Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development*. Mahwah, N. J.: Erlbaum.

Deci, E. L. & Ryan, R. M. (1992). The initiation and regulation of intrinsically motivated learning and achievement. In A. K. Boggiano & T. S. Pittman (Eds.), *Achievement and motivation: A social-developmental perspective.* Cambridge, England: Cambridge University Press.

Delta Society (2009). *How to become a registered pet partners team*. Retrieved December 8, 2009 from http://www.deltasociety.org/Page.aspx?pid=261

Dole, J. A., Valencia, S. W., Greer, E. A., & Wardrop, J. L. (1991). Effects of two types of prereading instruction on the comprehension of narrative and expository text. *Reading Research Quarterly, 26,* 142–159.

Downhower, S. (1991). Speaking of prosody: Fluency's unattended bedfellow. *Theory into Practice, 30,* 158-164.

Dowson, M. & McInerney, D. M., (2001). Psychological parameters of students' social and work avoidance goals: A qualitative investigation. *Journal of Educational Psychology, 93,* 35-42.

Dreher, M. J., & Brown, R. (1993). Planning prompts and indexed terms in textbook search tasks. *Journal of Educational Psychology, 85,* 662– 669.

Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (5th ed., pp. 1017-1095). New York: Wiley.

Eddy, J., Hart, L. A., & Boltz, R. E. (2001). The effects of service dogs on social a acknowledgments of people in wheelchairs. *Journal of Psychology, 122,* 39-45.

Edmonds, M. S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K. K., & Schnakenberg, W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research, 79,* 262-300.

Enders-Slegers, M.-J. (2000). The meaning of companion animals: Qualitative analysis of the life histories of elderly cat and dog owners. In A. L. Podberscek, E. S. Paul, and J. A. Serpell, (Eds.), *Companion Animals and Us: Exploring the Relationships between People and Pets* (pp. 237-256). Cambridge, England: Cambridge University Press.

Engelmann, S., Hanner, S., & Johnson, G. (1999). *Corrective reading series guide.* Columbus, OH: SRA/McGraw Hill.

Esteves, S. W., & Stokes, T. (2008). Social effects of a dog's presence on children with disabilities. *Anthrozoos, 21,* 5-15.

Fawcett, N. R. and Gullone, E. (2001) Cute and cuddly and a whole lot more? A call for empirical investigation into the therapeutic benefits of human-animal interaction for children. *Behaviour Change, 18,* 124–133.

Fine, A. H. (2000). Animals and therapists: Incorporating animals in outpatient psychotherapy. In A. H. Fine (Ed.), *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice* (pp. 179-211) New York, NY: Academic Press.

Fitzgerald, J., & Spiegel, D. L. (1983). Enhancing children's reading comprehension through instruction in narrative structure. *Journal of Reading Behavior, 15*(2), 1–17.

Friedmann, E., Katcher, A. H., Thomas, S. A., Lynch, J. J., & Messent, P. R. (1983). Social interactions and blood pressure: Influence of animal companions. *The Journal of Nervous and Mental Disease, 171,* 461-465.

Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence. A theoretical, empirical, and historical analysis. *Scientific Studies in Reading, 5,* 239-256.

Fulk, B. (1998). Motivation and self-regulation: a comparison of students with learning and behavior problems. *Remedial and Special Education, 19(5),* 300–309.

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95,* 148–162.

Garner, R., Brown, R., Sanders, S., & Menke, D. J. (1992). "Seductive details" and learning from text. In K. A., Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development.* Mahwah, N. J.: Erlbaum.

Gee, N. R., Church, M. T., & Altobelli, C. L. (2010). Preschoolers make fewer errors on an object categorization task in the presence of a dog. *Anthrozoos, 23,* 223-230.

Gee, Nancy R., Crist, Elise N., & Carr, & Daniel N. (2010). Preschool children require fewer instructional prompts to perform a memory task in the presence of a dog. *Anthrozoos, 23*, 173-184.

Gee, N. R., Harris, S. L., & Johnson, K. L. (2007). The role of therapy dogs in speed and accuracy to complete motor skill tasks for preschool children. *Anthrozoos, 20,* 375-386.

Gee, N., Sherlock, T., Bennett, E. & Harris, S. (2009). Preschoolers' adherence to instructions as a function of the presence of a dog, and motor skills task. *Anthrozoös, 22,* 267–276.

Gersten, R., Fuchs, L. S., Williams, J. P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of research. *Review of Educational Research, 71,* 279–320.

Good, R. H., Simmons, D. C., & Smith, S. (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review, 27*, 45–56.

Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology, 77,* 631– 645.

Gottfried, A. E., (1990). Academic intrinsic motivation in young elementary school children. *Journal of Educational Psychology, 82,* 525-538.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual differences investigation. *Journal of Personality and Social Psychology, 52,* 890–898.

Guthrie, J. T., Schafer, W. D., & Huang, C. W. (2001). Benefits of opportunity to read and balanced instruction on the NAEP. *Journal of Educational Research, 94,* 145–162.

Guthrie, J. T , & Wigfield, A. (Eds.). (1997). *Reading engagement: Motivating readers through integrated instruction.* Newark, DE: International Reading Association.

Guthrie, J. T., Wigfield, A., Barbosa, P., Perencevich, K. C., Taboada, A., Davis, M. H., et al. (2004). Increasing reading comprehension and en- gagement through concept-oriented reading instruction. Journal of Educational Psychology, 96, 403–423.

Guthrie, J. T., Wigfield, A., Humenick, N. M., Perencevich, K. C., Taboada, A., & Barbosa, P. (2006). Influences of stimulating tasks on reading motivation and comprehension. *Journal of Educational Research, 99,* 232–245.

Guthrie, J. T., Wigfield, A., & VonSecker, C. (2000). Effects of integrated instruction on motivation and strategy use in reading. *Journal of Educational Psychology, 92,* 331–341.

Gunter, P. L., Jack, S. L., DePaepe, P., Reed, T. M., & Harrison, J. (1994). Effects of challenging behaviors of students with emotional and beahioral disorders on teacher instructional behavior. *Preventing School Failure, 38,* 35-39.

Hansen, K. M., Messinger, C. J., Baun, M. M., & Megel, M. (1999). Companion
animals alleviating distress in children. *Anthrozoos, 12,* 142-148.

Hare, B., Brown, M., Williamson, C., & Tomasello, M. (2002). The domestication of
social cognition in dogs. *Science, 298,* 1634–1636.

Hergovich, A., Monshi, B., Semmler, G., & Zieglmayer, V. (2002). The effects of the
presence of a dog in the classroom. *Anthrozoos, 15,* 37-50.

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A
critical issue for the 21st century. *Review of Educational Research, 70,* 151–179.

Hootstein, H. (1995). Motivational strategies of middle school social studies teachers.
Social Education, 59, 23–26.

Huck, S. W. (2008). *Reading statistics and research*. New York, NY: Pearson.

Hughes, K. (2002). See spot read. *Public Libraries, 41(6),* 328-330.

Ivey, G. & Broaddus, K. (1999). "Just plain reading": A survey of what makes students
want to read in middle school classrooms. *Reading Research Quarterly, 36,* 350-
377.

Jalongo, M. R. (2005). What are all these dogs doing at school? Using therapy dogs to
promote children's reading practice. *Childhood Education, 81(3),* 152-158.

Jalongo, M. R., Astorino, T., & Bomboy, N. (2004). Canine visitors: The influence of
therapy dogs on young children's learning and well-being in classrooms and
hospitals. *Early Childhood Education, 32,* 9-16.

Jenkins, J. R., Fuchs, L. S., van den Broek, P., Espin, C., & Deno, S. L., (2003). Sources
of individual differences in reading comprehension and reading fluency. *Journal
of Educational Psychology, 95,* 719-729.

Joseph, L. M. (2007). Best practices on interventions for students with reading problems. *Best Practices in School Psychology V, 72,* 1163-1180.

Joye, Y., & DeBlock, A. (2011). "Nature and I are two": A critical examiniation of the biophilia hypothesis. *Environmental Values, 20(2),* 189-215.

Kahn,P. W.(1997). Developmental psychology and the biophilia hypothesis: Children's affiliation with nature. *Developmental Review, 17,* 1-61.

Katcher, A. H. (2000). The future of education and research on the animal-human bond and animal-assisted therapy Part B: Animal-assisted therapy and the study of human-animal relationships: Discipline or bondage? Context or transitional object? In A. H. Fine (Ed.), *Handbook on animal assisted therapy, 2nd edition* (pp. 461-473). New York, NY: Academic Press.

Katcher, A. H. & Beck, A. M. (2006). New and old perspectives on the therapeutic effects of animals and nature. In A. H. Fine (Ed.), *Handbook on animal assisted therapy, 2nd edition* (pp. 39-48). New York, NY: Academic Press.

Katcher, A. H. & Wilkins, G.G. (2000). The centaur's lessons: Therapeutic education through care of animals and nature study. In A. H. Fine (Ed.), *Handbook on animal assisted therapy* (pp. 153-177). New York, NY: Academic Press.

Kennedy, C.H. (2005). *Single-case designs for educational research.* Boston: Allyn and Bacon.

Kintsch, W. (1998). *Comprehension. A paradigm for cognition.* Cambridge, UK: Cambridge University Press.

Kostewicz, D. E. & Kubina, R. M. (2008). The national reading panel guidepost: A review of reading outcome measures for students with emotional and behavioral disorders. *Behavioral Disorders, 33,* 62-74.

Kotrschal, K. & Ortbauer, B. (2003). Behavioral effects of the presence of a dog in a classroom. *Anthrozoos, 16,* 147-159.

Kluger, A. N., & DeNisi, A. (1998). Feedback interventions. Toward the understanding of a double edge sword. *Current Directions in Psychological Science, 7,* 67-72.

Krapp, A. (2002). Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective. *Learning and Instruction, 12,* 383–409.

Kruger, K., & Serpell, J.A. (2006). Animal-assisted interventions in mental health: Definitions and theoretical foundations. In A.H. Fine (Ed.), *Handbook on animal-assisted therapy* (2nd ed., pp. 21–38). New York: Elsevier.

Landrum, T. J., Tankersley, M., & Kauffman, J. M. (2003). What is special about special education for students with emotional or behavioral disorders? *The Journal of Special Education, 37,* 148-156.

Lane, K. L., Barton-Atwood, S. M., Nelson, J. R., & Wehby, J. (2008). Academic performance of students with emotional and behavioral disorders served in a self-contained setting. *Journal of Behavioral Education, 17,* 43-62.

Lane, K. L., Little, M. A., Redding-Rhodes, J., Phillips, A., & Welsh, M. T. (2007). Outcomes of a teacher-led reading intervention for elementary students at risk for behavioral disorders. *Exceptional Children, 74,* 47-70.

Lapp, S. A., & Scruby, L. (1982). Responsible pet relationships: A mental health perspective. *Health Values: Achieving High Level Wellness, 6,* 20-25.

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

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

Levinson, B. M. (1978). Pets and personality development. *Psychological Reports, 42,* 1031-1038.

Levinson, B. M. (1984). Human/companion animal therapy. *Journal of Contemporary Psychotherapy, 14,* 131-144.

Levy, S., & Chard, D. (2001). Research on reading instruction for students with emotional and behavioral disorders. *International Journal of Disability, Development and Education, 48,* 429-444.

Limond, J., Bradshaw, J., & Cormack, K.F. (1997). Behaviors of children with learning disabilities interacting with a therapy dog. *Anthrozoos, 10,* 84-89.

Lockwood, R. (1983). The influence of animals on social perception. In A. H. Katcher and A. M. Beck (Eds.), *New Perspectives on Our Lives with Companion Animals* (pp. 64-71). Philadelphia, PA: University of Pennsylvania Press.

Mader, B., Hart, L. A., & Bergin, B. (1989). Social acknowledgments for children with disabilities: Effects of service dogs. *Child Development, 60,* 1529-1534.

Maehr, M. L. (1984). Meaning and motivation: Toward a theory of personal investment in R. Ames & C. Ames (Eds.) *Research on motivation in education: Vol. 1. Student motivation.* San Diego, CA: Academic Press.

Mallon, G. F. (1994a). Cow as co-therapist: Utilization of farm animals as therapeutic aides with children in residential treatment. *Child Adolescent Social Work, 11,* 455-474.

Mallon, G. F. (1994b). Some of our best therapists are dogs. *Child Youth Care Forum, 23,* 89-101.

Mason, M. S., & Hagan, C. B. (1999). Pet-assisted psychotherapy. *Psychological Report, 84,* 1235-1245.

Mastropieri, M. A., Leinhart, A., & Scruggs, T. E. (1999). Strategies to increase reading fluency. *Intervention in School and Clinic, 34,* 278-283.

Mathes, P.G., & Torgeson, J.K. (1998). All children can learn to read: Critical care for students with special needs. *Peabody Journal of Education, 73,* 317–340.

Mattison, R. E., Spitznagel, E. L. & Felix, B. C. (1998). Enrollment predictors of the special education outcome for students with SED. *Behavioral Disorders, 23,* 243-256.

Mathes, P. G., Simmons, D. G., & Davis, B. I. (1992). Assisted reading techniques for developing fluency. *Reading Research and Instruction, 31,* 70-77.

McClelland, D. C., Atkinson, J. W., Clark, R. A., Lowell, E. L. (1953). *The achievement motive*. New York, NY: Appleton-Century-Crofts.

McKenna, M. C., & Kear, D. J. (1990). Measuring attitudes towards reading: A new tool for teachers. *Reading Research Quarterly, 43,* 626-639.

McKenna, M. C., Kear, D. J., & Ellsworth, R. A. (1995). Children's attitudes toward reading: A national survey. *Reading Research Quarterly, 30,* 934-956.

McKinney, J. D., Osborne, S. S., & Schulte, A. C. (1993). Academic consequences of learning disability: Longitudinal prediction of outcomes at 11 years of age. *Learning Disabilities Research and Practice, 8*, 19–27.

Meece, J. L., Blumenfeld, P. C, & Hoyle, R. H. (1988). Students' goal orientations and cognitive engagement in classroom activities. *Journal of Educational Psychology, 80,* 514-523.

Melson, G. (2001). *Why the wild things are: Animals in the lives of children*. Cambridge, MA: Harvard University Press.

Messent, P. R. (1983). Social facilitation of contact with other people by pet dogs. In A. H. Katcher and A. M. Beck (Eds.), *New Perspectives on Our Lives with Companion Animals* (pp. 37-46). Philadelphia, PA: University of Pennsylvania Press.

Miklósi, Á., Kubinyi, E., Topál, J., Gácsi, M., Virányi, Z., & Csányi, V. (2003). A simple reason for a big difference wolves do not look back at humans, but dogs do. *Current Biology, 13,* 763–766.

Miklósi, Á., Pongracz, P., Lakatos, G., Topál, J., & Csányi, V. (2005). A comparative study of the use of visual communicative signals in interactions between dogs (Canis familiaris) and humans and cats (Felis catus) and humans. *Journal of Comparative Psychology, 119,* 179–186.

Mitchell, M. (1993). Situational interest: Its multifaceted structure in the secondary school mathematics classroom. *Journal of Educational Psychology, 85,* 424–436.

Morgan, P. L., & Fuchs, D. (2007). Is there a bidirectional relationship between children's reading skills and reading motivation? *Exceptional Children, 73,* 165–183.

Nagasawa, M., Mogi, K., & Kikusui, T. (2009). Attachment between humans and dogs. *Japanese Psychological Research, 51,* 209-221.

Nagengast, S. L., Baun, M. M., Megel, M. M., Leibowitz, J. M. (1997). The effects of the presence of a companion animal on physiological arousal and behavioral distress in children during a physical examination. *Journal of Pediatric Nursing, 12,* 323-330.

National Center for Education Statistics (2005). National assessment of educational progress. Washington D. C. Retrieved November 12, 2010, from http://www.nces.ed.gov/

National Reading Panel (2000). Part III. Fluency. Bethesda, MD: NICHD Retrieved on October 2, 2010 from http://www.nichd.hih.gov/publications/nrp/report.htm

National Reading Panel. (2000). *Teaching children to read: An evidence- based assessment of the scientific research literature on reading and its implications for reading instruction.* Washington, DC: National Institute of Child Health and Human Development.

Nelson, J. S., Alber, S. R., & Gordy, A. (2004). The effects of error correction and repeated readings on the reading achievement of students with learning disabilities. *Education and Treatment of Children, 27,* 186-198.

Nelson, J. R., Benner, G. J., & Gonzalez, J. (2003). Learner characteristics that influence the treatment effectiveness of early intervention: A meta analytic review. *Learning Disabilities Research and Practice, 18,* 255-267.

Nelson, J. R., Benner, G. J., Lane, K., & Smith, B. W. (2004). An investigation of the academic achievement of K-12 students with emotional and behavioral disorders in public school settings, *Exceptional Children, 71,* 59-73.

Newlin, R. B. (2003). Paws for reading: An innovative program uses dogs to help kids read better. *School Library Journal, 49(6),* 43.

No Child Left Behind Act of 2001, Pub. L. 107-110, 115 Stat. 1425 (2002).

Nolen, S. B., & Nichols, J. G. (1994). A place to begin (again) in research on student motivation: Teachers' beliefs. *Teaching and Teacher Education, 10,* 57–69.

O'Brien D.G., Stewart, R,.A., & Moje, E.B. (1995).Why content literacy is difficult to infuse into the secondary school: Complexities of curriculum, pedagogy, and school culture. *Reading Research Quarterly, 30,* 442-463.

Ormrod, J. E. (2006). *Educational psychology: Developing learners* (5th ed.). Columbus, OH: Pearson.

Pintrich, P. R., & Schunk, D. H., (2002). *Motivation in education: Theory, research, and applications* (2nd ed.). Upper Saddle River, N.J.: Merrill/Prentice Hall.

Polloway, E. A., Miller, L., & Smith, T. E. C., (2004). *Language instruction for students with disabilities* (3rd ed.). Denver, CO: Love.

Polloway, E. A., Patton, J. R., & Serna, L. (2008). *Strategies for teaching learners with special needs* (9th ed.). Columbus, OH: Pearson.

Poskiparta, E., Niemi, P , Lepola, J., Ahtola, A., & Laine, P. (2003). Motivational-emotional vulnerability and difficulties in learning to read and spell. *British Journal of Educational Psychology, 73,* 187-206.

Reichert, E. (1998). Individual counseling for sexually abused children: A role for animals and storytelling. *Child Adolescent Social Work, 15(3),* 177-185.

Reynolds, P. L., & Symons, S. (2001). Motivational variables and children's text search. *Journal of Educational Psychology, 93,* 14–23.

RHMSS Pty Ltd (2003, February). Animal assisted therapy and young people - A review of selected literature. Prepared for Menzies Inc. by RHMSS Pty Ltd. Retrieved March 17, 2011 from www.menzies.org.au/_publications/Animal-Assisted-Therapy-Report.pdf.

Roberts, G., Good, R., & Corcoran, S. (2005). Story retell: A fluency-based indicator of reading comprehension. *School Psychology Quarterly, 20,* 304-317.

Rogers, C. R. (1961). *On becoming a person.* Boston, MA: Houghton Mifflin.

Roseberry-McKibbon, C., & Brice, A. (2003). Acquiring a second language: What's normal and what's not. Retrieved May 19, 2011 from http://www.asha.org/speech/development/easl.cfm.

Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research, 66,* 181–221.

Rossbach,K. A., & Wilson, J. P (1992). Does a dog's presence make a person appear more likable? Two studies. *Anthrozoos, 5,* 40-51.

Rud, A. & Beck A.M. (2000). Kids and critters in class together. *Phi Delta Kappan, 82,* 313-315.

Rud, A. G., & Beck, A. M. (2003). Companion animals in Indiana elementary schools. *Anthrozoos, 16,* 241-251.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25,* 54–67.

Salonen, P, Lepola, J., & Niemi, P (1998). The development of first graders' reading skill as a function of pre-school motivational orientation and phonemic awareness. *European Journal of Psychology of Education, 13,* 155-174.

Scott, T. M., & Shearer-Lingo, A. (2002). The effects of reading fluency instruction on the academic and behavioral success of middle school students in a self-contained EBD classroom. *Preventing School Failure, 46,* 167-174.

Schreiber, P. A. (1991). Understanding prosody's role in reading acquisition. *Theory into Practice, 30,* 158-164.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 16–32). San Diego, CA: Academic Press.

Schunk, D. H., & Zimmerman, B. J. (1997). Developing self-efficacious readers and writers: The role of social and self-regulatory processes. In L. Baker, M. J. Dreher, & J. T. Guthrie (Eds.), *Reading engagement: Motivating readers through integrated instruction* (pp. 34 –50). Newark, DE: International Reading Association.

Schwanenflugel, P. J., Hamilton, A. M., Kuhn, M. R., Wisenbaker, J., & Stahl, S. A.

(2004). Becoming a fluent reader: Reading skill and prosodic features in the oral

reading of young readers. *Journal of Educational Psychology, 96,* 119-129.

Scruggs, E. T., & Mastropieri, M. A. (1998). Summarizing single-subject research:

Issues and applications. *Behavior Modification, 22,* 221–242.

Scruggs, T. E., Mastropieri, M. A., & Casto, G. (1987). The quantitative synthesis of

single-subject research: Methodology and validation. *Remedial and Special

Education, 8*, 24–33.

Serpell, J. A. (2000). Creatures of the unconscious: Companion animals as mediators. In

A. L. Podberscek, E. 5. Paul, & J. A. Serpell (Eds.), *Companion animals and us:

Exploring the relationships between people and pets* (pp. 108-121). Cambridge,

England: Cambridge University Press.

Shapiro, E. S. (2004a). *Academic skills problems workbook* (Revised Ed.). New York:

Guilford Press.

Shapiro, E. S. (2004b). *Academic skills problems: Direct assessment and intervention* (3rd

Ed.). New York: Guilford Press.

Shaywitz, S. (2003). *Overcoming dyslexia. A new and complete science based program

for reading problems at any level*. New York, NY: Knopf.

Shernoff, D. J., Knauth, S., & Makris, E. (2000). The quality of classroom experiences in

M. Csikszentmihalyi & B. Schneider, *Becoming adult: How teenagers prepare

for the world of work*. New York: Basic Books.

Skinner, C. H. (1998). Preventing academic skill deficits. In T. S. Watson & F. M.

  Gresham (Eds.) *Handbook of child behavior therapy* (pp. 61-82). New York:

  Plenum Press.

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in

  school and whether I've got it: A process model of perceived control and

  children's engagement and achievement in school. *Journal of Educational*

  Psychology, 82, 22–32.

Smith, K. A. (2009). Impact of animal assisted therapy reading instruction on reading

  performance of homeschooled students. *Journal of eLearning and Online*

  Teaching, 10 (1), 1-30.

Snider, B. (2007). Gone to the dogs. *Edutopia*, Retrieved July 9, 2007, from

  http://www.edutopia.org/read-with-rover

Stanovich, K. E., (1984). The interactive-compensatory model of reading: A confluence

  of developmental, experimental, and educational psychology. *Remedial and*

  Special Education, 5, 11-19

Stanovich, K. E., (1986). Matthew effects in reading: Some consequences of individual

  differences in the acquisition of literacy. *Reading Research Quarterly, 21(4),* 360-

  406.

Stipek, D. (1996). Motivation and instruction. In D. C. Berliner & R. C. Calfee (Eds.),

  Handbook of educational psychology (pp. 85–113). New York: Simon &

  Schuster/Macmillan.

Strong, A. C., Wehby, J. H., Falk, K. B., & Lane, K. L. (2004). The impact of a structured reading curriculum and repeated reading on the performance of junior high students with emotional and behavioral disorders. *School Psychology Review, 33,* 561-581.

Sweet, A. P., Guthrie, J. T., & Ng, M. M. (1998). Teacher perceptions and student reading motivation. *Journal of Educational Psychology, 90,* 210 –223.

Tam, K. Y., Heward, W. L., & Heng, M. A. (2006). A reading instruction intervention program for English-language learners who are struggling readers. *Journal of Special Education, 40,* 79-93.

Therrien, W. J. (2004). Fluency and comprehension gains as a result of repeated reading: A meta-analysis. *Remedial and Special Education, 25,* 252-261.

Therrien, W. J., Gormley, S., Kubina, R. M. (2006). Boosting fluency and comprehension to improve reading achievement. *Teaching Exceptional Children, 38(3),* 22-26.

Tompkins, G. E., (2006). *Literacy for the 21st century a balanced approach* (4th ed.). Columbus, OH: Merrill/ Prentice Hall.

Triebenbacher,S. L. (1998). Pets as transitional objects: Their role in children's emotional development. *Psychological Report, 82,* 191-200.

Tunstall, P., & Gipps, C. (1996). Teacher feedback to young children in formative assessment: A typology. *British Educational Research Journal, 22,* 389-404.

Ulrich, R. S. 1993. Biophilia, biophobia, and natural landscapes. In S. R. Kellert and E. O. Wilson, (Eds.), *The Biophilia Hypothesis* (pp. 73-137). Washington, D.C.: Island Press.

Vaughn, S., Levy, S., Coleman, M., & Bos, C. S. (2002). Reading instruction for students with LD and EBD: A synthesis of observation studies. *The Journal of Special Education, 36,* 2-13.

Wagner, M. & Cameto, R. (2004). The characteristics, experiences, and outcomes of youth with emotional disturbances. *NLTS2 Data Brief,* 3(2).

Walker, H. M., Ramsey, E., & Gresham, F. M. (2004). *Antisocial behavior in school: Evidence-based practices* (2nd ed.). Belmont, CA: Wadsworth.

Wehby, J. H., Lane, K. L., & Falk K. B. (2003). Academic instruction for students with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 11,* 225-238.

Wehby, J., Falk, K. B., Barton-Atwood, S. M., Lane, K. L., & Cooley, C. (2003). The impact of comprehensive reading instruction on the academic and social behavior of students with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 11,* 225-238.

Wehby, J. H., Symons, F. M., Canale, J., & Go, F. (1998). Teaching practices in classrooms for students with emotional and behavioral disorders: Discrepancies between recommendations and observations. *Behavioral Disorders, 24,* 52-57.

Weiss, R. S. (1974). The provision of social relationships. In Z. Rubin (Ed.), *Doing unto Others* (pp. 17-26). P Engelwood Cliffs, NJ: Prentice Hall.

Wentzel, K. R. (1993). Motivation and achievement in early adolescence: The role of multiple classroom goals. *Journal of Early Adolescence, 13(1),* 4–20.

Wells, M., and Perrine, R. (2001). Pets go to college: The influence of pets on students' perceptions of faculty and their offices. *Anthrozoos, 14,* 161-167.

Wells, E. S., Rosen, L. W., & Walshaw, S. (1997). Use of feral cats in psychotherapy. *Anthrozoos,* 10, 125-130.

Westat Research Corporation (2002). *Percent of service providers with various types of teacher certification, by type of service provider.* Retrieved October 10, 2010, from www.spense.org

Whelan, R. J. & Simpson, R. L. (1996). Preparation of personnel for students with emotional and behavioral disorders: Perspectives on a research foundation for future practice. *Behavioral Disorders, 22,* 49-54.

Wigfield, A. (1994). Expectany-value theory of achievement motivation: A developmental perspective. *Educational Psychology Research, 6,* 49-78.

Wigfield, A. & Eccles, J. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25,* 68-81.

Wigfield, A. & Eccles, J. (2002). The development of competency beliefs, expectancies for success, and achievement values from childhood to adolescence. In A. Wigfield & J. Eccles (Eds.), *Development of achievement motivation* (pp 91-120). San Diego, CA: Academic Press.

Wigfield, A., Eccles, J., MacIver, D., Reuman, D., & Midgley, C. (1991). Transitions at early adolescence: Changes in children's domain-specific self-perceptions and general self-esteem across the transition to junior high school. *Developmental Psychology, 27,* 552-565.

Wigfield, A., Eccles, J. S., Yoon, K. S., Harold, R. D., Arbreton, A. J. A., Freedman-Doan, C , et al. (1997). Change in children's competence beliefs and subjective task values across the elementary school years: A 3-year *UMAJ. Journal of Educational Psychology, 89, 451-469.*

Williams, J. P., Lauer, K. D., Hall, K. M., Lord, K. M., Gugga, S. S., & Bak, S. J. (2002). Teaching elementary school students to identify story themes. *Journal of Educational Psychology, 94,* 235–248.

Wilson, E (1984) *Biophilia: The human bond with other species*. Cambridge, MA: Harvard University Press.

Winnicott, D. W. (1951). Transitional objects and transitional phenomena. In D. W. Winnicott, (Ed.), *Playing and Reality* (pp. 1-25). New York, NY: Basic Books.

Wolf, M. & Katzir-Cohen, T. (2001). Reading fluency and its intervention. *Scientific Studies in Reading, 5,* 211-239.

Worthy, J., & McKool, S. (1996). Students who say they hate to read: The importance of opportunity, choice, and access. In D. J. Leu, C. K. Kinzer K. A. Hinchman (Eds.), *Literacies for the 21st century: Research and practice. 45th yearbook of the National Reading Conference* (pp.245-256). Chicago: National Reading Conference.

Zajonc, R. (1965). Social facilitation. *Science, 149,* 269-274.

Zahorik, J. (1996). Elementary and secondary teachers' reports of how they make learning interesting. *Elementary School Journal, 96,* 551–564

APPENDICES

Appendix A: Modified Quantification of Retelling for Narrative Text

Modified Quantification of Retelling for Narrative Text (Shapiro, 1996a)

Students Name: _____
Session: _____
Date: _____

Place a check next to each item included in the student's retell. Credit the gist as well as the obvious recall.

Story Sense
      Theme: Main idea or moral of the story   _____(1 point)
      Goal: What the character wants to happen   _____(1 point)

Setting
      When and where the story occurs   _____(1 point)

Characters
      Name the main characters   _____(1 point)

Events/episodes
      Initiating event   _____(1 point)
      Major events (climax)   _____(1 point)
      Sequence: retells in structural order   _____(1 point)
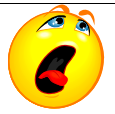
Resolution
      End the story   _____(1 point)

                                  Total _____(out of 7)
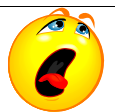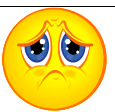
Appendix B: Modified Elementary Reading Attitude Survey

Modified Elementary Reading Attitude Survey (McKenna & Kear, 1990)
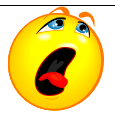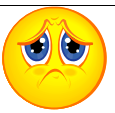
1. How did you feel when you read aloud to Ms. Laura?

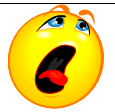| Love it!	Like it.	Ho Hum…	Don't like it!

2. How calm did you feel when you read aloud to Ms. Laura?

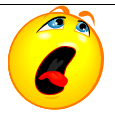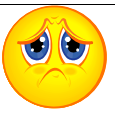| Love it!	Like it.	Ho Hum…	Don't like it!

3. How comfortable did you feel when you read aloud to Ms. Laura?

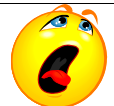| Love it!	Like it.	Ho Hum…	Don't like it!

4. How do you feel about reading different passages to Ms. Laura?

Love it!	Like it.	Ho Hum…	Don't like it!
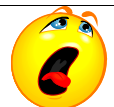
5. How do you feel when it's time to read to Ms. Laura?

Love it!	Like it.	Ho Hum…	Don't like it!
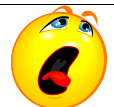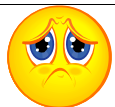
1. How did you feel when you read aloud to Maggie?
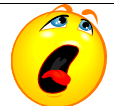
Love it!	Like it.	Ho Hum...	Don't like it!

2. How calm did you feel when you read aloud to Maggie?

Love it!	Like it.	Ho Hum...	Don't like it!
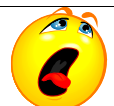
3. How comfortable did you feel when you read aloud to Maggie?

Love it!	Like it.	Ho Hum...	Don't like it!

4. How do you feel about reading different passages to Maggie?

Love it!	Like it.	Ho Hum...	Don't like it!

5. How do you feel when it's time to read to Maggie?

Love it!	Like it.	Ho Hum...	Don't like it!

Appendix C: Social Validity Questions

Student Interview Questions (pre intervention)	Teacher Interview Questions (pre intervention)
1. What do you think about the dog? 2. What do you think about reading aloud? 3. Do you think you will like reading to the dog? 4. What do you think you will like most/least about reading to the dog? 5. Do you like to get feedback on your reading? Why or why not? 6. Do you think it is important to read well? Why? 7. What things do you struggle with when reading? 8. Do you think reading to the dog can help your overall reading skills? 9. Do you think you will be comfortable when you read aloud to the researcher or the dog?	1. Do you think the students will like having to do repeated readings, receive error correction, and receive performance feedback? 2. Why do you bring your dog to your class and what ways have you incorporated her in the past? 3. Do you think reading to the dog will assist students in reading? 4. Do you think the dog will help improve their behaviors during reading? 5. What aspects of having the students read to the dog do you think are useful in the learning process? 6. Do you think having the students read to the dog will allow you as the teacher to be more efficient and effective in teaching? 7. What are your concerns about having your students read to the dog? 8. What benefits do you foresee in having the students read to the dog? 9. Do you think you would want to continue to allow your student to read to the dog in the future?
Post intervention Questions	

1. Did you like reading aloud to the researcher and the dog? Which one and why?
2. Did you feel more confident in your reading skills when you read aloud?
3. Did reading aloud to the researcher and the dog help you to learn to read better?
   a. If it did, how do you think it helped?
   b. If it did not, why do you think it did not?
4. What did you like most about reading aloud to the researcher and the dog?
5. What was the worst thing about reading to the researcher and the dog?
6. Would you want your teacher to let you keep reading to the dog during your independent reading time?
7. Would you like to have other opportunities to interact with a dog or other animals?
8. Would you like to have animals used in your other classes?
9. Did reading to the dog help you learn?
10. Did you like getting feedback on your reading from the researcher and the dog?
11. Did you feel comfortable when you read to the dog?
	1. What did you think about having your students engage in repeated readings, receive error correction, and receive performance feedback?
	2. Do you think any of the components and/or reading to the researcher and the dog improved the student's reading skills or behaviors?
	3. Do you think the students were more confident in their reading after reading to the researcher and/or the dog?
	4. Do you think it was better, worse, or equivalent to traditional reading activities? Why?
	5. What did you like most and least about having the students participate in the study?
	6. Would you have your students read to the dog again?
	7. Have you thought of any other ways you may want to incorporate the dog into academics in the future?

Appendix D: Treatment Integrity Checklist

Treatment Integrity – Place a check next to each step completed.

Listen to the audio recording and place a check next to each step that was included.
1. Researcher gives student instructions regarding what he/she should do based on the condition for that session.
2. Researcher starts tape recorder as the student reads appropriate grade level passage and researcher records words read correctly and the length of time using paper/pencil.
3. Researcher provides error correction to the student either from their perspective or dog's perspective based on condition being used in the session.
4. Student reads the passage a second time and researcher gives performance feedback component and tells the student the number of errors and length of time between the 1st reading compared to the 2nd reading from her own or the dog's perspective based on condition.
5. Students reads the passage a third time and researcher provides feedback on the 3rd reading compared to the other 2 readings (errors and time) and also gives feedback on that session's performance compared to the previous session (# of errors) in the passage.
6. Researcher instructs student to complete oral retell.
7. Researcher asks the students comprehension questions on the passage and student verbally answers the questions. Student gives feedback on # of questions answered correctly for that session and number of questions answered correctly for that session compared to the previous session.

Student	Session	Steps Completed							Notes
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	
		1.	2.	3.	4.	5.	6.	7.	

VITA

VITA

Laura A. Bassette

CONTACT INFORMATION

Work
Beering Hall of Liberal Arts & Education
Department of Educational Studies
100 North University Street
Purdue University
West Lafayette, IN 47907-2098
Phone: 765-586-5008
Email: labasset@purdue.edu

Home
6239 North State Road 43
West Lafayette, IN 47906

EDUCATION

Ph.D., Special Education,
Purdue University, West Lafayette, December 2011
Emphasis: Animal-assisted activities and education for students with disabilities
Chair: Teresa Taber-Doughty, PhD

Master of Science in Youth Development and Agricultural Education
Purdue University, West Lafayette, August 2007, *Summa Cum Laude*

Bachelor of Arts in Psychology, Minor in Clinical Psychology
Lehigh University, Bethlehem, PA, May 2005, *Magna Cum Laude*

Associate of Arts in Liberal Studies
Cazenovia College, Cazenovia, NY, December 2002, *Magna Cum Laude*

RESEARCH

PUBLICATIONS

Taber-Doughty, T., Bouck, E. C., Tom, K., Jasper, A. D., Flanagan, S. M., & Bassette, L. A. (in-press). *Video modeling and prompting: A comparison of two strategies for teaching cooking skills to students with mild intellectual disabilities.* Education and Training in Autism and Developmental Disabilities.

Bouck, E.C., Taber-Doughty, T., Flanagan, S. M., Szwed, K., & Bassette, L.A. (2010) Is the pen mightier? Using pentop computers to improve secondary students' writing. *Journal of Special Education Technology, 25(4),* 33-47.

Bouck, E.C., Bassette, L.A., Taber-Doughty, T., Flanagan, S. M., & Szwed, K. (2009). Pentop computers as tools for teaching multiplication to students with mild intellectual disabilities. *Education and Training in Developmental Disabilities, 44,* 367-380.

Bassette, L.A., Beck, A., Russell, M., Templin, S., & Brady, C.M. (2007). The effect of a horse oriented curriculum on academic engagement in students with disabilities. *Proceedings of the Equine Science Society, 20,* 78-79.

MANUSCRIPTS SUBMITTED FOR PUBLICATION

Bouck, E.C., Shurr, J., Tom, K., Jasper, A. D., Bassette, L., Miller, B., & Flanagan, S. M. (submitted). *Fix it with TAPE: Repurposing technology to be assistive technology for students with high-incidence disabilities*.

Gama, R., Alberto, P., Bassette, L., Taber-Doughty, T., & Cihak, D. (submitted). *Integrating technology and safety instruction for students with moderate intellectual disabilities.*

Taber-Doughty, T., Szwed, K., Bouck, E.C., Bassette, L.A, & Flanagan, S. M. (submitted). *Spelling on the fly: Investigating a FLYPen™ to improve the spelling skills of elementary students with mild disabilities.*

MANUSCRIPTS IN PREPARATION

Bassette, L.A. & Zentall, S. (in preparation). *A systematic and theoretically-based review of the impact of human animal interactions on human arousal: Implications for children with disabilities.*

Bassette, L.A., Taber-Doughty, T., & Brady, C.M. (in preparation). *The effects of therapeutic horseback riding on conversational skills in adolescents with mild disabilities.*

Bassette, L.A. & Taber-Doughty, T. (in preparation). *Reading with the dogs: The effects of a dog visitation program on elementary students with emotional and behavioral disabilities.*

PRESENTATIONS

National Presentations

Taber-Doughty, T., Bouck, E.C., Tom, K., Jasper, A. D., Flanagan, S. M., & Bassette, L. A. (April, 2011). *Effects of Two Video-Based Instructional Methods for Students with Intellectual Disabilities.* Presentation at the 2011 Council for Exceptional Children Convention and Expo, National Harbor, MD.

Bassette, L.A., Taber-Doughty, T., & Brady, C.M. (April, 2011). *The effects of therapeutic horseback riding on conversational skills in adolescents with mild disabilities.* Poster session. Presentation at the 2011 Council for Exceptional Children Convention and Expo: Kaleidoscope, National Harbor, MD.

Bassette, L.A., Beck, A., Russell, M., Templin, S., & Brady, C.M. (April, 2009). *The effect of a horse oriented curriculum on academic engagement in students with disabilities.* Poster session. Presentation at the 2009 Council for Exceptional Children Convention and Expo: Kaleidoscope, Seattle, WA.

Bouck, E.C., Bassette, L.A., Doughty, Teresa, T., Flanagan, S. M., & Szwed, K. (April, 2009). *Computer pens: Tools for learning writing, math, and spelling.* Presentation at the 2009 Council for Exceptional Children Convention and Expo, Seattle, WA.

Bassette, L.A., Beck, A., Russell, M., Templin, S., & Brady, C.M. (June, 2007). *A follow-up study: The effect of a horse oriented curriculum on academic engagement in students with disabilities.* Presentation at the bi-annual meeting of the Equine Science Society, Hunt Valley, MD.

Bassette, L.A., Beck, A., Russell, M., Templin, S., & Brady, C.M. (November, 2006). *A pilot study: The effects of a horse related curriculum on children with disabilities: A study of academic engagement.* Presentation at the annual meeting of the North American Riding for the Handicapped Association (NARHA), Indianapolis, IN.

Local Presentations

Bassette, L. A. (March, 2011). *A systematic and theoretically-based review of the impact of human animal interactions on human arousal: Implications for children with disabilities.* Presentation at the 2010 Purdue University's 5th Annual Graduate Student Research Symposium, West Lafayette, IN.

Bassette, L. A. (April, 2010). *Reading with the dogs: The effects of a dog visitation program on elementary students with emotional and behavioral disabilities.* Poster session. Presentation at the 2010 Purdue University's 4th Annual Graduate Student Research Symposium, West Lafayette, IN.

Invited Presentations

Bassette, L. A. (October, 2010). *Animal-assisted activities in special education.* Presentation to the Special Education Advisory Council, West Lafayette, IN.

Bassette, L. A. (September, 2010). *The impact of animals on behavior and learning in children with disabilities.* Presentation at Purdue University's Annual College of Education Family Day, West Lafayette, IN.

Bassette, L.A. (March, 2009). *Animal assisted activities and research.* Presentation to the Purdue University Equine Assisted Programs Club, West Lafayette, IN.

TEACHING

UNIVERSITY TEACHING EXPERIENCE

Purdue University, West Lafayette, IN

Co-Instructor, Department of Youth Development and Agricultural Education
YDAE 491 "Introduction to Equine Assisted Programs"   Spring 2010
- Initiated, advertised, and executed an undergraduate course on equine assisted programs as the primary instructor. Responsibilities included orchestrating all aspects of the lecture and labs including lecturing, grading and assigning grades, and organizing guest lecturers.

Co-Instructor, Department of Special Education
EDPS 515 "Applied Behavior Analysis for Teachers"   Fall 2009
- Assisted with the organization and preparation of the graduate level online course. Tasks included assisting students with questions and grading assignments.

Co-Instructor, Department of Special Education
EDPS 265 "The Inclusive Classroom"   Fall 2008 & Spring 2009
- Prepared and organized coursework for the special education teacher preparation class required for all education majors. Activities included preparing and delivering lectures as well as assisting with grade assessments.

Teaching Assistant, Department of Special Education
EDPS 265 "The Inclusive Classroom"   Fall 2007 & Spring 2008
- Assisted with the organization and grading of a special education teacher preparation class required for all education majors.

Teaching Assistant, Department of Youth Development and Agricultural Education
YDAE 491T "Introduction to Equine Assisted Programs"   Spring 2007
- Developed and implemented an undergraduate interdisciplinary course on the use and management of equine assisted programs for people with disabilities. Assignments included creating and presenting lectures, forming lessons plans, and assisting with grade assessments.

Teaching Assistant, Department of Animal Sciences
ANSC 446 "Companion Animal Management"   Fall 2005 & Fall 2006
- Supervised undergraduate students during the laboratory section of the course. Presented lectures and assisted with grade assessments.

ELEMENTARY/SECONDARY TEACHING EXPERIENCE

Special Education Field Experiences, Purdue University, West Lafayette, IN
       Classroom Teaching Assistant/Researcher   August 2005-Present
- Assisted special education teachers in providing instruction through conducting functional behavioral assessments, analyzing IEP goals, implementing interventions, and recording/evaluating student progress.

Therapeion: North American Riding for the Handicapped Association (NARHA)
Therapeutic Riding Member Center, Brookston, IN
      NARHA Certified Riding Instructor   June 2010-August 2010
- Served as a horse-back riding instructor for people with disabilities. Duties included creating lesson plans and instructing students in horseback riding and academic skills and evaluating skill progression.

CHAPS: NARHA Premier Accredited Therapeutic Riding Center, Brookston, IN
      NARHA Certified Riding Instructor   February 2006-August 2007
- Served as a horse-back riding instructor for people with disabilities. Duties included creating lesson plans, instructing students in horseback riding and horse oriented academic classroom lessons, organizing volunteers, caring for the horses, and evaluating students' skill and goal progression.

SERVICE

<u>LEADERSHIP</u>

North American Riding for the Handicapped Association (NARHA)
      NARHA/EFMHA Integration Steering Committee Member   2010
- Selected to work as a committee member to incorporate the mission, vision, and code of ethics for EFMHA and NARHA. Collaborate with the committee to determine future directions and role of the organization in the field of equine assisted activities/therapies.

2009 Council for Exception Children Convention and Exposition
      Session Chair   April 2009
- Served as a presentation chair and assisted by moderating time for presenters.

Council for Exceptional Children - Division of Autism and Developmental Disabilities
Proposal Reviewer   2008-2010
- Selected to critique and analyze proposals submitted to be presented at the annual CEC convention and exposition for the DADD division.

Purdue University, Council for Exceptional Children, Graduate Chapter
      Faculty Representative   2008-2009
- Acted as a liaison between the special education faculty and graduate students. Served as the student representative at faculty meetings and communicated topics of interests between graduate students and faculty.

GRANTS

Purdue University Graduate Student Travel Award (funded, $150)   Spring 2011
> Funding awarded to present at the 2011 Council for Exceptional Children Convention and Exposition.

Dean's Graduate Student Support Program (funded, $200)   Fall 2010
> Funding awarded to purchase data collection instruments and travel expenses to conduct dissertation research.

Horses and Humans Research Foundation - $50,000 (submitted)   Spring 2010
> Submitted research proposal to fund research to examine the effects of equine assisted activities on language abilities in children with high-functioning autism spectrum disorders.

National Institute of Health: Eunice Kennedy Shriver National Institute of Child Health and Human Development - $71,525 (submitted)   Fall 2009
> Submitted research proposal seeking to examine the effects of equine assisted activities on language abilities in children with high-functioning autism to "The Role of Human-Animal Interaction in Child Health and Development (R03) (RFA-HD-09-030)".

Purdue University Service Learning Grant (funded, $350)   Spring 2010
> Funding awarded to buy food and supplies needed for video modeling research project.

Purdue University Graduate Student Travel Award (funded, $150)   Spring 2009
> Funding awarded to present at the 2009 Council for Exceptional Children Convention and Exposition.

Indiana Youth Institute Grant (funded, $719.96)   Fall 2005
> Funding awarded to participate in the North American Riding for the Handicapped Association (NARHA) Registered Instructor and On-Site Workshop/Certification.

PROFESSIONAL AFFILIATIONS

- Council for Exceptional Children (CEC)
    - Division on Autism and Developmental Disabilities
- International Society for Anthrozoology
- North American Riding for the Handicapped Association (NARHA)

FELLOWSHIPS

Technologies in Special Education (TISE) Research Scholar ($50,000)
2009-2011
> Selected as a fellow to receive funding from the Office of Special Education Programs leadership grant to fund doctoral studies and research.

Purdue Research Fellowship ($10,000)   Summer 2008
> Chosen to receive summer departmental funding to work on research projects

HONORS/AWARDS
- Department of Youth Development and Agricultural Education Outstanding M.S. Thesis of 2007
- Purdue University's Animal-Assisted Therapy Certificate
- 2005 Who's Who Among America's College Students
- National Dean's List nominee