2-20-2023

The Impact of a Canine-Assisted Reading Program on Readers Needing Extra Practice

Amanda N. Coffman

Elana Bernstein

Susan C. Davies

Ann F. Justice

INTERNATIONAL LITERACY ASSOCIATION

The Impact of a Canine-Assisted Reading Program on Readers Needing Extra Practice

Amanda N. Coffman, Elana R. Bernstein, Susan C. Davies, Ann F. Justice

This study investigated the impact of incorporating a service dog in programming for students needing extra reading practice. Brief sessions involving reading to a dog improved students' attitudes toward reading.

Much of the research on reading intervention focuses on the development of skills through cognitive strategies; often less attention is paid to the affective side of reading, a domain which includes motivation, interest, and attitude (Taboada Barber & Lutz Klauda, 2020). Factors such as classroom engagement, intrinsic motivation, and perceived competence can predict reading achievement (Froiland & Oros, 2014). These aspects, in combination with a child's early success in reading, lay an important foundation for a child's reading self-concept, which research suggests is a contributing component to reading achievement (Taboada Barber & Lutz Klauda, 2020). Increased opportunities to read aloud in a nonthreatening situation, such as to a dog or other animal that presents a non-judgmental character, can improve reading fluency and enjoyment. This article presents the outcomes of a study examining the impact of a canine-assisted reading program on four second-grade students' reading fluency and attitudes toward reading.

Reading Attitudes and Achievement

Young children typically start school with a positive attitude toward reading, but this positive attitude can decline across grade levels (McKenna et al., 2012; Nootens et al., 2019). Improved attitudes toward reading yield greater motivation to read and increased recreational reading (for pleasure), both of which impact overall reading achievement (Taboada Barber & Lutz Klauda, 2020). Not surprisingly, students who need extra practice in reading often become discouraged, avoid reading out loud, and ultimately dislike reading (McKenna et al., 2012). Reluctant readers read less, resulting in poor reading efficiency and ultimately lower achievement (Žolgar-Jerkovic, Jenko, & Lipec-Stopar, 2018).

Reading attitude and motivation may be influenced by students' lack of confidence in reading or repeated exposure to negative feedback, resulting in an avoidance of negative emotions associated with reading (Friesen, 2009). Educators can improve students' self-esteem and self-concept in reading among those who could use extra practice/motivation, and reduce their anxiety around it, by creating safe opportunities where students can experience reading success. Safe and non-threatening environments are those where students are given the opportunity to practice their reading skills free from judgment.

Oral Reading Fluency and Reading Attitudes

Engaging in regular repeated reading practice improves reading fluency, which improves overall reading skills (Swain, Leader-Janssen, & Conley, 2017). It comes as no surprise

Amanda N. Coffman is currently a School Psychologist at Building Bridges Therapy Center in Plymouth, MI, USA; email amandapratercoffman@gmail.com.

Elana R. Bernstein is an Assistant Professor in School Psychology at the University of Dayton in Dayton, OH, USA; email ebernstein1@udayton.edu.

Susan C. Davies is a Professor in School Psychology and the Leary Chair for Innovation in Education, Health and Wellness at the University of Dayton in Dayton, OH, USA; email sdavies1@udayton.edu.

Ann F. Justice is currently a School Psychologist in Springboro Community City School District in Springboro, OH, USA; email anniefj28@gmail.com.

 doi:10.1002/trtr.2192

then that repeated reading interventions are so commonly employed for readers needing extra practice—they are effective (Kim et al., 2017). However, such strategies can be tedious for students and may result in decreased reading enjoyment (De Naeghel et al., 2012; Smith, Smith, Gilmore, & Jameson, 2012). Leathers (2016) described this phenomenon in a second grader who avoided rereading texts, despite needing crucial practice opportunities to build his skills. The student desired a purpose for rereading, specifically, an audience to read to.

Interventions that address the affective side of reading may lead to more proficient and engaged readers (Linder et al., 2018), who enjoy reading. Raffaele Mendez, Pelzmann, and Frank (2016) conducted a pilot evaluation of an intervention called *Reading by Design*, aimed at increasing students' reading skills, but which also targeted improving students' enjoyment and attitude about reading, to increase their motivation to read. The emphasis was on building skills with methods that reduce frustration and increase enjoyment of reading. Positive outcomes (measured by improved oral reading fluency [ORF]) of this initial study suggest an integrated approach to reading intervention that addresses cognitive and affective aspects of learning/loving to read as a promising intervention strategy. Innovative approaches to improve students' oral reading skills while *also* maintaining their engagement in, and enjoyment of reading are needed.

PAUSE AND PONDER

- What steps would need to be taken to incorporate a service dog in your school and from where would you need to seek buy-in? Are service dogs already used for other purposes in your school?
- How might a service dog be used in your school to assist readers needing extra practice/motivation? How feasible would it be? What barriers do you foresee?
- Which students would be best suited to read with a service dog? What reading outcomes would you expect as a result?

Canine-Assisted Reading Program

Readers in need of extra practice are typically placed in reading intervention programs where they are expected to read to an adult in some capacity. The emphasis in many reading interventions on oral reading may impact a student's willingness to practice reading, including outside of the intervention, further contributing to their reading struggles (Henderson et al., 2020).

The purpose of canine-assisted literacy programs is to create a non-threatening environment for readers to practice reading. A dog's presence influences the tone in the room and the circumstances of the task at hand (Breslau, 2015). Since canines are not capable of showing judgment, students may tend to feel more comfortable with their reading abilities and be more inclined to read in future situations. Canine-assisted reading programs are not entirely new. In fact, a 1983 study by Friedmann, Katcher, Thomas, Lynch, and Messent found that when children were asked to read aloud to a therapy dog, their blood pressure and heart rate reduced to normal levels and observable signs of anxiety decreased. Shaw (2013) assessed the qualitative perspectives of students who engaged in the Reading Education Assistance Dog (READ) program, finding higher reported confidence and comfort during their READ sessions. Smith (2009) evaluated the SitStayRead program (an 8-week intervention program consisting of one-hour sessions per week) and found a 20% increase in ORF scores for students who read to the dog compared with the teacher. Levinson et al. (2017) evaluated the effect of reading aloud to a therapy dog and handler following five 30-min sessions on children's ORF using a post-test only control group design. Students' ORF performance improved more when reading aloud to a therapy dog. There was no significant impact on students' general attitudes toward reading.

Linder et al. (2018) conducted a pilot study examining the effect of a 6-week animal-assisted intervention on reading skills and attitudes in second-grade students with average reading abilities. The students read to a registered therapy dog for 30 min once weekly. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2009) were used to measure outcomes four times during the study (baseline, weeks 2, 4, and 6) as well as the Elementary Reading Attitude Survey (ERAS; Mohd-Asraf and Abdullah (2016)) in a pre/post fashion. Their findings yielded no significant difference in reading skills; however, participants in the intervention group demonstrated a statistically significant improvement in attitudes toward academic reading from pre- to post-intervention, although not toward recreational reading.

More recently, Fung (2019) conducted a twice-a-week, eight-session canine-assisted reading intervention pilot study with three lower-performing third-grade students in Hong Kong. Outcomes in this study were measured through reading fluency and accuracy skill assessments and physiological stress response (via heart rate variability) to determine if lower levels of relaxation would increase reading fluency for students. Positive improvements in participants' reading fluency were reported, ranging from 19 to 29% gains in reading speed; no improvements were reported in reading accuracy. Additionally, increased relaxation was observed in all three participants following

the 20-min sessions, although some limitations were reported in the measurement of heart-rate variability.

Finally, Rousseau and Tardif-Williams (2019) recently conducted a study with 17 children in grades one through three in which their motivation to read was assessed across two conditions: with a therapy dog and without a therapy dog. Theirs is the first in this body of literature to use a within-subjects design, and their findings suggest that the presence of the dog positively impacted the students' reading motivation and persistence. Children reported higher levels of interest and competence when reading in the presence of a canine than in the absence of one. The length of time spent reading was particularly noted to be significantly longer in the therapy dog group.

Clearly, canines can provide emotional support, and reading out loud to canines can allow a child to read in a nonjudgmental environment. In this safe environment, student motivation and attitudes toward reading in the future have also been shown to increase. Thus, the purpose of this study was to investigate the impact of a canine-assisted reading program on students' reading. This study explored the following research questions: (1) what is the impact of a canine-assisted reading program on second-grade students' ORF performance? and (2) what is the impact of a canine-assisted reading program on second-grade students' attitudes toward reading?

Method

The present study looked at four participants to examine the impact of a canine-assisted reading program on students' ORF performance and attitudes toward reading. Participants served as their own control. The repeated weekly measurement strengthens the conclusions drawn, and in our case, recruitment of a large sample was not feasible.

Setting and Participants

The study was approved by the Institutional Review Board prior to data collection. Parent consent was obtained for each student participant; pseudonyms were used for all participants. The program was implemented in a suburban public elementary school located in a small school district (school enrollment of 683 students) in the Midwest region of the United States. The program was conducted during school hours on school property in an office with minimal distractions.

Participants included second-grade students referred by their classroom teacher due to below-average (below the 25th percentile) benchmark scores on the district's ORF benchmarking assessment, which included AIMSweb R-CBM and Developmental Reading Assessment scores. These measures were only used to initially identify students eligible to participate in the canine-assisted reading program; subsequent measurement occurred through the administration of DIBELS Next ORF probes, and 87 words correct per minute (WCPM) was used as the point of comparison and target goal for participants.

Henry. Henry is an 8-year-old male. During the baseline phase, Henry read 72 WCPM, which was below the benchmark of 87 WCPM. During canine-assisted reading, Henry was observed petting the service dog while reading to her. Halfway through the study, Henry's mom emailed the researcher and shared that Henry started reading to the family dog before bedtime. On the last day of intervention, Henry gave the service dog a picture that he drew of them reading together.

Joy. Joy is a 7-year-old female. During the baseline phase, Joy read 77 WCPM, 10 words per minute below the benchmark of 87 WCPM. Joy was observed petting the service dog, and showing the dog pictures while she read.

Susie. Susie is an 8-year-old female. During the baseline phase of this study, Susie read 57 WCPM, compared with the benchmark of 87 WCPM. During canine-assisted reading, Susie engaged in task-avoidant/escape behaviors; she spent a lot of time selecting books and occasionally stopped reading to interact with the dog, which required a targeted adult prompt from the researcher to get back on task.

Molly. Molly is a 7-year-old female. During the baseline phase, Molly demonstrated off-task verbal and motor behaviors, which impacted her ORF performance; she read 70 WCPM on the benchmark, compared with the 87 WCPM grade level expectation. Molly demonstrated greater active engagement during canine-assisted reading than in the baseline phase.

Measures

DIBELS Next Assessment. ORF was measured with the Dynamic Indicators of Basic Early Literacy Skills (DIBELS Next, 2011) ORF measures, a continuous scale based on the number of words read correct orally from a passage in 1 min (Good & Kaminski, 2009). DIBELS Next is a nationally recommended assessment of reading fluency and is a valid and reliable tool to measure fluency in second-grade students (Powell-Smith et al., 2010).

Elementary Reading Attitude Survey. The ERAS is a 20-item survey measuring student attitudes toward reading

(McKenna & Stahl, 2009; Mohd-Asraf & Abdullah, 2016). The ERAS contains two scales: attitudes toward recreational reading and attitudes toward academic reading, which are combined for a total score. Responses are provided on a 4-point Likert scale with cartoon image anchors provided instead of numerals. Students select the picture that best describes their feeling toward reading (e.g., "How do you feel about starting a new book?").

Procedures

The service dog in-training had proof of liability insurance protection from the organization 4 PAWS for Ability and was approved to participate in these types of activities during the dog's socialization training. The researcher ensured that students were not allergic to dogs, were not afraid of dogs, and that they wanted to participate in the study. If there is a student who is allergic or afraid of dogs, there are alternative supplementary reading programs that could assist student reading. Students should never have to partake in a program that may make them uncomfortable or at risk for any medical issues. Students participated in the canine reading program during their independent reading time.

The same outcome variables (ORF scores and attitude toward reading) and treatment (canine-assisted reading program) were used with each participant, with staggered implementation to start. Each participant received 12 canine-assisted reading sessions over a 6-week period, which was selected because the researchers determined that daily canine-assisted reading might not be feasible in a real-world classroom setting.

The canine-assisted reading program and DIBELS Next probes were administered and audio-recorded during the regular classroom session in a quiet office outside the main classroom. Two trained independent raters listened to and scored four progress-monitoring probes to establish inter-rater reliability. The reliability ranged from 98% to 100% for all probes scored.

During the baseline phase, the examiner administered a randomly selected second-grade-l evel DIBELS Next probe once per week for five consecutive weeks. During the 12 reading sessions, the examiner provided a basket containing instructional-l evel books selected by the teacher. The teacher selected books from her classroom-leveled book collection with the aim of choosing a variety of topics; the student chose books to read to the dog for 20 min, selecting additional books until they had read for the full time. Part of the purpose of canine-assisted reading is that the child might feel more comfortable making mistakes or struggling to sound out a word when reading to a dog rather than with an adult, so instructional-level texts were selected because that is the highest level at which a reader is not independent but can access text quickly and with no or few errors. The researcher documented books read to ensure there was minimal story repetition and worked with the classroom teacher to refill and refresh the basket with new books at the students' instructional level. Participants' instructional level was determined in consultation with the student's classroom teacher using guided reading levels (rated from A to Z) from the school's Fountas and Pinnell Leveled Literacy Intervention (LLI).

In the first canine-assisted reading session, the examiner introduced the dog and encouraged the student to pet the dog if they wanted. Following a protocol when talking about the dog ensured consistency across participants and reading sessions. The student then read books from the basket to the dog for 20 min. Later in the week, the researcher met with the students for their second session, and the students followed the same protocol: they chose books to read to the dog for 20 min. At the second weekly reading session's conclusion, the researcher administered one DIBELS Next probe at the second-grade level to obtain an ORF score for progress monitoring; student progress was monitored once per week after the second session for the week. Second-grade-level DIBELS Next probes were selected based on the students' grade level; probes remained at the second-grade level from baseline through intervention. Twelve DIBELS Next reading fluency progress-monitoring probes were randomly selected to assess students' ORF progress.

In all subsequent sessions, the examiner encouraged the student to pet and interact with the dog prior to reading, and described the dog's interest in hearing the stories the student read. Once reading began, the examiner listened without taking notes and only aided when asked by the student or if the student struggled with a word for more than 3 seconds, consistent with the procedures outlined in the DIBELS Next ORF assessment.

Data Analyses

ORF data were analyzed using two methods: visual analysis of graphed data (level, trend, variability, and immediacy of the effect; Kratochwill et al., 2010) and calculation of the slope-level change (SLC) statistic to determine the effect size (see Table 1). The SLC method removes the problem of autocorrelation of the data, thereby reducing the possibility of a type 1 error. The ERAS data were analyzed by comparing students' percentile ranks across phases.

Table 1
Results of Visual Analysis of Oral Reading Fluency Data

	Baseline				Intervention				Difference				Slope-level change estimate
Participant	Level	Slope	Trend score	SD	Level	Slope	Trend score	SD	Level	Slope	Trend score	SD	Effect size
Henry	72.0	−2.7	−2.5	13.1	92.0	4.7	7.2	9.9	20.0	7.4	9.7	3.2	9.7
Joy	77.8	5.0	6.6	15.2	97.7	2.9	3.7	8.8	19.9	−2.1	−2.9	6.4	−2.9
Susie	57.8	−1.1	0.8	11.9	62.5	2.9	1.8	8.5	4.7	4.0	1.0	3.4	1.0
Molly	70.0	0.6	3.1	17.7	97.8	2.6	4.2	6.0	27.8	2.0	1.0	11.7	1.0

Notes. Level: The student's level of performance (number of words read correctly per minute).
Slope: Direction of slant and a calculation of the specific rate of change (y = mx + b; m = slope).
Trend score: An average of the differences between each adjacent score in a phase (baseline/intervention).
Standard deviation (SD): Mean of the deviation of scores.
Slope-level change estimate (effect size): Difference between the detrended baseline mean and de-trended intervention mean, which is equal to the difference between the baseline trend score and intervention trend score.

Results

Visual Analysis

Figure 1 displays the baseline and canine-assisted reading data for each of the four participants: Henry, Joy, Susie, and Molly. Henry read an average of 72 WCPM in baseline and 92 WCPM in the reading program sessions. Joy read 77.8 WCPM in baseline and 97.6 WCPM in the program. Susie read 57.8 WCPM in baseline; she read 62.5 WCPM in the program. Molly read 70 WCPM in baseline and 97.8 WCPM in the canine-assisted reading sessions. Henry and Susie had a decrease in words read correctly during their baselines but saw an increase in reading accuracy during the canine program. While their reading accuracy was increasing for both Joy and Molly, their baseline data also demonstrate an increase (see Table 1).

Henry, Joy, Susie, and Molly's 3- point baseline averages (WCPM) and 3- point intervention averages (WCPM) were 72.3 and 84.0; 85.0 and 96.0; 50.3 and 56.3; and 74.6 and 93.0, respectively. Each participant's 3- point average increased compared with baseline, demonstrating that participants performed at a higher level during the reading sessions and with less variability; this suggests that the program had an immediate effect.

ERAS Scores. Participant scores on the ERAS are displayed in Figure 2. Prior to the canine-assisted reading sessions, Henry indicated a neutral attitude toward reading; and at the end of the program, he indicated a stronger positive attitude toward reading. Joy's score on the ERAS aligned with a high positive attitude toward reading and remained high and stable at the conclusion of the program. Susie's initial score on the ERAS was a very negative attitude; however, her final score was more neutral. Molly's initial score indicated a significant negative attitude toward reading, and her final score at the conclusion of the program was more neutral, in the average range for second grade. While Henry's, Susie's, and Molly's ERAS scores experienced increases at the last measure, Joy's scores remained relatively high and stable throughout the intervention.

Observational Data. Based on observational data and the variability observed in the participants' baseline scores, the researcher hypothesized that students may have struggled with attention difficulties, sensory processing difficulties, and/or performance anxiety associated with reading aloud. While these areas were not directly measured, observational notes were recorded following each reading session, and coupled with the quantitative data, can present a richer description of the outcomes observed. For example, during the baseline phase, Molly demonstrated off-task verbal and motor behaviors, which impacted her ORF performance; this may be why we see great variability in her ORF scores. During the reading sessions, Molly entered the room and asked the service dog in-training to lie across her lap while she read. After the service dog in-training complied with this request, Molly was observed showing the dog pictures and petting the dog while she read. Interestingly, the researcher observed that Molly demonstrated greater active engagement during this phase; perhaps, the service

Figure 1
Participant's Weekly Oral Reading Fluency Scores

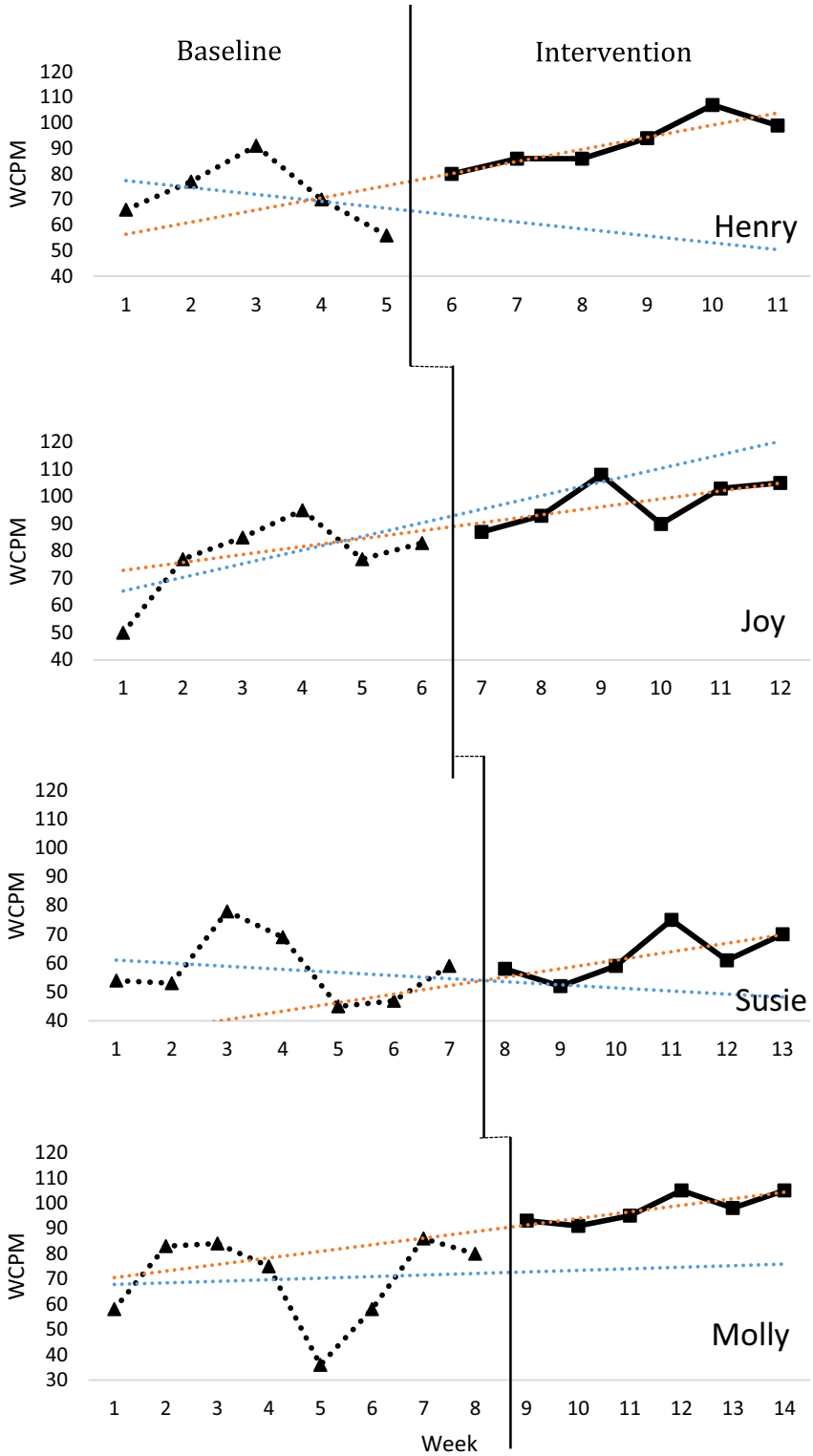
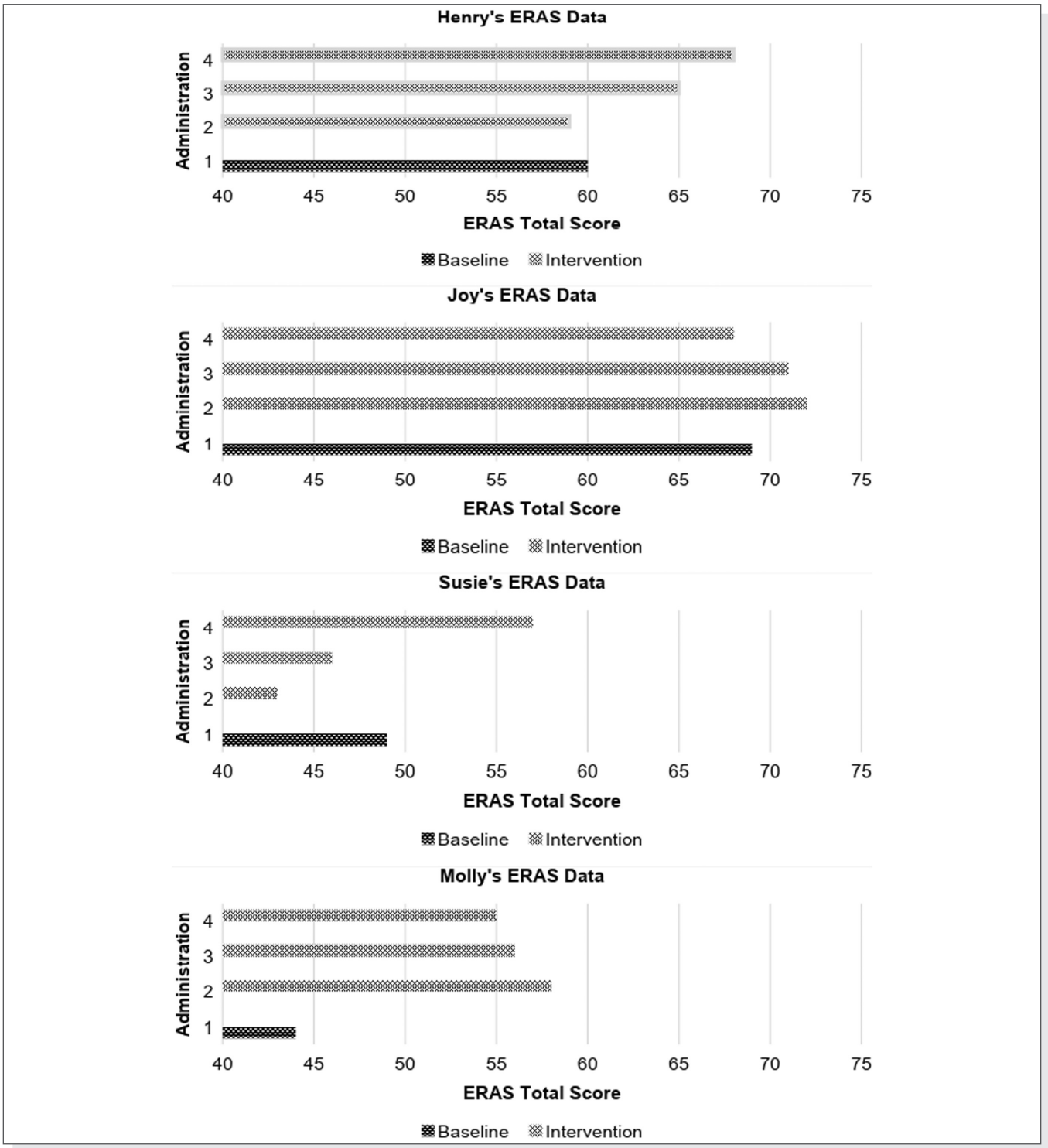


Figure 2
Elementary Reading Attitude Survey Total Scores by Participant



dog in-training provided the necessary sensory input that she needed to concentrate and focus on the task.

Henry demonstrated behaviors suggestive of performance anxiety such as trembling hands, voice, and shortness of breath when he was asked to read aloud during the baseline phase of the study. During the reading sessions, Henry appeared relaxed while reading aloud; this was demonstrated through observations of his slackened posture while lying next to the service dog in-training on the floor and his use of prosody and inflection when reading aloud during the canine-assisted reading sessions.

In summary, moderate improvements in ORF were observed in three of the four participants, particularly when examining the trendlines in the graphed repeated measurement data; without the program, Henry, Susie, and Molly's reading was trending in the non-desired direction. Additionally, there was less variability in the intervention data than was in the baseline phase. Finally, participants demonstrated significant improvement in attitudes toward reading, with the exception of Joy, whose attitude remained stable throughout the study.

Implementing Canine-Assisted Reading at Your School

Reading to a dog is a great option for tier two programs within a school's multi-tiered system of support, and one that requires few resources (other than time and space), if dogs/handler volunteers are available or used in other ways in the school. A canine-assisted reading literacy option is suggested as a supplementary program in addition to other evidence-based interventions.

It should be noted that the ORF data collected in this study demonstrate that the canine-assisted reading program may have targeted the affective side of reading behaviors more than the child's reading skills. For example, Henry, Molly, and Joy's baseline data were variable (demonstrated by inconsistent high and low ORF WCPM scores), potentially suggesting a root cause other than fluency challenges. Consequently, Susie's baseline data scores were much lower (by approximately 20 WCPM) and relatively flat during the program, in comparison, suggesting, perhaps, she had a true reading difficulty requiring direct skill or strategy instruction. Furthermore, Henry, Molly, and Joy's data demonstrated an immediate effect after the first few weeks of the program when they increased by 11.6, 11, and 18.3 WCPM respectively. In contrast, Susie demonstrated less of an immediate effect, with an increase of 6 WCPM. This highlights the importance of closer examination of screening data for students with inconsistent performance, particularly when making recommendations for interventions and support. Furthermore, it may prove helpful to assess and address the affective side of a child's reading behavior. A canine-assisted reading program may be a better fit for targeting the affective variables of learning and loving to read.

The positive impact of the canine-assisted reading program in this study may, perhaps, be attributed to the students' perception of feeling less pressure and stress in the absence of teachers and peer observers while reading aloud, although this certainly warrants further examination. The service dog in-training was a nonjudgmental listener unable to criticize or correct students' reading, and may have the potential to alleviate symptoms of performance anxiety (Lane & Zavada, 2013). For example, when asked to read aloud, students experience physiological changes such as a quickened pulse and increased heart rate (Siegel, 2004), but the presence of the service dog in-training helped the body return to homeostasis or a more relaxed state (Lane & Zavada, 2013). Fung (2019) reported similar findings when measuring direct physiological responses to the presence of the dog, which, in turn, resulted in improved reading fluency.

Implications for Educators

Based on the results of this study and the research literature on canine-assisted instruction, educators seeking innovative options for reading interventions are encouraged to consider canine-assisted programs. Moderate improvements in reading fluency were observed in most participants in our study, and attitudes toward reading significantly improved or remained stable in one participant's case. Improved attitudes about reading may lead to more practice, which may, in turn, lead to improved reading skills. Thus, such programs may be particularly beneficial for addressing affective variables in a student's reading development, such as attitude, motivation, and stamina. Having students read to a canine is a promising way to encourage oral reading in a nonthreatening environment. Readers in need of extra practice are often in reading intervention programs where they are required to read to an adult. This can create anxiety, which may affect the student's willingness to practice their reading, thereby contributing to their struggles in this area (Henderson et al., 2020). With canine-assisted reading, students can read books of their choice out loud to a dog without fear of making mistakes or being monitored. Instead, they have the attention of an animal who simply enjoys the sound of the child's voice, thereby reinforcing

continued reading. Furthermore, the dog's presence in the classroom can create a relaxed and positive tone in the classroom overall (Breslau, 2015), potentially increasing opportunities for socialization and decreasing anxiety.

Note that this program did not provide direct reading instruction or highly structured practice; therefore, students in the acquisition phase will still require these intervention elements. Teachers might structure reading time during which they provide direct instruction to students requiring intensive intervention, while students ready for more independent practice use canine-assisted reading or read independently.

If a school cannot bring a service animal in for children to read to, teachers might suggest to parents that children read out loud to the family dogs—or another pet—at home. Teachers could also provide an array of plush toys or dolls that children can read to in the classroom.

Finally, a recommendation specific to this program implementation is to streamline the intervention sessions by pre-selecting and limiting the reading material used during each intervention session to two to four books to choose from. In our study, students chose books to read from a basket containing 10–12 books; the primary researcher found there were too many options; one student delayed task initiation by looking extensively through all of the books.

Limitations

Students were referred to participate in this study by their classroom teacher; however, it would have been better if referrals followed a data-driven decision-making process with a careful task analysis of students' reading skills. All participants were selected from the same elementary classroom, and the primary researcher was also the trained dog handler in the study. In addition, it is possible that the presence of the dog trainer may have had an impact on the students' outcomes. Furthermore, readers who need extra practice/motivation need more time in text. The design of twice-weekly canine-assisted program is below the intensity of what literature suggests for most tier 2 interventions. Additionally, the texts from which students selected during the intervention were at their instructional, not independent, levels, which offer less fluency practice given the decoding skills required. Different results may have been achieved with independent texts.

While the ORF probes were at the same reading level for each student, they did vary from student to student, and session to session, and may not have been a reliable indicator of overall reading fluency and ORF slope. We also do not know whether it was the dog or simply the reading practice that led to changes; it is possible that just reading to something else as opposed to a dog might lead to improved attitudes toward reading. Furthermore, progress monitoring probes were administered at the end of each session, after students read to the canine. This practice before the probes may have impacted the progress monitoring scores. Finally, a notable threat to external validity in this study is maturation. Although the staggered start helps to reduce this problem, it is without question that the seven and 8-year-old participants developed physically, emotionally, socially, cognitively and academically throughout the 12-week study. The novelty of the situation also may have made a difference in the attitudes of the students toward reading. Finally, it is important to note two students increased fluency during the baseline phase of data collection; while they also increased reading fluency during intervention, the fact of the increase during baseline indicates we cannot be certain the program was the sole cause for improvement.

Future Research

Future research might involve more highly controlled studies to evaluate the effect of students reading with both canines and other nonthreatening entities, such as felines or stuffed animals. It would also be helpful to study the effects of the intervention at different levels of intensity (e.g., daily intervention vs. twice-weekly).

In addition to evaluating ORF, future researchers should consider progress monitoring reading comprehension, as well as the program's impact on students' active engagement during reading activities. Active engagement could be measured with time-on-task observations of the student during the baseline and intervention phases. Performance anxiety in reading fluency assessments and interventions is an under-researched area of study that may be important, particularly if schools continue to focus on it to meet curriculum standards. Finally, closer examinations, both quantitative and qualitative studies, of the impact of canine-assisted literacy programs specifically on the affective domain of reading are needed.

Reading aloud to an adult can create anxiety, which may affect the student's willingness to practice their reading, thereby contributing to their struggles in this area (Henderson et al., 2020). This study evaluated the use of a canine-assisted reading program to improve students' ORF performance and attitude toward reading. When reading to a canine, students read more correct words per minute and with more consistency over time than when they read aloud to an adult. In addition, students' attitudes toward

TAKE ACTION!

1. Compile a team to implement change in regard to service dogs in the school.
2. Research and select locations that train therapy dog handlers.
3. Identify independent-level texts for students to practice reading with the therapy dog.
4. Work through logistical questions (where will the intervention take place, who will implement the program, etc.).
5. Implement the program and progress monitor student growth and the effectiveness of the program.

reading improved following the program; these findings reinforce the need for more innovative approaches to providing reading interventions that help motivate students to practice their reading skills and increase or maintain their reading enjoyment.

Acknowledgments

We would like to extend gratitude to the students who participated in the study and the school administrators who helped make the study possible.

Funding Information

This study was not funded.

Conflict of Interest

None.

Ethics Statement

This study was approved by the Institutional Review Board at the University of Dayton.

Permission to Reproduce Material from other Sources

Not applicable.

Data Availability Statement

Data are available upon request of the second author.

REFERENCES

Breslau, S. (2015). A cigar is sometimes just a cigar, but a dog is never just a dog. *International Journal of Group Psychotherapy*, *65*(1), 115–123. https://doi.org/10.1521/ijgp.2015.65.1.115

De Naeghel, J., Van Keer, H., Vansteenkiste, M., & Rosseel, Y. (2012). The relation between elementary students' recreational and academic reading motivation, reading frequency, engagement, and comprehension: A self-determination theory perspective. *Journal of Educational Psychology*, *104*(4), 1006–1021. https://doi.org/10.1037/a0027800

Dynamic Measurement Group. (2011). *DIBELS Next Assessment Manual*. Retrieved from November 23, 2016. https://dibels.org/next/downloads/DIBELSNext_AssessmentManual.pdf

Friesen, L. (2009). How a therapy dog may inspire student literacy engagement in the elementary language arts classroom. *Learning Landscapes*, *3*(1), 105–122.

Froiland, J. M., & Oros, E. (2014). Intrinsic motivation, perceived competence and classroom engagement as longitudinal predictors of adolescent reading achievement. *Educational Psychology*, *34*(2), 119–132.

Fung, S. C. (2019). Effect of a canine-assisted read aloud intervention on reading ability and physiological response: A pilot study. *Animals*, *9*, 1–13. https://doi.org/10.3390/ani9080474

Good, R. H., & Kaminski, R. A. (2009). What are DIBELS NEXT? Dynamic indicators of basic early literacy skills. Retrieved from. https://dibels.org/dibels.html

Henderson, L., Grove, C., Lee, F., Trainer, L., Schena, H., & Prentice, M. (2020). An evaluation of a dog-assisted reading program to support student wellbeing in primary school. *Children and Youth Services Review*, *118*, 105449. https://doi.org/10.1016/j.childyouth.2020.105449

Kim, M. K., Bryant, D. P., Bryant, B. R., & Park, Y. (2017). A synthesis of interventions for improving oral reading fluency of elementary students with learning disabilities. *Preventing School Failure*, *61*, 116–125. https://doi.org/10.1080/1045988X.2016.1212321

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). Single-case designs technical documentation. Retrieved from What Works Clearinghouse website. http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf

Lane, H. B., & Zavada, S. D. W. (2013). When reading gets ruff: Canine-assisted reading programs. *The Reading Teacher*, *67*(2), 87–95. https://doi.org/10.1002/TRTR.1204

Leathers, J. (2016). Fluency: It's all about audience. *The Reading Teacher*, *70*(4), 499. https://doi.org/10.1002/trtr.1534

Levinson, E. M., Vogt, M., Barker, W. F., Jalongo, M. R., & Zandt, P. V. (2017). Effects of reading with adult tutor/therapy dog teams on elementary students' reading achievement and attitudes. *Society & Animals*, *25*, 38–56. https://doi.org/10.1163/15685306-12341427

Linder, D. E., Mueller, M. K., Gibbs, D. M., Alper, J. A., & Freeman, L. M. (2018). Effects of an animal-assisted intervention on reading skills and attitudes in second grade students. *Early Childhood Education Journal*, *46*, 323–329. https://doi.org/10.1007/s10643-017-0862-x

McKenna, M. C., Conradi, K., Lawrence, C., Gee Jang, B., & Meyer, J. P. (2012). Reading attitudes of middle school students: Results of a U.S. survey. *Reading Research Quarterly*, *47*(3), 283–306. https://doi.org/10.1002/rrq.021

McKenna, M. C., & Stahl, K. A. (2009). *Assessment for Reading instruction*. Guilford Press.

Mohd-Asraf, R., & Abdullah, H. (2016). Elementary schoolers' attitudes toward reading in English: How boys feel relative to girls. *English Language Teaching*, *9*(6), 134–140. https://doi.org/10.5539/elt.v9n6p134

Nootens, P., Morin, M., Alamargot, D., Goncalves, C., Venet , M., & Labrecque, A. (2019). Differences in attitudes toward reading: A survey of pupils in grades 5 to 8. *Frontiers in Psychology*, *9*, 1–13. https://doi.org/10.3389/fpsyg.2018.02773

Powell-Smith, K. A., Good, R. H., & Atkins, T. (2010). DIBELS next ORF readability study (tech. Rep. No. 7). Eugene, OR: Dynamic Measurement Group.
Raffaele Mendez, L. M., Pelzmann, C. A., & Frank, M. J. (2016). Engaging struggling early readers to promote reading success: A pilot study of reading by design. *Reading & Writing Quarterly*, *32*(3), 273–297. https://doi.org/10.1080/10573569.2014.986592
Rousseau, C. X., & Tardif-Williams, C. Y. (2019). Turning the page for spot: The potential of therapy dogs to support reading motivation among young children. *Anthrozoös*, *32*, 665–677. https://doi.org/10.1080/08927936.2019.1645511
Shaw, D. M. (2013). Man's best friend as a reading facilitator. *The Reading Teacher*, *66*(5), 365–371. https://doi.org/10.1002/RTRT.1136
Siegel, W. L. (2004). The role of animals in education. *Revision*, *27*(2), 17–26.
Smith, C. E. (2009). An analysis and evaluation of sit stay read: Is the program effective in improving student engagement and reading outcomes? (unpublished doctoral dissertation). National-Louis University, Illinois.
Smith, J. K., Smith, L. F., Gilmore, A., & Jameson, M. (2012). Students' self-perception of reading ability, enjoyment of reading and reading achievement. *Learning and Individual Differences*, *22*, 202–206. https://doi.org/10.1016/j.lindif.2011.04.010
Swain, K. D., Leader-Janssen, E. M., & Conley, P. (2017). Effects of repeated reading and listening passage preview on oral reading fluency. *Reading Improvement*, *54*(3), 105–111.
Taboada Barber, A., & Lutz Klauda, S. (2020). How reading motivation and engagement enable reading achievement: Policy implications. *Policy Insights From the Behavioral and Brain Sciences*, *7*(1), 27–34. https://doi.org/10.1177/2372732219893385
Žolgar-Jerković, I., Jenko, N., & Lipec-Stopar, M. (2018). Affective factors and reading achievement in different groups of readers. *International Journal of Special Education*, *33*(1), 201–211.

MORE TO EXPLORE

- Support for starting your own reading program: https://www.readingwithrover.org/volunteer/start-your-own-reading-program/
- Podcasts:
  - A reading specialist who has a team of therapy dogs: https://www.northernpublicradio.org/post/meet-reading-specialist-her-team-therapy-dogs-teachers-lounge-podcast
  - Therapy dogs in the school setting: https://www.teachermagazine.com/au_en/articles/podcast-therapy-dogs-in-school-settings
- Information about R.E.A.D. program: http://www.therapyanimals.org/R.E.A.D.html
- Lane, H. B., & Zavada, D. W. (2013). When reading gets ruff: Canine-assisted reading programs. *The Reading Teacher, 67*(2), 87–95.
- Shaw, D. M. (2013). Man's best friend as a reading facilitator. *The Reading Teacher, 66*(5), 365–371. https://doi.org/10.1002/RTRT.1136