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COMBINED ACADEMIC AND BEHAVIORAL SUPPORTS FOR STRUGGLING READERS WITH EMOTIONAL/BEHAVIORAL DISORDERS

by

Danika Lang

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

Major: Educational Studies

(Special Education)

Under the Supervision of Professors Suzanne Kemp and John Maag

Lincoln, Nebraska

August, 2024

COMBINED ACADEMIC AND BEHAVIORAL SUPPORTS FOR STRUGGLING READERS WITH EMOTIONAL/BEHAVIORAL DISORDERS

Danika Lang, Ph.D.
University of Nebraska, 2024

Advisors: Suzanne Kemp and John Maag

The present study aims to examine the effects of a combination of academic and behavioral supports on students with emotional/behavioral disorders (EBD) who are also struggling readers. A multiple baseline across participants single case design was used to measure the impact of an evidence-based systematic phonics program, in combination with instruction in self-monitoring and self-evaluation via goal setting, on students' word identification/decoding skills, oral reading fluency, and on-task behavior. Curriculum-based progress monitoring measures in nonsense word fluency and oral reading fluency were used to assess participants' progress in reading. Momentary time sampling was the behavior recording method used to measure participants' rate of on-task behavior. The purpose of these assessments was to determine whether the addition of self-monitoring and self-evaluation instruction resulted in improvements in word identification/decoding skills, oral reading fluency, and rate of on-task behavior for participants above and beyond systematic phonics instruction alone.

DEDICATION

This dissertation is dedicated to my students. All of you, from my kindergartners all the way up to my preservice teachers, have shown me the importance of this work. You are the reason I do what I do and have motivated me through the most challenging times in my career. Thank you for helping me understand how much this matters.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my faculty advisors and dissertation committee members: Drs. Suzanne Kemp, John Maag, Ed Daly, and Susan Loveall. You all are my dream team, and I could not have asked for better professionals with whom to collaborate. I also want to thank my research assistant, Ms. Sydney Hobza. I truly could not have finished this project without you, and I'd be hard pressed to find a better person for this role. I want to convey my genuine appreciation to the graduate coordinator for the Department of Special Education and Communication Disorders, Ms. Jill England. Thank you, Jill, for walking with me every step of the way. I've loved sharing this journey with you. I'd also like to express my sincere gratitude to my unofficial mentor, Dr. Pam Bazis. The professional expertise and unwavering support you have provided me has been invaluable. Working with you has made me better on all accounts. Finally, thank you to my amazing and wonderful mother. You are the most caring person I have ever met, and your compassion has inspired me to persevere in the challenging but rewarding field of special education. Thank you for editing seven years' worth of my graduate school papers, including this one.

Table of Contents

List of Tables

List of Figures

List of Appendices

CHAPTER 1

Introduction

Reading is a foundational skill for academic success (Benner et al., 2010; Honig et al., 2018; McKenna et al., 2021). More specifically, all facets of reading, including decoding, oral reading fluency, and reading comprehension, are essential for learning all other academic subject areas. Students must first be able to "learn to read" before they can "read to learn" in order to successfully comprehend and demonstrate their understanding in a variety of other subjects such as science, social studies, and mathematics (Chall, 1996; Goldenberg, 2020). Without the solid foundation that reading mastery provides, children are susceptible to widespread academic failure and future challenges in postsecondary education as well as in the workforce (McKenna et al., 2021).

Unfortunately, a low percentage of students in the United States are currently meeting grade level expectations in reading. According to results from the National Assessment of Educational Progress (NAEP, 2022), the overall average score for students in both fourth and eighth grade on the 2022 reading assessment decreased by three points since the last national assessment in 2019. Each content area evaluated by NAEP assessments (i.e., math, reading, writing, and science) has three achievement levels: "basic," "proficient," and "advanced," where "proficient" indicates solid academic performance and a demonstration of competency in the subject matter that includes content-specific knowledge, application, and analytical skills (U.S. Department of Education, 2022). The "basic" and "advanced" achievement levels indicate student performance that is below or above the NAEP proficiency level, respectively. According

to the most recent NAEP reports, 37% of fourth grade and 30% of eighth grade students performed below the NAEP basic level in reading, while 66% of fourth grade and 69% of eighth grade students performed below the NAEP proficient level (U.S. Department of Education, 2022). These statistics are alarming as they indicate that over half of fourth and eighth students are failing to meet grade level standards in reading.

Although reading can be challenging for many students, some subgroups of students experience more difficulty learning to read than others. Students with learning disabilities are an example of one such subgroup. Students with learning disabilities are characterized by impairments "in one or more basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations," (Individuals with Disabilities Education Act [IDEA], 2004). These impairments make it more challenging for students with learning disabilities to be successful in reading, writing, and/or performing mathematical calculations, depending on their specific area(s) of deficit. Students with emotional or behavioral disorders (EBD) are another subgroup of students who also struggle with reading, oftentimes more so than students with learning disabilities due to their co-occurring difficulties with reading and behavior management (Hinshaw 1992; Roberts et al., 2020).

To foster a better understanding of the reading achievement of students with EBD, it is imperative to take a closer look at the characteristics of this group of students and what distinguishes them from other students with and without disabilities. It is also important to break down the broad topic of "reading" into the core components of effective reading instruction, namely, phonemic awareness, phonics, fluency, vocabulary,

and comprehension. Recognizing both the distinguishing features of learners with EBD and the fundamental attributes of effective reading instruction provides a clearer picture of the best methods for teaching reading to this population of students. Given that students with EBD experience challenges not only with reading but also with behavior management skills, it is critical to recognize what behavioral interventions have been proven to be most effective for this group of students. Equipped with this knowledge, teachers and researchers may have a better understanding of how to provide holistic support to these individuals in a variety of educational settings.

Characteristics of Students with EBD

Researchers have consistently found that students with EBD have difficulty in a variety of academic subjects such as reading, writing, and mathematics (Campbell et al., 2018; Chitiyo et al., 2021; Dunn et al., 2017; Kauffman & Landrum, 2017; Roberts et al., 2020). Academic achievement problems may stem from characteristics of EBD, including difficulty building successful interpersonal relationships with teachers and peers, inappropriate types of feelings or behavior under normal circumstances, and pervasive depression and/or anxiety (Kauffman & Landrum, 2017). Any of these additional challenges experienced by students with EBD may impair their ability to learn by negatively impacting their attention and concentration (Campbell et al., 2018; Chitiyo et al., 2021; Dunn et al., 2017; Kauffman & Landrum, 2017; Roberts et al., 2020).

Regardless of whether or not students have been formally verified as having EBD, a specific learning disability, or a combination of the two, the co-occurrence rate of reading difficulties and problem behavior is high (McKenna et al., 2021; Roberts et al., 2020; Roberts et al., 2021), and students with co-occurring reading difficulties and

problem behavior are at a high-risk for academic failure (Campbell et al., 2018; Chitiyo et al., 2021; Dunn et al., 2017; Kauffman & Landrum, 2017; Roberts et al., 2020; Rivera et al., 2006). There are several hypotheses regarding the mechanisms underlying this high rate of comorbidity. These hypotheses were originally proposed by Hinshaw (1992) and have since been explored in greater depth by several research teams (e.g., Kulkarni et al., 2020; Roberts et al., 2020; Roberts et al., 2021). One theory is that students who experience reading difficulties have lower self-efficacy in terms of their reading ability, which may result in less engagement with reading and lead to future problem behaviors. Another theory posits that the opposite is true, that students who exhibit problem behaviors may also struggle with reading difficulties because they have trouble attending to literacy instruction, which may, in turn, hinder their ability to effectively engage in the learning process. A third theory proposes that a bi-directional relationship exists between reading difficulties and problem behaviors. It is also possible that an external factor, such as working memory or processing speed, is responsible for the frequent comorbidity of reading difficulties and problem behavior. Currently, the research is still inconclusive on these hypotheses and further studies are necessary to better understand the reasons behind these co-occurring deficits (Hinshaw, 1992; Kulkarni et al., 2020; Roberts et al., 2020; Roberts et al., 2021).

In a study by Trout et al. (2006), researchers conducted a cluster analysis on the early literacy skills and behavioral characteristics of kindergarten and first grade students who were screened for EBD while participating in an early intervention program. The authors found that nearly half of the students in their sample, identified as being at risk of EBD, also showed deficits in at least one measure of early literacy (i.e., the word

identification, word attack, word comprehension, and passage comprehension subscales of the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1998). In addition, the cluster analysis revealed five distinct profiles of students at risk for EBD and delays in early literacy skills: broad risks, academic achievers, primarily behavior, primarily academic, and extreme behaviors. In terms of practical applications, categorizing at-risk students based on their primary areas of need allows for the design and use of more targeted intervention programs for each unique profile of students specified in this study (Trout et al., 2006). A more recent study by Siperstein et al. (2011) used a longitudinal approach to explore the progress of students at risk or identified with EBD with respect to their reading and math achievement as well as their behavioral progress. Based on two years of research, the results of this study suggest that the academic and behavioral progress of students at risk or identified with EBD is minimal.

Given the research described previously, students with EBD often have co-occurring reading difficulties and, without intervention, tend to make minimal academic progress. Under these circumstances, it is imperative to understand what instructional strategies and behavioral supports have been found to be most effective for the general population of students. This collection of evidence-based practices can then be further examined to determine what techniques have been found to be most effective for the more specific population of students with co-occurring reading difficulties and problem behaviors.

Core Components of Reading Instruction

In their report “Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading

Instruction," the National Reading Panel described how the most effective approach to reading instruction was one that incorporated explicit instruction in phonemic awareness and systematic phonics, methods to improve fluency, and ways to enhance both vocabulary and reading comprehension (National Reading Panel, 2000; Nebraska Department of Education [NDE], 2016). These key concepts, often referred to as the "big five" components of effective reading instruction, work together to provide a strong foundation in literacy that ultimately produces skilled readers. Although the core components of effective reading instruction are not necessarily taught in a linear fashion, the skills of hearing and manipulating individual sounds within words and applying letter-sound correspondences to decode printed text are necessary prerequisites for fluent reading. Without the ability to read fluently, strategies for identifying unfamiliar vocabulary words and reading comprehension in general quickly become overwhelming for struggling students.

Phonological and phonemic awareness skills generally develop when children are young, usually between the beginning of preschool and the end of kindergarten (Honig et al., 2018). Some of this development, such as knowledge of rhyming words or syllable awareness, is part of normal oral language development, however, more advanced skills such as phoneme recognition, segmenting, and blending, are not usually evident until children are finishing with kindergarten and beginning first grade (Honig et al., 2018; National Reading Panel, 2000; NDE, 2016). Once students can detect, identify, and manipulate the larger parts of spoken language (e.g., words, syllables, onsets, and rimes) as well as the smaller parts (e.g., phonemes), they have the prerequisite skills to learn how letters and letter combinations (i.e., graphemes) in written language relate to

individual sounds (i.e., phonemes) in spoken language. This is also known as phonics (Honig et al., 2018; National Reading Panel, 2000). In terms of phonics instruction, the panel found that systematic and explicit instruction was most effective, and that it is beneficial for students in kindergarten through sixth grade (Honig et al., 2018; National Reading Panel, 2000; NDE, 2016). Although core phonics skills are usually mastered in the early elementary grades, struggling readers may continue to need additional explicit phonics instruction as they progress to upper elementary and middle school (National Reading Panel, 2000; NDE, 2016). While evidence-based systematic phonics instruction may be sufficient for students who only have challenges in reading, students with co-occurring EBD and deficits in early literacy skills may need more intensive intervention.

Characteristics of Effective Phonics Instruction

Effective phonics instruction has two primary characteristics: it is explicit and systematic. For a phonics program to be "explicit," it needs to have clearly defined objectives for each lesson**,** incorporate sufficient practice to build fluency, activate students' prior knowledge, and provide opportunities to apply prior knowledge of letter-sound relationships to reading new words. A phonics program can be characterized as "systematic" when the instruction includes a clear sequence of phonics elements and there is a logical progression of skills and knowledge (Honig et al., 2018). Research conducted by the National Reading Panel (2000) yielded several findings in terms of the efficacy of systematic and explicit phonics instruction. First, they found that it significantly improves students' reading and spelling in kindergarten and first grade. Second, it significantly improves students' ability to comprehend what they read. Finally, the panel found that explicit and systematic phonics instruction is effective both

in helping to prevent reading difficulties among students who may be at risk as well as supporting students who are struggling with learning to read (Honig et al., 2018, p. 171; National Reading Panel, 2000; NDE 2016). Some examples of commercially developed phonics programs that are both systematic and explicit include Sound Partners**,** Lindamood Phoneme Sequencing (LiPS), and Peer-Assisted Learning Strategies (PALS) (What Works Clearinghouse, 2010; What Works Clearinghouse, 2015; What Works Clearinghouse, 2012).

Role of Decoding in Reading Achievement

Although reading is a fundamental skill for students to succeed academically, it is nevertheless a complex process. According to Gough and Tunmer (1986), reading comprehension consists of two key components: word recognition and language comprehension. While phonics is an instructional method used to teach letter-sound correspondences, decoding is the process of applying one's knowledge of letter-sound correspondences and is one strategy for identifying written words (Mather & Wendling, 2011). Gough and Tunmer's theoretical model, known as the Simple View of Reading, describes reading comprehension as the product of word recognition and language comprehension, indicating that their relationship is multiplicative: reading comprehension equals word recognition times language comprehension. Therefore, if a student has no language comprehension, which Gough and Tunmer (1986) defined as "the process by which lexical information, sentences, and discourses are interpreted," (p. 7) they will be unable to successfully comprehend, or derive meaning, from what they read. Likewise, if a student lacks the ability to decode, characterized by the capacity to apply the knowledge of letter-sound relationships to the correct pronunciation of written

words, they will be unsuccessful with reading comprehension (Gough & Tunmer, 1986). Consequently, effective instruction in decoding as well as the development of automatic and fluent decoding skills is necessary for students to become proficient in reading comprehension (Hook & Jones, 2002). As students begin to strengthen their decoding skills, their ability to read words automatically and fluently takes some cognitive load off of working memory so that students can devote more energy to using effective comprehension strategies (Nation, 2009).

Kim (2020) expanded on the theoretical understanding of reading outlined in the Simple View. As theorized in the Direct and Indirect Effects of Reading (DIER) model, reading comprehension is impacted by an individual's word reading and listening comprehension skills as well as their background knowledge and reading affect (Kim, 2020). Reading affect can be defined as an individual's motivation, attitude(s), and self-concept regarding reading. In the model, reading affect (also referred to as socioemotions) has a bidirectional relationship with reading comprehension. Students with EBD struggle specifically with these skills, which may partially explain why they may also struggle in reading. (Kauffman & Landrum, 2017).

Reading Instruction for Students with EBD

Campbell et al. (2018) summarized findings from seven systematic reviews—two narrative and five meta-analytic—that concentrated on the impact of a broad range of academic interventions on student achievement in reading, writing, math, and science. Each review focused specifically on the academic achievement of students with EBD. Results indicated that peer-mediated, teacher-directed, and self-regulated strategies had the most positive impact on this population of students' academic and behavioral

outcomes (Campbell et al., 2018). More specifically, for the studies that focused on reading outcomes, the authors found that the majority of interventions were focused on students who were at risk of reading failure and aimed to increase their scores on measures of oral reading fluency. In addition, the authors concluded that, for the studies included in their review of reviews, direct instruction and peer tutoring were the most effective reading interventions for students with EBD (Campbell et al., 2018). However, of the 12 reviews discussed in the appraisal, only two (Mulcahy et al., 2016; Warmbold-Braun et al., 2017) included studies that contained both academic and behavioral outcome measures. This small number of studies makes it difficult to determine the impact of combined academic and behavioral interventions for students with EBD on dependent variables such as on-task and disruptive behavior and thus implies a need for further research.

Another meta-analysis conducted by Roberts et al. (2020) narrowed the academic area of interest and focused specifically on the effect of reading interventions on reading outcome measures for students with co-occurring reading and behavioral difficulties. The interventions targeted a variety of reading subskills including phonological awareness, word recognition, reading comprehension, spelling, and vocabulary. The overall effect of these reading interventions on the reading achievement of students in kindergarten through twelfth grade who had a combination of reading difficulties and problem behavior was statistically significant at $g = 0.86$, indicating that students receiving these interventions outperformed their peers in comparison conditions (e.g., a business-as-usual control group) by nearly one standard deviation on reading outcome measures. The authors concluded that, specifically for younger students with co-occurring deficits in

reading and behavior management, a systematic and explicit reading intervention program delivered in a small group setting may have a positive impact on early word reading outcomes. In the implications for practice section of the review, the authors acknowledge that the results of the meta-analysis do not support the conclusion that improved reading achievement may lead to improved behavioral outcomes for this population of students. Given that only four of the 17 included studies measured the impact of various reading interventions on behavioral dependent variables, more research is warranted in this area.

Behavior Management

In addition to academic challenges, students with EBD have difficulty with self-management skills (Ennis & Jolivette, 2014; Kauffman & Landrum, 2017; Mooney et al., 2006: Popham et al., 2018). Self-management refers to a group of cognitive skills that enables individuals to independently observe their behavior, evaluate its impact on themselves and those around them, and take conscious measures to regulate their thoughts, words, and actions (Moohr et al., 2021; Mooney et al., 2005; Popham et al., 2018). Strategies that fall under the heading of "self-management" include self-monitoring, self-instruction, and self-evaluation. Receiving explicit instruction in self-management skills allows students with EBD the opportunity to be more cognizant of their behavior and better understand what they can do to change it. Self-monitoring strategies help students acknowledge and document the occurrence (or non-occurrence) of target behaviors such as raising their hand before speaking or writing answers. Self-instruction allows students to formulate self-statements in order to help them regulate their internal dialogue, and self-evaluation allows students the opportunity to track their

progress towards a self-selected behavioral goal such as reducing the number of times they interrupt the teacher from seven down to three over the course of a class period.

Self-Management Strategies for Students with EBD

Although there is only one method for improving behavioral outcomes (e.g., decreasing disruptive behavior and/or increasing on-task behavior), self-management strategies have been deemed an evidence-based practice in the area of behavior management (Busacca et al., 2015; Maggin et al., 2013). Several systematic reviews have specifically investigated the impact of self-management strategies on academic outcomes for students with EBD. A review by Mooney et al. (2005) reported on the effectiveness of self-management procedures on improving academic achievement for students with EBD. The authors classified interventions into five categories: self-monitoring, self-evaluation, self-instruction, goal setting, and strategy instruction in order to facilitate the problem-solving process. For each category, Mooney and colleagues supplied an operational definition to distinguish one group of self-management procedures from another. The review reported a range of academic outcomes including student performance in math, writing, reading, and social studies. Results indicated that self-management interventions for students with EBD produced large positive effects on academic outcomes. In terms of reading achievement, eight effect sizes were reported across the 20 included studies. Regardless of the type of strategy, the mean effect size for the impact of self-management interventions on reading outcomes was 2.28. This effect size indicates that when students received some kind of self-management intervention, their scores on academic outcome measures increased from their baseline scores by more than two standard deviations. The authors expressed that future research should include more reading studies, as the

majority of studies in the review addressed writing and math. An additional area for future research is an expanded investigation of different types of self-management procedures.

Another systematic review by Popham et al. (2018) reported on the effectiveness of self-regulation strategies for improving a broad range of academic outcomes for students with EBD. The term "self-regulation" is used in this instance as this is the phrase the authors used to describe this group of interventions. The self-regulation techniques outlined in this review were similar to those described in the review by Mooney et al. (2005). These included self-monitoring of both attention and performance, strategy instruction, and several specific academic intervention programs, namely, self-regulated strategy development (SRSD; Harris & Graham, 1992). Results were consistent with those found in Mooney et al. (2005) and indicated that self-regulation interventions were effective for increasing the academic achievement of students with EBD. However, of the 36 studies reviewed, only five included reading outcome measures, which made it difficult to determine the true impact of self-regulation interventions on the reading achievement of students with EBD from the results of this review alone. The authors' discussion of the limitations of the review was also similar to that of Mooney et al., (2005) in that they indicated a need for more research on the impact of self-regulation strategies on academic outcomes outside of writing and math.

The Present Study

The purpose of the present study is to investigate the potential impact of a combination of explicit instruction in phonics, self-monitoring, and self-evaluation via goal setting on students' reading and behavioral outcomes. The intervention package is a

modified version of an explicit and systematic phonics program called Peer Assisted Learning Strategies (PALS; What Works Clearinghouse, 2012). In the present study, the primary modification made to the program is that a researcher works with each participant individually and acts as the coach and reader as opposed to students working one-on-one with peers as the program was originally designed to be carried out. Peer Assisted Learning Strategies was selected for this intervention study because it meets the criteria of effective phonics instruction, namely, that the program is both systematic in its logical progression of phonics concepts and explicit in the activation of students' prior knowledge of letter-sound relationships and provision of opportunities for repeated practice to build fluency. Additionally, this modified version of PALS incorporates elements of peer tutoring and teacher-mediated instruction, both of which were found by Campbell et al. (2018) to be effective instructional techniques for students with EBD.

In the present study, the phonics instruction in PALS was combined with self-monitoring procedures and self-evaluation techniques in the form of students setting their own goals for reading accuracy and charting their progress towards those goals. The target population is elementary students in third through eighth grade who have been identified as or are at risk of developing EBD and who also demonstrate challenges with foundational literacy skills such as phonics and oral reading fluency. The primary goal of this research is to determine whether a combination of academic and behavioral supports is more beneficial for this population of students than academic or behavioral supports by themselves. This study will attempt to answer the following research questions:

RQ1: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***improve the decoding skills*** of students identified with or

at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

RQ2: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***improve the oral reading fluency*** of students identified with or at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

RQ3: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***increase the on-task behavior*** of students identified with or at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

CHAPTER 2

Literature Review

Educational research has been conducted for the past several decades on the academic achievement and behavior management skills of students with emotional or behavioral disorders (EBD). The numerous studies that make up this body of literature provide insight into the defining features of this population, how their academic and behavioral outcomes compare to students in other disability categories or those without disabilities, what interventions are most effective for supporting this group of students, and the specific components of academic and behavioral interventions that make them most effective for students with EBD in particular. The most rigorous methods for examining the efficacy of intervention programs for a specific group of students are systematic reviews and meta-analyses. These methods of research provide an organized and thorough summary of previous literature, either descriptively in the case of systematic reviews or through a combination of narrative writing and statistical analyses when taking a meta-analytic approach (Uman, 2011). Although the primary aims and research questions vary from one review to another, many of those focused on students with EBD examine this population's performance in core academic areas such as reading, writing, and math as well as the frequency, duration, and intensity of any challenging behaviors they may exhibit in the classroom (Campbell et al., 2018; Mooney et al., 2005; Popham et al., 2018; Roberts et al., 2020).

There are several important practical implications of research focused on students with EBD. First, this area of educational research can help identify and describe characteristics of students with EBD and what distinguishes them from other students

with and without disabilities. Second, this research allows for measurement of the academic and behavioral progress of students with EBD over extended periods of time and how this compares to the progress of their typically developing peers. Finally, educational research focused on students with EBD, specifically intervention efficacy research, serves as the foundation for establishing the most effective instructional strategies and interventions for supporting students with academic, behavioral, and co-occurring academic and behavioral challenges. The studies and reviews outlined in this chapter focus on these three core practical implications as they relate to the present state of the literature on students with co-occurring academic and behavioral challenges. Any gaps that may exist in the present understanding of the academic and behavioral characteristics of this population, their overall progress in K-12 education, and the intervention programs that are most effective in supporting their needs are discussed as well as directions for future research. One of the primary goals of the present study is to address some of these gaps in the literature to broaden the understanding of teachers and researchers regarding evidence-based academic and behavioral interventions for students with EBD.

Profiles of Students with EBD

One study that identifies and describes characteristics of students with EBD and what distinguishes them from other students with and without disabilities is a cluster analysis conducted by Trout et al. (2006). The authors conducted a cluster analysis that identified five distinct subgroups of kindergarten and first grade students who were screened for EBD while participating in an early intervention program. The descriptive profiles of each subgroup of participants were based on the early literacy and behavioral

characteristics of 195 students from nine elementary schools in a mid-size city in the Midwest (Trout et al., 2006). Data that informed the composition of these groups in terms of behavioral characteristics included teacher ratings on the Early Screening Project (ESP; Walker et al., 1995) for kindergarten students and the Systematic Screening for Behavior Disorders (SSBD; Walker & Severson, 1992) for individuals in first grade. These rating scales allowed teachers to rank order the students in their classroom based on the number and severity of the internalizing and externalizing behaviors they exhibit in order to identify children who may be at risk for EBD. Internalizing and externalizing patterns of behavior can be distinguished by the way they present themselves. Examples of internalizing behaviors include being withdrawn and exhibiting signs of anxiety, sadness, or loneliness. In contrast, externalizing behaviors include more overt actions such as defiance, disruption, or disturbance of peers (Trout et al., 2006). The data that informed the composition of groups in terms of early literacy characteristics included the word identification, word attack, word comprehension, and passage comprehension subscales of the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1998).

The authors found that nearly half of the kindergarten and first grade students in their sample, identified as being at risk of EBD, also showed deficits in at least one measure of early literacy (i.e., the word identification, word attack, word comprehension, and/or passage comprehension subscales of the WRMT-R). By clustering their sample into five different subgroups (i.e., broad risks, academic achievers, primarily behavior, primarily academic, and extreme behaviors), the researchers were able to assess students' needs more accurately in terms of potential intervention efforts moving forward.

Individuals in the “broad risks” category showed moderate to high risk for EBD according to the Critical Events and Maladaptive Behaviors subscales of the ESP and SSBD. These students also presented with the most severe difficulties in both decoding and reading comprehension. Students in the “academic achievers” category demonstrated mild risk for EBD and exhibited above average performance in early literacy skills. Those who were grouped into the “primarily behavior” or “primarily academic” categories only demonstrated significant risks in those respective areas. Finally, individuals in the “extreme behaviors” category showed the most severe risks for EBD paired with more minor risks for delays in early literacy skill development (Trout et al., 2006).

The results of this study, in conjunction with more recent literature, indicate that deficits in early literacy skills and problem behaviors are frequently co-occurring (Hinshaw 1992; Roberts et al., 2020; Roberts et al., 2021). While the research is still inconclusive in terms of explaining the cause(s) of this high comorbidity rate, its presence calls for the design and implementation of interventions that address both areas to support students in this population. This study also indicates the need for proactive screening in order to identify students who may be struggling with early literacy skills, behavior management, or both. Proactive screening facilitates early intervention efforts so that these students can receive the necessary academic and behavioral supports as soon as possible. In addition, the identification of distinct subgroups of students at risk for EBD who also demonstrate delays in early literacy skill development allows for tailored interventions to be put in place in order to cater to the unique needs of this heterogeneous population of students.

A more recent study by Farley et al. (2022) builds on the foundation laid by the research of Trout et al. (2006) and expands upon their work by examining the heterogeneity of middle school students identified with and receiving special education services for EBD. Farley and colleagues conducted a latent profile analysis of more than 300 middle school students in the Midwest. The latent profile analysis identified unique subgroups of this population of students using demographic and setting variables, teacher ratings of students' behavioral characteristics and academic performance, and parent reports on the number of times their child had been suspended over the course of their academic career (Farley et al., 2022). These variables captured important demographic information about students including their gender, race and ethnicity, socioeconomic status as approximated by family household income, special education classification (e.g., EBD or an alternative label), age at special education identification, and whether or not students were educated in an alternative school setting. Additionally, scores from the Strengths and Difficulties Questionnaire (SDQ; Goodman et al., 2000) were used to illustrate students' behavioral characteristics, whereas academic competence scores from the Social Skills Improvement System (SSiS; Gresham & Elliott, 2008) were used to describe student achievement in math, reading, and overall academic performance. Latent profile analysis is a statistical technique used to organize a specific population into subgroups based on shared characteristics. The authors chose latent profile analysis over other methods for clustering participants into unique profiles due to the presence of both categorical and continuous variables (Farley et al., 2022; Spurk et al., 2020). This research was exploratory in nature and sought to determine whether unique profiles exist

among middle school students with EBD, and if so, in what ways do the groups of students differ?

After performing their analyses, the authors determined that a four-profile model was most representative of the data. These groups of students were labeled Profiles 1, 2, 3, and 4, respectively, given that none of them were distinctive from the others based on one particular feature but rather a number of defining features. Students in all four profiles were predominantly male and identified as white, non-Hispanic or Latino. The students in Profile 1 represented 15.2% of the total sample. The majority of these students were classified by special education labels other than EBD, (e.g., other health impairment, or OHI), were identified for special education services when they were between the ages of five and eight years old, had the second highest academic competence scores of the four profiles, and the second lowest scores in terms of problem behavior. None of the students in Profile 1 had ever been suspended and none of them attended an alternative school (Farley et al., 2022).

The students in Profile 2 represented 20.4% of the total sample. The students in this profile all came from families with a household income of more than $50,000 per year, included the highest rate of male students, were classified primarily as EBD, and were identified for special education services when they were between the ages of five and eight years old. These students had the second lowest scores in terms of academic competence and the highest scores in terms of problem behavior. Seven percent of students in this profile attended an alternative school and 94.4% of parents reported one or more suspensions (Farley et al., 2022).

The students in Profile 3 represented 52% of the total sample, the largest of the four profiles. This profile is notably different from the other three in that it included the highest percentage of students who did not identify as white, non-Hispanic or Latino and all students came from families with a household income of less than $50,000 per year. The students in Profile 3 had the highest mean scores in terms of problem behavior and the lowest mean scores in terms of academic competence. In addition, the majority of students in this profile (87.8%) had been suspended at least once according to parent report. Finally, in terms of the characteristics of students in Profile 4, who represented 12.4% of the total sample, these individuals were notable in that they had the highest mean scores of academic competence as well as the lowest mean scores of problem behavior based on teacher report. This profile of students, which had the highest proportion of males (95.3%), also had the highest proportion of students (48.8%) who were nine to twelve years old when they were initially identified for special education services. Over half of the students in this profile attended an alternative school (Farley et al., 2022).

The results of this study have important implications as far as describing the heterogeneous nature of students verified with and receiving special education services for EBD. It is evident in the description of each of the four student profiles that individuals may substantially differ with regard to variables such as gender, race/ ethnicity, socioeconomic status, verification label, age at initial special education identification, school setting, and teacher ratings of academic competence and problem behavior. Although this study focuses specifically on middle school students from two adjacent Midwestern states, a fact which limits the generalizability of the results, the

findings nevertheless indicate the need for individualization of supports to cater to the needs of these unique subgroups of students with EBD. In the discussion section of the article, Farley and colleagues (2022) write, “Such documentation of both student needs and context may help to inform the way that evidence-based practices are modified to ensure person-centered approaches, rather than a focus solely on implementation with fidelity,” (p. 11). This conclusion is similar to the one drawn by Trout and colleagues (2006) after conducting their cluster analysis to categorize the academic and behavioral characteristics of at-risk students in kindergarten and first grade, namely, that it is imperative to differentiate special education services, even for children being served within the same disability category, in order to maximize the effectiveness of academic and behavioral interventions for such a diverse population of students.

Academic and Behavioral Progress of Students with EBD

In addition to recognizing the characteristics of students with EBD, it is also critical to understand the overall achievement of these students and the rate at which they progress in school as compared to their typically developing peers. This information is necessary for the design and implementation of effective academic and behavioral interventions for students with EBD for two reasons. First, understanding the nature of the achievement gap between students with and without EBD can provide a reasonable estimate of the effect size to be expected for an intervention tailored to support this population. Second, with reference to special education policy and funding allocations, specifying the magnitude of the achievement gap may help determine how much priority is given to intervention development for these individuals.

According to data from several large-scale longitudinal studies such as the Special Education Elementary Longitudinal Study (SEELS), the National Longitudinal Transition Study-2 (NLTS2), and the National Adolescent and Child Treatment Study (NACTS), students with EBD made relatively little progress on measures of academic achievement, social interactions, and post-school experiences over the course of these three studies, which lasted anywhere from six to ten years. Examples of the data collected for these longitudinal studies include demographic characteristics of children and their families, information about students' schools and class sizes, measures of psychological functioning (e.g., problem behaviors), and survey measures on adult-student interpersonal relationships at school. The studies also reported variables such as the number and type of academic courses taken, characteristics of students' transition planning services, student engagement in extracurricular and community service activities, measures of student performance in reading and math, and descriptions of the amount and types of academic supports students received (Bradley et al., 2008; Greenbaum et al., 1996; Wagner et al., 2004; Wagner et al., 2005a; Wagner et al., 2005; Wagner et al., 2006). In addition to these large-scale studies, other research conducted with smaller sample sizes also indicated minimal improvement for students with EBD in terms of academic and behavioral performance.

A smaller scale study by Siperstein et al. (2011) used a longitudinal approach to explore the progress of students' reading and math achievement as well as their behavioral progress. The 86 students included in the study were divided into three subgroups: (a) children with EBD receiving special education services in low-income schools, (b) children with EBD receiving special education services in high-income

schools, and (c) children who were not receiving any special education services but were considered at high risk for EBD. The research team used students' scores on the math calculation, applied problems, letter-word identification, and passage comprehension subtests of the Woodcock Johnson III (WJ III; Woodcock et al., 2001) to measure their academic progress, while the elementary version of the Social Skills Rating System-Teacher Version (SSRS-T; Gresham & Elliott, 1990) and the Critical Events Index (CEI) rating scale of the SSBD (Walker & Severson, 1992) were used to assess the occurrence of problem behaviors. The research team conducted a series of multivariate analyses of variance (MANOVAs) to measure the academic and behavioral progress of each of these three groups of students over a two-year period of time. Twenty-one comparisons of pretest and posttest scores on the reading, math, and behavior outcome measures were analyzed to determine whether significant differences in performance existed among the three groups of students over time. More specifically, the authors wanted to know whether students with EBD from high-income schools would show more progress than students with EBD from low-income schools, and whether students at risk for EBD from low-income schools would demonstrate more progress than students from other, similar low-income schools who had been formally identified with EBD.

The results of the analyses indicated relatively little progress in academic or behavioral outcomes for participants in any of the three subgroups. Students with EBD from high-income schools significantly outperformed students with EBD from low-income schools on all four subtests of the WJ III. Additionally, at-risk students from low-income schools significantly outperformed their formally identified peers from other low-income schools on all measures of academic achievement. On the three behavioral

measures, only the group of students at risk for EBD from low-income schools showed statistically significant improvement from pretest to posttest, and this was limited to teacher ratings of internalizing behaviors.

Findings from this study suggest that regardless of whether students (a) come from high or low-income schools and (b) receive a formal identification of EBD with subsequent special education services or are merely labeled as "at-risk," their progress toward academic and behavioral goals is minimal, at least over the course of two years. Progress may be more substantial if measured over a longer time frame. These findings warrant further research of more effective and intensive intervention programs for this population of learners to determine whether their scores on academic and behavioral outcome measures could increase in a shorter period of time with the proper instructional techniques. The lack of progress for this population of students is noteworthy because it follows that if these children do not receive the necessary supports, the school-related challenges of students with or at risk for EBD could lead to more serious consequences in terms of their progress later in their academic careers (i.e., middle school and high school) as well as their prospects for employment or acceptance into post-secondary education programs.

Providing strong academic and behavioral supports to students with EBD first requires educational research that can help identify and describe characteristics of these children and what distinguishes them from other students with and without disabilities. It is imperative to begin by understanding a population in order to determine their most prominent needs. The provision of effective academic and behavioral supports also requires the support of research which allows for measurement of these students'

progress over extended periods of time, and how this compares to the progress of their typically developing peers. This information can provide an illustration of this population's overall achievement in school and the rate at which they make improvements without additional intervention. Finally, educational research that focuses on intervention efficacy serves as the foundation for establishing the most effective instructional strategies and behavioral supports for assisting students with academic, behavioral, and co-occurring academic and behavioral challenges. As stated earlier, the most rigorous methods for examining the efficacy of intervention programs for a specific group of students are systematic reviews and meta-analyses (Uman, 2011). Systematic reviews and meta-analyses provide an organized and thorough summary of previous literature that describes what works, for whom, and under what circumstances. These articles also provide directions for future research to expand on the intervention research that has already been conducted.

Academic Interventions for Students with EBD

A study by Campbell et al. (2018) is one such example of an organized and methodical review of the literature. This research is a review of reviews which summarized the findings from seven systematic reviews and five meta-analyses focused on academic interventions designed to improve academic and behavioral outcomes for students with EBD. The authors began with a specific set of search terms to help identify the most relevant reviews from several electronic databases of peer-reviewed articles. Their search terms included the keywords, "EBD," "emotional disorders," behavior disorders," "behavior problems," "academic instruction," "academic curriculum," "academic intervention," "instructional intervention," "reading," "writing," "math,"

"science," and "social studies" along with the terms "systematic reviews" and "meta-analyses," (Campbell et al., 2018). After an initial search of the literature, the resulting reviews were compared to the authors' inclusion criteria to ensure that they included academic interventions in reading, writing, mathematics, science, or social studies, took place in an elementary or secondary school setting, and focused on students identified with or at risk for EBD. Reviews that met all of the inclusion criteria were double coded for relevant variables such as the number of participants in each of the individual studies included in the larger reviews, students' ages and grade levels, the dependent and independent variables measured, and the intensity, duration, and fidelity of implementation for the interventions in question.

The results of this review of reviews summarized the participant characteristics, research designs, and academic and behavioral outcomes of the interventions examined in the 223 single-case and group design studies analyzed across 12 reviews. In general, the systematic reviews and meta-analyses described in this larger review included a wide range of participants in terms of age and grade level. Studies included a total of 3,366 participants in grades K-12 with an age range of five to 18 years old. Students' gender as well as their race and ethnicity were not consistently reported across reviews. For the meta-analysis and systematic review focused specifically on writing interventions (Losinski et al., 2014; Sreckovic et al., 2014), Campbell and colleagues indicated that self-regulated strategy development (SRSD) had a positive impact on writing-related dependent variables such as essay elements, quality, and word count for students at risk or formally identified with EBD. For the three systematic reviews focused specifically on math interventions (Hodge et al., 2006; Mulcahy et al., 2016; Ralston et al., 2014),

Campbell and colleagues indicated that the included studies analyzed a wide range of academic and behavioral interventions aimed at improving students' overall performance in math. This variety in interventions made it difficult to draw conclusions about evidence-based practices due to an insufficient number of studies analyzing the effectiveness of the same intervention. The authors of two of the three systematic reviews (Hodge et al., 2006; Ralston et al., 2014) also indicated that mathematics interventions for students with EBD generally focused on basic facts and operations as opposed to more complex concepts such as problem solving.

For the two systematic reviews and one meta-analysis focused specifically on reading interventions (Benner et al., 2010; Garwood et al., 2014; Rivera et al., 2006), Campbell and colleagues indicated that improvement in oral reading fluency, as measured by words read correctly per minute, was a common target for intervention. Some interventions aimed to improve students' reading comprehension skills as well as their fluency. For the meta-analysis focused specifically on science interventions (Therrien et al., 2014), Campbell and colleagues indicated that mnemonic instruction was highly successful for students with EBD in terms of improving their knowledge and retention of science concepts. Finally, for the two meta-analyses and one systematic review that included a mix of academic subjects, interventions, and outcome variables (Bowman-Perrott et al., 2013; van der Worp-van der Kamp et al., 2014; Warmbold-Brann et al., 2017;), Campbell and colleagues indicated that peer tutoring was an effective instructional strategy that remained effective regardless of the dosage level of the intervention, academic content area, grade level, or disability status of the students. However, peer tutoring was found to be more effective for students with EBD than

students from any other disability category (Bowman-Perrott et al., 2013). The meta-analysis by Warmbold-Brann et al. (2017), which examined interventions in math, reading, and writing, looked specifically at the effect of academic interventions on behavioral outcomes. The authors determined that the interventions included in the review increased time on task and decreased disruptive behaviors for students with EBD, although the effect was stronger for increasing time on task. The authors also reported that interventions delivered one-on-one were the most effective in terms of influencing behavioral outcomes for students with EBD.

Findings from this review of reviews provide a summary of a group of reading, writing, math, and content-area interventions and their influence on the academic and behavioral outcomes of students with EBD. The studies focused on writing interventions demonstrated that self-regulated strategy development is an effective instructional technique for helping students with EBD improve elements of their writing such as length, overall quality, and the inclusion of important components of an essay such as an introduction and a conclusion. Beyond the subject area of writing, the systematic reviews and meta-analyses described in Campbell et al. (2018) mention broader instructional components that were found to be especially effective in supporting students with EBD. These included aspects of peer tutoring such as repetition of key concepts and increased opportunities to respond, explicit instruction in self-monitoring and self-instruction techniques, modifying task difficulty, and contingent reinforcement for academic performance. Each of these instructional components are fairly general, which suggests the possibility for broad application across academic subjects as opposed to using a handful of different interventions, one for each content area.

A meta-analysis by Roberts et al. (2020) is another example of an organized and methodical review of the literature that provides important information on academic interventions to support students with EBD. Unlike the review of reviews by Campbell et al. (2018), this article consisted of only one review with a narrowed focus on reading interventions as opposed to a broader range of content areas. The population of interest was also different from Campbell et al. as Roberts and colleagues were focused on students with problem behaviors and co-occurring reading difficulties. Studies that targeted interventions for students with reading difficulties that were receiving special education services for attention-deficit/hyperactivity disorder (ADHD) were also included in the analysis. This research sought to determine the impact of reading interventions on the reading achievement of this population of students as well as how the effects of the interventions differed based on student characteristics, intervention characteristics, and the number of quality indicators present in each study according to standards outlined by the What Works Clearinghouse. Similar to Campbell et al. (2018), Roberts and colleagues began with a specific set of search terms to help identify the most relevant studies from several electronic databases of peer-reviewed articles. They used a robust set of search terms in order to identify any articles that might meet their inclusion criteria. The search terms included the keywords, “read,” “reading,” “phonics,” “phonological awareness,” “phonemic awareness,” “behavior disorder,” “behavior disturbance,” “behavior disability,” “behavior difficulty,” “problem behavior,” “attention,” “hyperactive,” “hyperactivity,” “internalizing behaviors,” “externalizing behaviors,” “emotional disturbance,” “emotional disorder,” “emotional and behavioral,”

"social skills," "behavior concern," "instruction," "intervention," "treatment," "medication," "student," "child," and "adolescent" (Roberts et al., 2020).

After an initial search of the literature, each resulting study was compared to the authors' inclusion criteria to ensure that the study was published in English between the years of 1975 and October of 2018, the study design allowed for the calculation of an effect size, the intervention focused on reading instruction and included a reading and/or behavioral outcome, and the participants were students in grades K-12 who were at risk or identified with EBD and/or ADHD who also had co-occurring reading difficulties. In addition to an electronic database search, Roberts and colleagues also conducted hand searches of a select group of relevant journals (i.e., those in whom other articles that met all inclusion criteria had been published). They also did an ancestral review of the reference lists of all articles that met inclusion criteria to make sure their search was thoroughly comprehensive. Studies that met all of the inclusion criteria were double coded for relevant variables such as the study design, the disability category of the participants, the reading components included in the intervention (e.g., phonics or oral reading fluency), and whether the intervention included any behavioral supports.

The results of this meta-analysis summarized the demographic characteristics of the participants, the reading skills that were the focus of instruction in the treatment conditions, and the nature of any behavioral supports provided in the descriptions of the four quasi-experimental and seven randomized controlled trial studies included in the review. Of the included studies, nine were focused on participants in grades K-5 while the remaining two focused on older students in grades 6-10. These studies included a total of 622 participants, a majority of whom were male. The disability category of the

participants was fairly evenly split, with 49% of participants identified as having EBD, 46% identified as having ADHD, and 5% identified with both conditions.

The following reading subskills were taught in at least one of the treatment conditions: phonics, phonological awareness, the alphabetic principle, reading comprehension, vocabulary, oral reading fluency, and spelling. Seven studies analyzed interventions which included a phonics component, seven studies analyzed interventions that included a phonological awareness component, and three studies analyzed interventions that included an oral reading fluency component, however, the majority of studies examined interventions that involved instruction of more than one reading subskill. The studies that incorporated behavioral supports as part of one or more of the treatment conditions utilized a variety of techniques including positive reinforcement, social skills instruction, and parent training. Findings from this meta-analysis suggest that students with EBD and co-occurring reading difficulties benefit from the same instructional techniques used for students without behavioral challenges, namely, systematic and explicit foundational reading instruction in a small group or one-on-one setting. What remains unclear, however, is the impact of reading interventions, with or without the inclusion of additional behavioral supports, on reading and behavioral outcome measures for students with EBD and co-occurring reading difficulties. Although this meta-analysis included studies that evaluated the effects of combined academic and behavioral intervention packages, Roberts and colleagues indicated that additional research is necessary in order to more fully understand how to maximize the positive impact of reading and behavior supports for students who struggle in both areas.

Similar to the portion of literature that summarizes the efficacy of academic interventions, there is another related category of educational research that focuses on the effectiveness of various behavioral supports. While the topic of these two areas of intervention research differs, their overall purpose remains the same. Systematic reviews of the literature that investigate the efficacy of academic or behavioral supports allow researchers, and ultimately teachers, to analyze what works, for whom, under what circumstances. The ability to answer these questions is a precursor to providing the highest quality of instruction to meet the needs of students with EBD who also struggle academically.

Behavioral Interventions for Students with EBD

A systematic review by Mooney et al. (2005) summarized the impact of self-management interventions on the academic achievement of students with EBD. The review included 22 studies derived from 20 articles published in peer-reviewed journals. The results of the collective studies characterized the academic achievement of 78 students with EBD between the ages of five and 21 years old. Comparable to the methods of Campbell et al. (2018) and Roberts et al. (2020), Mooney and colleagues began with a set of predetermined search terms to locate the most relevant studies from several electronic databases of peer-reviewed articles. The search terms included the keywords "behavior disorders," "emotional disturbance," and "conduct disorder" to specify the population of interest as well as "academic status," "reading," "math," "science," "social studies," "testing," "academics," "special education," "self-monitoring," "self-instruction," "goal-setting," "self-evaluation," "self-reinforcement," "self-regulated

learning," and "strategy instruction" to establish that the authors were looking for studies about self-management interventions tested in an academic setting (Mooney et al., 2005).

After an initial search of the literature, each resulting study was compared to the authors' inclusion criteria to ensure that the participants were children or adolescents between the ages of five and 21 who had been verified as having EBD, studies were peer-reviewed reports of experimental research that included the manipulation of an independent treatment variable and the measurement of an academic dependent variable, and the content of the intervention was the direct instruction of one or more self-management techniques. In addition to an electronic database search, Mooney and colleagues also conducted hand searches of studies published in the *Journal of Special Education*, the *Journal of Emotional and Behavioral Disorders*, *Behavioral Disorders*, or *Exceptional Children* between the years of 1970 and 2002. Finally, the authors did an ancestral review of the reference lists of all articles that met inclusion criteria to make sure their search was thorough and comprehensive. Studies that met all of the inclusion criteria were double coded for relevant variables such as participant characteristics, intervention type (i.e., the category of self-management technique), and academic focus (e.g., basic reading skills, written expression, math calculation).

The results of this systematic review summarized the categories of the variables coded. Participants were characterized based on their age, grade, gender, race/ethnicity, socioeconomic status, and the process by which they were identified with EBD. Additionally, the interventions were described based on the type of self-management technique(s) used as well as the academic area which was the target of intervention. Across the 22 studies included in the review, approximately half of the student

participants were between the ages of five and 11 years old while the other half were 12 years old or older. Logically, the percentage of students in elementary versus middle or high school was also fairly evenly split, however over one third of the studies did not explicitly report information related to students' grade level. The majority of participants were male. Demographic information related to students' race/ethnicity and socioeconomic status was not widely reported across the studies included in the review. In terms of verification of participants as students with EBD, 18 of the 22 studies identified participants using school-based procedures (e.g., special education status) as opposed to information from outside psychiatric identification procedures.

With regard to the different categories of self-management techniques, self-monitoring or self-instruction interventions were tested in over half of the included studies. Three studies employed intervention packages that included more than one self-management technique (e.g., self-monitoring plus self-evaluation). Concerning the academic subject area of interest, half of the interventions aimed at improving students' math achievement. Approximately one third of the studies focused on reading outcome measures, another third focused on writing outcome measures, and approximately one third included outcome measures for more than one academic area. Outcome measures for student achievement in social studies and science were included in only two studies. Effect sizes were calculated for all studies that provided the necessary information for such a calculation. Half of the included studies contained the data required to calculate an effect size. With reference to intervention type, self-monitoring had the largest mean effect size while the academic area with the largest mean effect size was social studies, yet these results should be interpreted with caution considering that the number of effect

sizes provided by any given study could impact the mean. For example, outcome measures of social studies achievement reported a mean effect size of 2.66, which is an improvement of over two and a half standard deviations. However, this mean was calculated based on only five effect sizes as opposed to the mean effect size for math outcome measures, which was smaller, but calculated using 45 effect sizes.

Findings from this systematic review led to several conclusions. First, the authors acknowledge that self-management interventions yielded large effects for students with EBD on a number of academic outcomes. They also note that the included studies examined a range of self-management techniques including self-monitoring, self-evaluation, self-instruction, goal setting, and strategy instruction. In the discussion section of the review, Mooney and colleagues call for further research on the impact of self-management interventions on a broader range of academic outcomes given that half of the included studies were focused on improving math achievement. In addition, the authors mention that future research should be conducted in settings that are more reflective of actual student placement as opposed to carefully controlled research settings that are somewhat contrived and unnatural.

Similar to the work of Mooney et al. (2005), a more recent systematic review by Popham et al. (2018) also explored the impact of self-regulation interventions on academic outcomes for students with EBD. The term “self-regulation” is used in this instance as this is the phrase the authors used to describe this group of interventions. The review included 36 studies derived from 35 articles published in peer-reviewed journals. The results of the collective studies characterized the academic achievement of 189 students with EBD in grades K-12. In line with the systematic methods of study

identification used by Campbell et al. (2018), Roberts et al. (2020), and Mooney et al. (2005), Popham and colleagues conducted their review of the literature using a set of predetermined search terms to locate the most relevant studies from several electronic databases of peer-reviewed articles. The search terms included the keywords "emotional or behavioral disorder," "EBD," "behavior disorder," "emotional disorder," "conduct disorder," and "behavioral disturbance," to specify the special education category of interest. The authors also used the search terms "academic," "academic outcomes," "academic status," "reading" "writing," "math," "science," "social studies," and "technology" to indicate the type of outcome measures they were interested in as well as the search terms "self," "self-monitoring," "self-management," "self-instruction," "self-evaluation," "self-recording," "self-reinforcement," "goal setting," "self-assessment," "self-regulated learning," "self-regulated strategy," and "strategy instruction," to narrow the results down to only include studies that evaluated self-regulation interventions (Popham et al., 2018).

After an initial search of the literature, each resulting study was compared to the authors' inclusion criteria to ensure that studies were published between 1976 and 2016, examined the impact of self-regulation strategies on a variety of academic outcome measures, measured at least one academic dependent variable, and included participants in grades K-12 who were identified as EBD as defined by the Individuals with Disabilities Education Act (IDEA). Studies were also considered for the review if participants received special education services for EBD in a residential or day school setting (Popham et al., 2018). In addition to an electronic database search, Popham and colleagues also conducted hand searches of studies published in the *Journal of Emotional*

and Behavioral Disorders, Behavioral Disorders, and *Remedial and Special Education.* The authors also conducted an ancestral review of the reference lists of all articles that met inclusion criteria. Finally, Popham and colleagues conducted a forward search in order to locate any other relevant studies that had cited the articles that had already met all inclusion criteria. Studies that met all of the inclusion criteria were double coded for relevant variables such as participant characteristics, study design, setting, intervention implementation, intervention type, and academic focus.

The results of this systematic review summarized the categories of the variables coded. The age of student participants in the studies included in this systematic review was variable, with students in 11 studies falling between the ages of five and 11 years old (i.e., elementary school age) and students in 13 studies who were 12 years old or older (i.e., middle school or high school age). Nine studies included students from both age groups, two studies only reported students' grade level (3^{rd}-6^{th} and 9^{th}-11^{th}), and one study failed to report any demographic information on participants' age or grade level. A majority (80%) of participants were male. Students' race/ethnicity was reported in just over half of the studies, with participants being predominantly Caucasian or African American. Socioeconomic status of participants was only reported in two of the 36 included studies. Thirty three of the 36 studies utilized some variation of a single case research design, while the remaining three studies were experimental or quasi-experimental (Popham et al., 2018).

Interventions took place in a variety of settings including self-contained classrooms, general education classrooms, resource rooms, special day schools, residential facilities, university schools, psychiatric facilities, and alternative schools,

although residential facilities were the most popular setting for intervention. The majority of interventions took place in a small group (i.e., five or less students) setting or one-on-one with a teacher or researcher implementing the intervention. The most popular intervention was self-regulated strategy development, so it follows that nearly half (47%) of the studies were focused on improving students' written expression skills. Math calculation or math reasoning were the dependent variables in 39% of studies, while improvement in basic reading or reading comprehension skills was the target of intervention for only 14% of studies.

Findings from this systematic review were similar to those of Mooney et al. (2005), and both groups of authors drew comparable conclusions in regard to practical implications and directions for future research. First, evidence from the studies reviewed by Popham et al. (2018) suggests that self-regulation strategies such as self-monitoring and strategy instruction have a positive impact on the academic outcomes of students with EBD. Next, Popham and colleagues note that the settings of the included studies were not reflective of students' actual placement. Finally, the authors point out that the range of outcome measures was generally limited to the academic areas of writing and math.

In summary, educational research focused on students with EBD has several important practical implications for supporting this population in elementary and secondary schools. First, this area of educational research can help identify and describe characteristics of students with EBD and what distinguishes them from other students with and without disabilities. Second, this research allows for measurement of the academic and behavioral progress of students with EBD over extended periods of time

and how this compares to the progress of their typically developing peers. Finally, educational research focused on students with EBD, specifically intervention efficacy research, serves as the foundation for establishing the most effective instructional strategies and interventions for supporting students with academic, behavioral, and co-occurring academic and behavioral challenges. While much research has been conducted on what is most effective for supporting these students' growth both academically and behaviorally, there are still gaps in the present understanding of these individuals and what educational practices and techniques are most useful for them. The purpose of the present study is to work from the foundation of and expand upon the conclusions drawn by the research described in this chapter. As such, the primary aim of the present study is to provide combined academic and behavioral supports to struggling readers with EBD and determine the impact of these supports on both academic and behavioral outcome measures.

The Present Study

The purpose of the present study is to investigate the potential impact of a combination of explicit instruction in phonics, self-monitoring, and self-evaluation via goal setting on students' reading and behavioral outcomes. The intervention package is a modified version of Peer Assisted Learning Strategies (PALS), in which a researcher works with each student individually and acts as the coach and reader as opposed to students working with another peer as the program was originally designed to be carried out. Peer Assisted Learning Strategies was selected for this intervention study because it meets the criteria of effective phonics instruction, namely, that the program is both systematic in its logical progression of phonics concepts and explicit in the activation of

students' prior knowledge of letter-sound relationships and provision of opportunities for repeated practice to build fluency. Additionally, this modified version of PALS incorporates elements of peer tutoring and teacher-mediated instruction, both of which were found by Campbell et al. (2018 to be effective instructional techniques for students with EBD.

In the present study, the phonics instruction in PALS is combined with self-monitoring procedures and self-evaluation techniques in the form of students setting their own goals and charting their progress towards those goals. The target population is elementary students in third through eighth grade who have been identified as or are at risk of developing EBD and who also demonstrate challenges with foundational literacy skills such as phonics and oral reading fluency. The primary goal is to determine whether a combination of academic and behavioral supports is more beneficial for this population of students as opposed to academic or behavioral supports alone. This study will attempt to answer the following research questions:

RQ1: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***improve the word identification/decoding skills*** of students identified with or at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

RQ2: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***improve the oral reading fluency*** of students identified with or at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

RQ3: Does the addition of self-monitoring and self-evaluation via goal setting within the context of phonics instruction ***increase the on-task behavior*** of students identified with or at risk for developing emotional or behavioral disorders who also exhibit reading deficits?

CHAPTER 3

Method

A multiple baseline across participants single case research design was used to determine the impact of combined academic and behavioral supports on the word identification/decoding skills, oral reading fluency, and on-task behaviors of struggling readers with emotional/behavioral disorders (EBD). In this research design, the independent variable, also known as the treatment or intervention, is gradually introduced to participants one at a time. The participants typically exhibit similar patterns of behavior that occur under similar environmental conditions, and the introduction of the treatment is staggered to strengthen the potential for identifying a functional relationship between the independent and dependent variable(s) (Ledford & Gast, 2018). The replication of a treatment effect across each of the participants provides strong evidence of this type of functional relationship.

Setting

This study was carried out during the regular school day at an alternative school, accredited by the state department of education, that specifically serves students with EBD. The school is a private K-12 school in a mid-sized city in the Midwest with approximately 20 students and a four-to-one student to teacher ratio. In addition to small class sizes, the school offers therapeutic services through an intensive outpatient program. This program incorporates therapy into the students' regular school day. During these therapy sessions, the school's licensed mental health practitioner addresses child and family issues including behavior, mood disorders, conduct disorders, trauma, chemical dependency, and anger management through group, individual, or family

therapy as well as psycho-educational groups. At the same time, a team of highly qualified, experienced teachers helps students build the skills necessary for successfully transitioning back to their original school.

Participants

Participants were recruited from the population of 3rd through 8th grade students (age range of approximately 8 to 14 years old) at the alternative school. In addition to meeting the age/grade level requirements, participants had to be struggling readers with a formal special education verification of EBD. For the purposes of this study, "struggling readers" were defined as individuals who scored at or below the 25th percentile in the basic skills cluster of the Woodcock Reading Mastery Test, 3rd Edition (WRMT III; Woodcock, 2011). The basic skills cluster is a composite score of the word identification and word attack subtests of the WRMT III, which provides a broad measure of basic reading skills. Students also needed to have a formal verification of EBD, which was substantiated by the school's director who had access to records of all students' individualized education programs (IEPs) as well as evaluations from their respective multidisciplinary teams (MDTs).

The criteria outlined in the state department of education's eligibility guidelines for emotional disturbance (ED) were used to identify potential participants. "Emotional disturbance" is the official diagnostic label used for statewide verification purposes and is synonymous with EBD. To qualify for special education services in the category of emotional disturbance, a child must have:

> A condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance. These characteristics include an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; a general pervasive mood of unhappiness or depression; a tendency to develop physical symptoms or fears associated with personal or school problems (Nebraska Department of Education, 2021).

Any students with an "at-risk" status, namely, students without a formal verification of ED who were currently receiving Tier II (targeted) or Tier III (intensified) behavioral supports within the multi-tiered systems of support (MTSS) framework (Stoiber & Gettinger, 2015) were excluded from participation in the present study. Students with a primary verification of ADHD under the special education category of "other health impairment" (OHI) were also excluded. Students at risk for ED or those with ADHD were excluded from the present study because for these individuals, any learning or behavioral challenges might be better explained by intellectual, sensory, or other health factors (Nebraska Department of Education, 2021). Four students in that age/grade level range who met all inclusion criteria and submitted signed copies of both the parent/guardian informed consent and student assent forms were invited to participate in the study.

Participant 1: Peter

Peter was a 4th grade student. Although he was in 4th grade, he was assessed with probes at the 2nd grade level based on his grade level equivalency scores on the screening

measure. More so than any of the other participants, Peter often refused to engage in one-on-one instruction and therefore received the lowest dosage of the treatment. Over the course of the semester, he completed 29 lessons in the PALS program.

Participant 2: David

David was a 4th grade student. Although he was in 4th grade, he was assessed with probes at the 2nd grade level based on his grade level equivalency scores on the screening measure. Out of the four participants, David participated in the most instructional sessions and therefore received the highest dosage of the treatment. Over the course of the semester, he completed 41 lessons in the PALS program and managed to finish the entire instructional sequence.

Participant 3: Simon

Simon was a 7th grade student. Although he was in 7th grade, he was assessed with probes at the 2nd grade level based on his grade level equivalency scores on the screening measure. In addition to EBD, Simon also had a mild intellectual disability that may have impacted his progress in reading. Over the course of the semester, he completed 41 lessons in the PALS program and managed to finish the entire instructional sequence.

Participant 4: Rebekah

Rebekah was a 7th grade student. Although she was in 7th grade, she was assessed with probes at the 1st grade level based on her grade level equivalency scores on the screening measure. In addition to EBD, Rebekah also had a mild intellectual disability that may have impacted her progress in reading. Over the course of the semester, she completed 33 lessons in the PALS program.

Dependent Variables

Three dependent variables, decoding skills, oral reading fluency, and on-task behavior, were measured to determine the effects of the intervention package (systematic instruction in phonics, self-monitoring, and self-evaluation) on participants' reading achievement and behavior management skills. The first dependent variable, decoding skills, was operationally defined as the number of letter-sound correspondences correctly identified in phonetically regular pseudowords. Participants' decoding skills were measured using nonsense word fluency benchmark and progress monitoring probes from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment package. For the nonsense word fluency subtest, the median reliability coefficients across grade levels for the words recoded correctly (WRC) measure ranged from 0.72 to 0.92 (University of Oregon, 2020). In their text, *Assessment in Special and Inclusive Education*, the authors indicate that a reliability coefficient of 0.70 or above is acceptable when the purpose of assessment is progress monitoring, given that fluctuations are bound to occur when a behavior or skill is measured often (Salvia et al., 2016).

The second dependent variable, oral reading fluency, was defined as the number of words correctly read aloud per minute on a curriculum-based measure. This was measured using oral reading fluency benchmark and progress monitoring probes from DIBELS. The oral reading fluency subtest also had high reliability coefficients, with a range of 0.82 to 0.93 (University of Oregon, 2020). Baseline and progress monitoring probes from the DIBELS assessment package were used to evaluate participants' academic progress in both nonsense word fluency and oral reading fluency throughout the baseline and intervention phases of the study. The DIBELS assessment package was

selected for several reasons; it is widely used by teachers as a progress monitoring tool (Hoffman et al., 2009), is easily accessible, and is quick and easy to administer. In addition, this assessment package has high technical adequacy in terms of both reliability and validity, making it a consistent and accurate set of measures for evaluating students' early literacy skills (University of Oregon, 2020).

The final dependent variable was participants' on-task behavior. This was divided into two categories: academic responding (AR) and passive on-task (POT) behavior. Academic responding was operationally defined as "any active response to curricular material, including reading aloud, answering an academic question (verbally or in writing), asking an academic question, or writing a response," (Daly et al., 2020). Passive on-task behavior was operationally defined as any occurrence of "the student looking in the direction of (a) the teacher (while instructing or giving directions) or (b) an assigned instructional exercise (e.g., scanning a worksheet, reading silently)," (Daly et al., 2020). On-task behavior was measured using momentary time sampling, in which the occurrence (or non-occurrence) of the target behavior was recorded by the researcher in 20 second intervals over the course of each lesson using a classroom observation form. See Appendix C for a copy of this form. Momentary time sampling is an appropriate recording technique for continuous behaviors that do not have clear beginnings or ends. One major advantage of using momentary time sampling as a behavior recording method is that it provides an estimate of behavior without requiring constant monitoring on the part of the observer (Kazdin, 2021; Maag, 2018).

Independent Variables

Two interventions were used in the present study and served as the independent variables. The first was an academic intervention, a systematic phonics program called Peer Assisted Learning Strategies (PALS; Fuchs et al., 2000) which was included to improve decoding skills and increase participants' oral reading fluency and accuracy. The PALS phonics program contains 70 lessons that introduce letter-sound correspondences that gradually increase in complexity as the lessons progress. Each PALS lesson follows the same sequence that is comprised of four sections: saying sounds, sounding out, sight word practice, and reading stories. The first three lessons focus only on the saying sounds component. The fourth lesson adds in the "sounding out" section, while lessons five and six include instruction in saying sounds, sounding out, and sight word practice. From lesson seven onward, all four instructional components are present in every lesson. An essential element of the PALS program is the incorporation of peer tutoring. The peer tutoring component of PALS is present in the reciprocal roles of "reader" and "coach."

The second intervention/independent variable in the present study was a combination of instruction in self-monitoring and self-evaluation techniques. Participants were shown how to use self-monitoring of academic accuracy (Maag, 2018, p. 297) to track their progress on each of the four instructional sections of the PALS lessons. At the conclusion of each instructional section, participants were asked to count the number of sounds or words they identified correctly. Then, they recorded this number in a space provided at the bottom of each respective section. For example, if, in the first section, "saying sounds," the participant correctly identified 18 out of the 20 sounds, they would write the number 18 on the line next to "number of correct sounds" at the bottom of the

section. Similarly, if, in the "reading stories" section, the participant read the entire story without errors and the passage was 29 words long, they would write the number 29 on the line next to "words read correctly in story" at the bottom of the section. See Appendix D for a sample PALS lesson with these modifications for self-monitoring.

In conjunction with self-monitoring instruction, participants were provided with a model of how to use self-evaluation to set reasonable goals (Maag, 2018, p. 302) in terms of how many sounds or words they thought they could identify correctly in each section of the PALS lesson. Before phonics instruction began, the researcher and the participant previewed the first section of the PALS lesson and noted how many letter sounds were included in that particular lesson. Then the researcher asked the participant how many sounds they thought they could identify correctly. Finally, the participant wrote their goal for number of correct letter sounds in the empty column on the right-hand side of the lesson section along with the word "goal." This process of goal setting was followed for the "sounding out," "sight word practice," and "reading stories" sections of the lesson as well. Detailed procedures on the implementation of self-monitoring and self-evaluation instruction during the intervention phase can be found in the self-monitoring script in Appendix M.

Screening Measures

The word identification and word attack subtests that make up the basic skills cluster of the WRMT III were used as screening measures to assess participants' decoding skills and determine whether they met the necessary inclusion criteria to be considered a "struggling reader." The WRMT III is a standardized, norm-referenced assessment designed to identify students' individual strengths and challenges relative to

foundational reading skills. This information can be used to screen for reading readiness, identify struggling readers, and/or identify specific reading subskills in need of targeted intervention (Woodcock, 2011). The standard protocol for the screening process, including the student screening script, can be found in Appendix L. The word identification subtest of the WRMT III is one of nine subtests that evaluate a range of foundational reading skills. The word identification subtest measures a student's ability to decode regular English words. The word attack subtest of the WRMT III assesses students' ability to decode nonsense words. Students are asked to read "make-believe" words that follow the same phonetic rules as regular English words to determine how well they are able to apply these rules to nonsense words (Woodcock, 2011). For all qualifying students that participated in the intervention, the word identification and word attack subtests were also administered as a posttest measure at the conclusion of the study. The purpose of this was to provide more information about the effect of treatment in addition to the participants' performance on measures of each dependent variable.

Materials

The following materials were necessary for the implementation of this intervention: (a) a stopwatch; (b) pencils; (c) observation forms for momentary time sampling of on-task behavior; (d) blank bar graphs for participants to record their academic performance in each of the four sections of the PALS lesson—see Appendix F for examples of each of the self-monitoring graphs; (e) participant and instructor copies of the complete set of PALS lessons; (f) PALS point sheets and scoreboards for each participant—see Appendix E for examples of these materials; (g) participant and instructor copies of the benchmark and progress monitoring probes for nonsense word

fluency and oral reading fluency; (h) small tangible rewards such as markers, colored pencils, coloring books, fidgets, or passes for extra free time to engage in a preferred activity; (i) an iPad and tablet stand for video recording all instructional sessions.

General Procedures

The recruitment process began after the Institutional Review Board (IRB) at the University of Nebraska-Lincoln approved the study (see Appendix G for IRB approval letter). To recruit students, a digital copy of the informational flyer (see Appendix H) with the general purpose and inclusion criteria for the study was emailed to an elementary teacher at the alternative school. Given that the school has a small student population, this teacher was familiar with the academic and behavioral characteristics of all students who met the age/grade level requirements. The teacher was instructed by the researcher to send out the informational flyers via email to families of students who she thought might be eligible to participate. Parents or guardians who were interested in having their child participate in the study were provided a copy of the informed consent form via email (see Appendix J) and given the opportunity to contact the researcher if they had any questions or concerns.

Parents were required to read, sign, and return a hard copy of the informed consent form before the screening process could begin. In addition, potential student participants were required to read and sign a student assent form (see Appendix K), which was an abbreviated version of the parent/guardian informed consent form. Consent and assent forms were stored in a locked cabinet in the researcher's office at the Barkley Memorial Center. The researcher and research assistant were the only individuals with

access to these documents. All participants who completed the study received a $25 gift card to Amazon.

Baseline

During baseline, participants received only phonics instruction using the PALS program. Lessons occurred each weekday and were scheduled for 10 to 15 minutes per student. Participants were pulled from their general education classrooms for one-on-one instruction in the school's library. During this time, they missed portions of instruction in math, social studies, science, and language arts, depending on the class they were in when they were called for intervention. The researcher delivered one-on-one instruction in a different order each day to reduce the likelihood of participants missing large chunks of the same general education class. No other individuals apart from the researcher were present during baseline and intervention sessions.

For the first three lessons, benchmark probes in nonsense word fluency and oral reading fluency were administered to ensure that the assessment materials were at the appropriate instructional level for each participant. Nonsense word fluency was measured by presenting a curriculum-based measure of decoding to the participant and asking them to sound out as many nonsense words as they could in one minute. Participants were presented with two practice nonsense words. For the first word, the researcher modeled how they could sound out each individual sound or read the whole word. Then, the participant was given the opportunity to sound out the second practice word to ensure comprehension of the purpose and protocol of the assessment. After reading the second practice word, they were either praised for providing a correct answer or given corrective feedback. The researcher then gave these directions to the participant, "Here are some

more make-believe words. Start here (researcher points to the first word on the student copy of the nonsense word list) and go across the page. When I say 'begin,' read the words the best you can. Point to each letter and tell me the sound or read the whole word. Put your finger on the first word. Ready? Begin."

The researcher timed the participant for one minute while they decoded nonsense words. Each word that was decoded correctly was marked with a plus sign, while any words that were decoded incorrectly were marked with a minus sign as well as a phonetic spelling of what the participant had said. For example, if the word was /h//a//p/ and the participant sounded it out /h//o//p/, the error was noted on the researcher's copy of the recording form. The number of correctly decoded words was tallied for each line, with the total number of correctly decoded words marked at the bottom. This testing procedure was used for both benchmark and progress monitoring assessments. An example of a scored nonsense word fluency assessment is included in Appendix A.

To measure oral reading fluency, participants' accuracy and words correct per minute were calculated based on their oral reading of a baseline or progress monitoring probe from DIBELS. Oral reading fluency was measured by presenting a curriculum-based measure (a sample passage from DIBELS) to the participant and asking them to read aloud from it for one minute. Participants were given the following instructions: "Please read this (researcher points to the text) out loud. If you get stuck, I will tell you the word so you can keep reading. When I say 'stop,' I may ask you to tell me about what you read, so do your best reading. Start here (researcher points to the first word of the passage). Begin." The researcher timed the participant for one minute while they read and noted any errors the participant may have made, such as insertions, omissions, or

substitutions of words. These errors were recorded on the researcher's copy of the fluency passage using the standard annotation marks for scoring curriculum-based measures in oral reading fluency. Repetitions and self-corrects were also noted, but not counted as errors.

Accuracy was measured as a percentage of the text that was read without errors. This was calculated by subtracting the number of errors from the total number of words read and dividing by the total number of words read. For example, an individual who reads 95 words and makes 12 errors has an overall accuracy of 87%. Rate, as well as accuracy, is reflected by the participants' words correct per minute (WCPM) score, a common metric used to communicate proficiency in oral reading fluency. For a one-minute timed read, the participant's WCPM score is the total number of words read correctly. This testing procedure was used for both benchmark and progress monitoring assessments. A scored reading sample with the corresponding annotations is included in Appendix B. Once this period of benchmark assessment was complete, one-on-one instruction during baseline was set on a schedule so that every third session was designated as an "assessment only" lesson. In each of these "assessment only" sessions, the researcher administered two progress monitoring probes, one in nonsense word fluency and one in oral reading fluency. The assessment procedures for progress monitoring were the same as those used during benchmark assessments.

Measurement of on-task behavior using momentary time sampling took place in baseline during all instructional sessions and was not measured during assessment-only sessions because the goal of the behavioral intervention was to increase on-task behavior primarily during academic instruction. To simplify the collection of behavioral data, the

researcher recorded each instructional session using an iPad, thus eliminating the need for potentially distracting in-person behavioral recording. When using momentary time sampling in the present study, the researcher had to consult the operational definitions of "academic responding" and "passive on-task" to determine whether one or more behaviors in either of these categories had occurred at the end of each 20 second interval. If one or more of the target behaviors listed in the operational definition of "academic responding" had been occurring when the interval ended, the researcher would circle "AR" for that interval. If one or more of the target behaviors listed in the operational definition of "passive on-task" had been occurring when the interval ended, the researcher would circle "POT."

If academic instruction was not occurring at the end of a particular interval, the researcher would circle "NA" for "not applicable." This would be the case if the researcher was preparing materials or a transition from one activity to another was taking place. If none of the behaviors that constituted "on-task behavior" were occurring at the end of the interval, that box on the observation form was slashed through with a "x." Any problem behavior was noted in the space provided on the observation form. Each box on the recording form was marked to avoid ambiguity in scoring as the researcher and research assistant compared their observations. For example, if a box remained empty on either observer's recording form, it could either mean that on-task behavior did not occur or that one (or both) of the observers forgot to score that interval. Results were calculated as a percentage of time the target behaviors occurred by taking the number of intervals in which one or more of the target behaviors occurred, dividing this number by the total

number of intervals in an instructional session, and then multiplying by 100 (Kazdin, 2021, p. 103).

The baseline phase consisted of phonics only instruction using the PALS program. To implement the PALS program in a typical elementary classroom setting, the general education teacher would begin by ranking each of their students based on overall reading performance. The teacher would then divide the class in half and pair the highest performing reader from the top half of the class with the highest performing reader from the bottom half of the class. The second highest performing students from each half of the class would be paired together and this pattern would continue until every student was partnered up (Fuchs et al., 2000).

In the traditional implementation of PALS, higher performing readers are matched with lower performing (but not necessarily struggling) readers so that the more skilled reader can act as a peer tutor (Fuchs et al., 2000). Prior to beginning partner work, the teacher provides students with explicit instruction in the general rules of PALS, how to implement the correction procedures for each instructional section, and how and when to assign points. All of this information is included in the PALS program materials, which are included with the student instructional booklets. The higher performing student begins each instructional section as the "reader" by modeling accurate decoding skills while their partner acts as the "coach" and provides immediate corrective feedback as necessary. Any time the reader makes a mistake, it is the responsibility of the coach to say, "Stop. That sound is ____. What sound? Start the line again." This correction procedure is employed for all four instructional sections of each lesson, however, in the

sounding out, sight words, and reading stories sections, the correction phrase used by the coach changes to, “Stop. That word is _____. What word?” to reflect the new content.

Once partner 1 completes the first section as the reader, the roles switch, and the student who was initially the coach becomes the reader and repeats the same section while their partner assumes the role of the coach. This process is repeated for all four instructional sections. Points are associated with all four sections and are awarded to both members of the pair for completing each instructional activity as the reader and providing immediate corrective feedback as the coach. A point sheet and scoreboard are provided in the PALS program materials (see Appendix E) so that each individual can keep track of their points throughout the lesson and the students can compare their totals when each lesson is finished. Students remain with their same partner during all PALS lessons; pairings are meant to be changed by the teacher every four weeks (Fuchs et al., 2000). For the purposes of the present study, the researcher assumed the role of the “peer” as well as that of the higher performing reader so as to model accurate decoding of sounds and individual words as well as the identification of sight words and fluent reading of connected text.

For the purposes of accurately assessing nonsense word fluency and oral reading fluency with equivalent stimulus materials, the appropriate grade level benchmark and progress monitoring probes were randomly assigned to participants. Once a participant was exposed to a probe for either benchmark assessment or progress monitoring, the probe was replaced with another DIBELS probe from the same grade level set to ensure equivalent difficulty levels. The procedure of random sampling with replacement was put

in place to decrease the possibility of order effects as a potential threat to internal validity (Kazdin, 2021).

Intervention

A phase change from baseline to intervention was made for each participant after the student had achieved a stable baseline trend that consisted of at least three data points. In the cases of Participants 2, 3, and 4, phase changes were only made if the participant that preceded them (i.e., Participants 1, 2, and 3, respectively) had three subsequent stable baseline data points in both progress monitoring measures of basic reading skills (i.e., nonsense word and oral reading fluency). An assessment only session (detailed above in the description of the procedures for baseline instruction) took place immediately prior to implementing a phase change. When they moved from baseline into intervention, participants continued to receive phonics instruction using the PALS program. In this phase of the study, they were also shown how to use self-monitoring of academic accuracy (Maag, 2018, p. 297) to track the number of sounds, blends, and words they identified correctly in each instructional section of the PALS lesson. Self-monitoring of accuracy was selected as a component of the treatment to increase participants' academic performance in phonics while decreasing inappropriate social behaviors to ultimately increase their percentage of time on-task (Maag, 2018, p.292). Additionally, participants were shown how to use self-evaluation to set goals for the purpose of comparing their level of accuracy in each lesson to whatever standard they had set for themselves. Goals were established as a means of self-evaluation. Setting regular goals draws students' attention to their academic achievement. This increased attention on making progress allows students to set higher and higher standards for themselves (Maag, 2018, p. 302).

The purpose of adding this second independent variable was to determine whether a combination of academic and behavioral supports had a greater impact on the accuracy and fluency of participants' reading as well as the percentage of time spent on-task than phonics instruction by itself.

Prior to beginning phonics instruction in the first lesson of the intervention phase, the researcher modeled for participants how to self-monitor their academic performance on each of the four sections of the PALS lessons. To illustrate how participants would monitor their reading performance, the researcher showed them a blank copy of the bar graphs that corresponded to the four sections of the PALS lesson. On the graphs, the researcher pointed out the vertical axis that measured the scores for number of sounds or words read correctly and the spaces on the horizontal axis where they would write down their goal for how many sounds or words they wanted to read correctly in each section of the next PALS lesson. After pointing out each component of the bar graph, the researcher demonstrated to participants how to record their scores by shading in the bar graph to correspond with the number of sounds or words read correctly.

Once the researcher had modeled how to fill out a progress monitoring graph, they worked with each participant to set reasonable goals for increasing accuracy in the "saying sounds," "sounding out," "sight word practice," and "reading stories" sections of the lesson. The researcher explained that reasonable goals are specific, realistic, and challenging, that is, each goal clearly defines the target behavior and is within the realm of possibility for the participant to achieve without it being too easy or too difficult (Maag, 2018, p. 305). A goal was deemed reasonable by the researcher if it was an accurate reflection of the individual participant's capability for reading accuracy. For

example, if a participant decided to set a goal that required them to read with very low accuracy, they were encouraged to set a slightly higher goal. Conversely, if a participant set a goal to read all the sounds, blends, or words correctly within a section, they were encouraged to lower their goal enough to allow room for error and minimize the potential for frustration if they did not read with 100% accuracy. Once the pair decided on a reasonable goal, the participant wrote the goal in the empty column on the right-hand side of the lesson section next to the word "goal." Once the self-monitoring process had been modeled and goals had been established, the researcher and participant would engage in phonics instruction using the PALS program just as they did in baseline. To ensure fidelity of implementation, the process for instruction in self-monitoring and self-evaluation followed a script, which can be found in Appendix M.

Based on the achievement of their goals, participants were able to earn rewards as a means of positive reinforcement. Potential rewards were compiled in a reinforcement menu which identified tangible items and privileges that each participant was motivated to work for. Although all rewards were participant-selected, they needed to first be approved by the participant's teacher. Rewards were used as programmed consequences whenever participants met or exceeded one or more of the goals they had set. Programmed consequences were high-preference items, activities, and privileges which were divided into two categories: tier 1 and tier 2 rewards. Participants could earn tier 1 rewards such as a coloring book page or a small fidget if they met or exceeded their goals for 1-3 sections of the PALS lesson. If participants met or exceeded all four of their goals, they could earn a tier 2 reward, which was a bigger prize such as colored pencils, markers, or multiple coloring pages. Options for preferred activities included listening to

music, playing a game on the iPad, and coloring. In the intervention phase, the researcher used momentary time sampling to measure on-task behavior during each of the instructional sessions with the exception of assessment-only days. Additionally, the researcher implemented an intermittent schedule of reading assessment identical to the one used during baseline.

Data Analysis

There were two methods of data analysis for measuring the effectiveness of the intervention. Visual inspection was used to determine trend, stability, and level of change on graphs of all three dependent variables. The second method was calculating two types of within-case effect sizes: baseline-corrected Tau and a log response ratio. Baseline-corrected Tau (Tau-BC) is a percent of non-overlapping data measure of effect size that indicates the direction and strength of the relationship between the intervention and the outcome measures (Parker et al., 2011; Tarlow, 2017). This effect size statistic addresses and improves upon some of the limitations of the Tau-U effect size statistic, such as high levels of Type I error. As the name suggests, Tau-BC controls for potential trends in baseline data. If there is no trend in the baseline data, the correction becomes unnecessary, and the Tau-U statistic is reported (Parker et al., 2011; Tarlow, 2017). Tau-BC was selected as one of the effect size measures in the present study because of the potential for ascending trends in baseline on measures of the academic dependent variables due to participants receiving phonics instruction during the baseline phase. Log response ratios were also calculated to supplement the information provided by the Tau-BC effect sizes in order to quantify the impact of the intervention. A log response ratio is a parametric effect size index that "quantifies functional relationships in terms of

proportionate change" (Pustejovsky, 2018). The rationale for calculating within-case effect sizes was to supplement visual inspection and provide an additional measure of the relationship between the independent and dependent variables.

Interrater Reliability

For all three dependent variables, a research assistant (RA) served as a second scorer to determine interrater reliability. The RA used video recordings of the instructional sessions to conduct reliability checks of the scoring for the nonsense word fluency and oral reading fluency measures as well as the measurement of on-task behavior using momentary time sampling. For each "assessment only" session, the RA watched a video of the lesson and followed along with copies of the benchmark or progress monitoring probes for nonsense word fluency and oral reading fluency. Based on her observation, she scored the number of words read correctly on both measures and recorded these scores on her copies of the assessment forms. At the conclusion of the study, the researcher and the RA compared their scores for each of the four participants and resolved any disagreements through discussion. Using this information, an interrater reliability statistic was calculated by dividing the number of agreements by the number of agreements plus disagreements (Kazdin, 2021, p. 139). In a similar way, inter-observer agreement for momentary time sampling of on-task behavior was calculated using point-by-point agreement. Interrater reliability and inter-observer agreement data was collected for 30% of all baseline and intervention sessions. The scored sessions were selected at random using a random number generator, and a different random sample was used for scoring measures of each dependent variable, respectively. The interrater reliability statistic was computed by dividing the number of agreements by the total number of

items scored to determine a percentage of overall agreement between the two raters. Interrater reliability for both nonsense word and oral reading fluency scoring was 0.98, while the interrater reliability for on-task behavior scoring was 0.72. All discrepancies in scoring were resolved through discussion.

Implementation Fidelity

To assess fidelity, checklists were created that detailed each step of the intervention process. There were three separate fidelity checklists, one that included all the necessary steps for delivering the phonics instruction, one for the integration of self-monitoring and self-evaluation (only applicable during the intervention phase of the study), and one for assessment only sessions. See Appendix N for the complete set of fidelity checklists. Over the course of the intervention, the RA reviewed video recordings in order to oversee the implementation of both baseline and intervention sessions for each of the four participants. To assess implementation fidelity, a random sample of 30% of all instructional videos were selected using a random number generator. As the RA watched the video for each instructional session, she marked the occurrence (or non-occurrence) of every instructional step on the appropriate fidelity checklist. The intervention was implemented with a fairly high degree of fidelity, with 86% of the steps in the instructional and assessment procedures completed accurately. Fidelity of implementation was calculated as a percentage by dividing the number of procedural steps followed (for instructional sessions during baseline and intervention as well as assessment only sessions) by the total number of procedural steps listed on the fidelity checklists. These lists were monitored to make sure they accurately reflected the operational definitions of each of the necessary components of the intervention.

CHAPTER 4

Results

The objective of the present study was to examine the effects of a combination of academic and behavioral supports on students with emotional or behavioral disorders (EBD) who are also struggling readers. The research questions focused on whether the addition of self-monitoring and self-evaluation instruction within the context of systematic phonics lessons could improve the decoding skills, oral reading fluency, and on-task behavior of these students. Both academic and behavioral outcome measures were included to determine whether the combination of these supports could lead to improvements in students' basic reading and behavior management skills above and beyond academic or behavioral interventions on their own. Curriculum-based progress monitoring measures in nonsense word fluency and oral reading fluency were used to assess progress in reading. Momentary time sampling was the recording method used to measure the participants' rate of on-task behavior. An undergraduate research assistant served as a second scorer for measures of each of the dependent variables and also assessed the fidelity of implementation for baseline and intervention instructional sessions as well as assessment only days. The overall implementation fidelity of the intervention was 86%.

Results for Nonsense Word Fluency

The results for nonsense word fluency are presented in Figure 1. A stable baseline trend was established for Peter, David, and Rebekah prior to the implementation of a phase change. Efforts were made to ensure that Simon had a stable baseline trend before he was moved into the intervention phase, yet the consistently high level of variability in

his baseline data made it difficult to predict a stable pattern of responding. It was decided that Simon should move from baseline to intervention in spite of the unstable trend in his baseline data due to the presence of time constraints, namely, the impending end of the fall semester and the beginning of winter break. The interrater reliability for nonsense word fluency scoring was 0.98. All discrepancies in scoring were resolved through discussion.

Participant 1

For Participant 1, Peter, the scores on the curriculum-based progress monitoring measures of nonsense word fluency were relatively low in baseline, with a mean score of 13.50 (*SD* = 3.27) and a range of eight to 16 nonsense words decoded correctly in one minute. Although Peter was in 4th grade, he was assessed with probes at the 2nd grade level based on his grade level equivalency scores on the screening measure. There was a low level of variability in his baseline scores and no indication of an ascending trend in baseline despite the presence of ongoing systematic phonics instruction. When Peter moved from the baseline to the intervention phase, there was a slight increase in the level of responding that remained fairly stable throughout the rest of the instructional sessions. Overall, Peter's level of responding to the progress monitoring measures of nonsense word fluency in both baseline and intervention varied little. His mean score during intervention was 18.40 (*SD* = 3.20) nonsense words decoded correctly, with a range of 13-23 words. The baseline-corrected Tau (Tau-BC) effect size for Peter required no baseline correction and was statistically significant (τ = 0.49, p = 0.03). The log response ratio (LRR) was 0.83 (*SE* = 0.10).

Of all four participants, Peter's change in level provided the strongest case for a treatment effect. His were the only scores that actually increased directly following the introduction of the intervention condition, however, the difference in level after the phase change was minimal and could have been a product of either history or maturation effects, two of the threats to internal validity described by Kazdin (2021, p. 38). Since the systematic phonics instruction was a core component of both the baseline and intervention conditions, it is possible that ongoing one-on-one reading instruction led to his improvements. Therefore, it cannot be reliably concluded that the addition of self-monitoring and self-evaluation instruction was responsible for this growth.

Participant 2

The level of responding for Participant 2, David, was also relatively low in baseline, with a mean score of 9.64 (*SD* = 3.11) and a range of four to 14 nonsense words decoded correctly. There was some variability in his scores toward the beginning of baseline, including a small increase in responding between sessions three and six as well as between sessions nine and twelve. From then on, a very slight and consistently ascending trend is evident for the remainder of the baseline phase. Similar to Peter, David was assessed with progress monitoring probes at the 2nd grade level even though he was a 4th grade student. When David moved from baseline to intervention, the first score after the phase change was lower than the one that immediately preceded the phase change. However, after his initial intervention score, an ascending trend is evident in his scores for the first half of the intervention phase. There are several data points in the second half of the intervention phase (sessions 49 and 63) that dip down and introduce some variability to the overall level of responding, but over half of David's intervention scores

in terms of nonsense word fluency do not overlap with baseline. His mean score during intervention was 18.67 (*SD* = 5.30) nonsense words decoded correctly, with a range of 10-27 words. The Tau-BC effect size for David required no baseline correction and was statistically significant ($\tau = 0.64$, $p = 0.00$). The LRR was 0.94 (*SE* = 0.04).

Of the four participants, David's scores showed the most apparent increase from baseline to intervention. Regardless of this improvement, there is insufficient evidence to suggest that the treatment was responsible for the change in his scores on this particular dependent variable due to the latency of the change in his level of responding. Immediately following the phase change, his scores actually decreased slightly before following an ascending trend. Given that a slight ascending trend was also evident in David's baseline data, history or maturation effects could be responsible for his increased scores. The presence of two potential threats to internal validity make it unreasonable to conclude that the intervention led to increases in David's ability to decode nonsense words.

Participant 3

Participant 3, Simon, had the most variability of all four participants in nonsense word fluency scores during his baseline phase. At the time of the study, Simon was a 7th grade student but was assessed with progress monitoring probes at the 2nd grade level based on his scores on the screening measure. Of all four participants, Simon also had the highest level of responding in baseline, with a mean score of 24.92 (*SD* = 7.17) and a range of 13-38 nonsense words decoded correctly. Due to the consistently high level of variability, it was somewhat difficult to detect any sort of trend in Simon's baseline scores. There were, however, noticeable ascending trends for portions of the baseline

phase, namely between sessions 8 and 17 as well as between sessions 20 and 33. When Simon moved from baseline to intervention, there was a notable decrease in the level of responding that persisted for the first three data points after the phase change was made. After that, there is a prominent ascending trend in his nonsense word fluency scores for the majority of the intervention phase until the last three data points, which illustrate a fair amount of variability similar to the scores in the middle of the baseline phase. The majority of Simon's scores during intervention overlapped with baseline, which indicated that the treatment was unsuccessful at improving his ability to apply the principles of phonics to decode make-believe words. During the intervention phase, his mean score was 24.56 (SD = 8.96) nonsense words decoded correctly, a slight decrease from his mean score in baseline, with a range of 15-36 words. The Tau-BC effect size for Simon required no baseline correction and was not statistically significant (τ = -0.03, p = 0.89). The LRR was 0.48 (SE = 0.14).

The variability of Simon's scores in both baseline and intervention make his results more difficult to interpret. At several points throughout the study, the researcher considered moving Simon up to 3rd grade progress monitoring probes in both nonsense word and oral reading fluency. Ultimately, it was decided that, regardless of timing, a shift in the difficulty level of the assessments would have made it even harder to discern a treatment effect if there was one; if his scores suddenly dropped, it would be unclear whether that was due to a change in the assessment level or an ineffective intervention. Simon's scores also pose a challenge for interpretation because directly following the introduction of the intervention, his level of responding decreased and then rapidly increased between sessions 48 and 59. As with David, the latency of Simon's

improvement in nonsense word fluency makes it unlikely that the intervention was responsible for the change.

Participant 4

Finally, Participant 4, Rebekah, demonstrated the least variability of all four participants in her level of responding on measures of nonsense word fluency. Similar to Simon, at the time of the study, Rebekah was a 7th grade student who was assessed with progress monitoring probes at the 1st grade level based on her grade level equivalency scores on the screening measure. Although the progress monitoring probes she was given were six years below her actual grade level, Rebekah's scores in baseline were still consistently very low, with a mean of 1.75 (SD = 0.87) and a range of zero to three nonsense words decoded correctly. In session four, she did not correctly identify any of the nonsense words presented to her within a one-minute time frame, which might have been an indication that the set of 1st grade assessments was too difficult. Rebekah's scores remained stable throughout baseline without much evidence of change in level or trend. When she moved from baseline to intervention, there was a small increase and slightly more variability in her level of responding, however, this change did not occur until the intervention phase was nearly finished. Comparable to her baseline data, Rebekah's nonsense word fluency scores during intervention remained fairly stable with the exception of the data point for session 67 in which she correctly identified seven nonsense words. During the intervention phase, her mean score was 2.60 (SD = 2.70) with a range of zero to seven nonsense words decoded correctly. The Tau-BC effect size for Rebekah required no baseline correction and was not statistically significant (τ = 0.12, p = 0.60). The LRR was 0.59 (SE = 0.19).

Rebekah's scores in both baseline and intervention were by far the lowest of all four participants, and there was no noticeable change in the level or trend of her scores after the phase change. One explanation for this might be that, like Simon, Rebekah's instructional level of reading was far below her actual grade level, indicating substantial reading difficulty. Unlike Simon, however, Rebekah's scores in nonsense word fluency were consistently low throughout the study. It is possible that Rebekah's scores remained low in baseline and intervention because she had a skill deficit in reading. Skill deficits have to do with an individual not possessing the prerequisite skills necessary to complete a task and are different from performance deficits, in which an individual is able to complete a task and is simply unwilling or unmotivated to do so (Duhon et al., 2004; Maag, 2001). If the assessment material, even at a reduced difficulty level, was still too challenging for Rebekah, it follows that the addition of self-monitoring and self-evaluation instruction during the intervention phase would not be enough to increase her reading achievement. It may have even had the opposite effect, and the added responsibility of self-monitoring and self-evaluation (i.e., goal setting) could have led to additional strain on her executive function skills.

In summary, experimental control was not achieved for the dependent measure of nonsense word fluency. There were small, statistically significant positive effect sizes for two of the four participants (Peter and David), but without a replication of this effect across participants immediately following the introduction of the treatment, it cannot reasonably be concluded that the intervention was responsible for any improvements in decoding skills.

Results for Oral Reading Fluency

The results for oral reading fluency are presented in Figure 2. A stable baseline trend was only established for Rebekah prior to the implementation of a phase change. There was, however, a descending trend for the other three participants at the end of each of their respective baseline phases. This descending trend was in the opposite direction of the intended treatment effect, so phase changes were made for each of these participants. The interrater reliability for oral reading fluency scoring was 0.98. All discrepancies in scoring were resolved through discussion.

Participant 1

For Peter, the level of responding on the curriculum-based progress monitoring measures of oral reading fluency was relatively low in baseline, with a mean score of 41.17 (*SD* = 9.70) and a range of 27-56 words read correctly in one minute. According to the DIBELS 8th Edition Benchmark Goals, at the beginning of 4th grade, students should be reading between 87 and 130 words correct per minute on grade level appropriate fluency passages (University of Oregon, 2020), which indicates that his scores were well below average for a student his age. There was a fairly low level of variability in his baseline scores. An ascending trend is evident in Peter's scores from sessions four through 10, but in the next assessment session, his oral reading fluency score dropped back down to a level comparable to his initial level of responding. When Peter moved from baseline to intervention, his level of responding actually decreased before adopting a consistent pattern of variability for the majority of the intervention phase, although his scores did eventually stabilize by session 47. His mean score during intervention was

46.45 (*SD* = 14.15), with a range of 22-66 words read correctly. The Tau-BC effect size for Peter required no baseline correction and was not statistically significant (τ = 0.16, p = 0.48). The LRR was 0.66 (*SE* = 0.14).

Several factors make it challenging to draw clear conclusions about the change in Peter's oral reading fluency from baseline to intervention. First, the fluency probes he was assessed with were at a 2nd rather than a 4th grade level, which means his scores were not a true reflection of his reading ability. If given assessment materials at a 4th grade level, it is likely he would have struggled much more. Second, in contrast to the nonsense word fluency probes, each of the fluency passages consisted of several paragraphs of narrative or informative text. The difference in subject material from passage to passage may have impacted his fluency scores based on his level of background knowledge on the topic. This is true not just for Peter, but for all four participants. Finally, considerable variability in Peter's scores, especially during the intervention phase, made it hard to see a clear trend or discern a noticeable difference in level of responding after the phase change. The presence of these confounding variables makes it unreasonable to conclude that the intervention was responsible for his change in fluency scores.

Participant 2

The level of responding for David was relatively stable throughout the baseline phase. An ascending trend is evident toward the beginning of baseline, but his fluency scores descended back to their initial level right before the phase change. While David's scores were below average for a student at the beginning of 4th grade, they were considerably higher than Peter's. His mean score in baseline was 63.55 (*SD* = 14.58), with a range of 38-86 words read correctly per minute. When David moved from baseline

to intervention, there was a clear change in level, and this higher level of responding remained consistent for the rest of the intervention phase. As in baseline, there was some variability in David's fluency scores during intervention, especially between sessions 42 and 49. His mean score during intervention was 76.67 (*SD* = 12.09), with a range of 53-91 words read correctly. The Tau-BC effect size for David required no baseline correction and was statistically significant (τ = 0.40, p = 0.03). The LRR was 0.77 (*SE* = 0.11).

Of the four participants, David's increase in oral reading fluency was the most apparent from baseline to intervention. There was a noticeable change in his level of responding directly following the shift from baseline to intervention, which provides some evidence of a treatment effect. The fact that these increased fluency scores were maintained at a stable level throughout the intervention phase makes it less likely that history or maturation effects influenced his progress. If those threats to internal validity were in effect, there would have been a gradual ascending trend during the intervention phase as David received additional systematic phonics instruction. Taking all of this information into account, it is reasonable to conclude that the intervention was responsible for David's improvement in oral reading fluency.

Participant 3

For Simon, the pattern of his oral reading fluency scores was similar to his levels of responding for nonsense word fluency: consistently inconsistent with high levels of variability. Of the four participants, he had the highest level of baseline responding, with a mean score of 99.50 (*SD* = 23.58) and a range of 64-132 words read correctly per minute. This may have been because he was assessed with 2nd grade fluency probes,

which were well below his actual grade level. According to the DIBELS 8th Edition Benchmark Goals, at the beginning of 2nd grade, students should be reading between 49 and 84 words correctly per minute on grade level fluency passages (University of Oregon, 2020), so it makes sense that Simon, as a 7th grade student, was exceeding those benchmarks. When he moved from baseline to intervention, there was a small increase in his oral reading fluency scores, but not enough to constitute a clear change in his level of responding. His scores in intervention were less variable than those in baseline, however, 97% of his intervention data points overlapped with baseline. Taken together, the minimal change in level from baseline to intervention as well as the high percent of overlapping data suggests a lack of intervention effect. His mean score during intervention was 101.56 (SD = 20.82), with a range of 69-140 words read correctly. The Tau-BC effect size for Simon required no baseline correction and was not statistically significant (τ = 0.03, p = 0.89). The LRR was 0.52 (SE = 0.13).

There are several possible explanations for Simon's oral reading fluency results, including the low levels of responding (relative to his actual grade level) and the high levels of variability. It is possible that Simon had an underlying skill deficit in reading. The fact that he was a 7th grade student reading at a 2nd grade level indicates gaps in his core literacy skills. As fluency consists of doing a task both accurately and quickly (Maag, 2001), it makes sense that a student lacking a strong foundation in phonics would struggle with fluent reading of connected text. After several baseline instructional sessions, the researcher began to suspect that Simon may have had some degree of a co-occurring intellectual disability (ID). Through numerous conversations with the director of the alternative school, this suspicion was confirmed, although this confirmation did not

come until after the study had concluded. Additionally, no individualized education program (IEP) or multidisciplinary team (MDT) meeting records for Simon were made available to the researcher prior to or during the study, despite several attempts to obtain that information.

Since individuals with intellectual disabilities are characterized by subaverage general intellectual functioning that adversely affects their educational progress (Nebraska Department of Education, 2021), the presence of a mild intellectual disability helps to explain his slower progress in terms of basic reading skills as well as why his instructional level was so far below his actual grade level. Another potential explanation for Simon's fluency scores is the difference in subject material from passage to passage. It is likely that Simon had varying levels of background knowledge on each topic, so it follows that he would do better when reading about topics he could relate to, such as a passage about the importance of cleaning your room, than those he could not, such as a story about an island of mangroves.

Participant 4

A stable baseline trend was established for Rebekah on measures of oral reading fluency. There was a slight ascending trend between sessions 33 and 40, but this increased level of responding stabilized from session 40 through the remainder of baseline. Her mean score during baseline was 18.50 (*SD* = 7.77), with a range of eight to 32 words read correctly per minute. Similar to her nonsense word fluency scores, her level of responding during baseline on measures of oral reading fluency was quite low and lacked variability. When she moved from baseline to intervention, there was a slight increase in her level of responding, but this progress was not sustained or improved upon

for the rest of intervention. There was actually a descending trend in her scores after her first assessment following the phase change. Her fluency briefly increased in session 67 but returned to pre-intervention levels in session 71. Similar to baseline, there was little variability in her fluency scores during intervention. Her mean score during intervention was 29.40 (*SD* = 7.77), with a range of 21-39 words read correctly. The Tau-BC effect size for Rebekah did require a baseline correction and was not statistically significant (τ = -0.11, p = 0.61). The LRR was 0.85 (*SE* = 0.09).

Rebekah's low levels of responding in both baseline and intervention may be an indicator of an underlying skill deficit in reading. Given that her scores were consistently low in both nonsense word and oral reading fluency, it is possible that Rebekah was missing some core literacy skills, and these gaps made it more challenging for her to decode unfamiliar words in addition to accurately and fluently reading connected text. As was the case with Simon, after several baseline instructional sessions, the researcher began to suspect that Rebekah may have had some degree of a co-occurring intellectual disability. Through numerous conversations with the director of the alternative school, this suspicion was confirmed, although this confirmation did not come until after the study had concluded. Additionally, no individualized education program (IEP) or multidisciplinary team (MDT) meeting records for Rebekah were made available to the researcher prior to or during the study, despite several attempts to obtain that information. Regardless of the reason for the results, the lack of a noticeable intervention effect, based on both visual analysis and the within case effect sizes, would suggest that for Rebekah, adding self-monitoring and self-evaluation instruction to an existing systematic phonics program did not result in an increase in oral reading fluency.

In summary, experimental control was not achieved for the dependent measure of oral reading fluency. David was also the only participant for whom there was a small, statistically significant positive effect size. Without a replication of this effect across all participants upon introduction of the treatment, it cannot reasonably be concluded that the intervention was responsible for this growth.

Results for On-Task Behavior

The results for on-task behavior are presented in Figure 3. Given that phase changes were made based on participants' performance on the academic as opposed to the behavioral dependent variables, stable baseline trends were not established prior to moving each participant from baseline to intervention. The interrater reliability for on-task behavior scoring was 0.72. All discrepancies in scoring were resolved through discussion.

Participant 1

For Peter, the baseline level of on-task behavior was between 50 and 86%, with a mean of 69.86 (*SD* = 13.13). There was some variability in his level of on-task behavior in baseline, but his scores were the most stable of the four participants. Directly following the phase change, his rate of on-task behavior increased from 67 to 85%. This noticeable change upon introduction of the intervention was one indicator of a treatment effect for Peter as well as the fact that this increased level of responding was maintained throughout the intervention phase. There were two ascending (sessions 17-22 and 41-44) and two descending (sessions 37-41 and 60-63) trends within his intervention phase data. Nevertheless, his overall rates of on-task behavior tended to fluctuate, albeit at a somewhat higher level of responding than in baseline. In terms of overlapping data, 68%

of the data points in intervention overlapped with baseline. His mean level of on-task behavior in intervention had a slightly narrower range than in baseline, and was between 67 and 100%, with a mean of 82.23 (*SD* = 9.40). The Tau-BC effect size for Peter did not require a baseline correction and was statistically significant (τ = 0.32, p = 0.05). The LRR 0.75 (*SE* = 0.12).

When analyzing his results, it is important to note that Peter often refused to participate in one-on-one instruction during both baseline and intervention. With less data than the other three participants, Peter's mean rates of on-task behavior in baseline and intervention were more heavily influenced by his more extreme scores, both low and high. Additionally, on the days Peter chose to participate in instruction, which was approximately two-thirds of the total number of instructional days, his behavior was qualitatively different than on the days in which he refused, which may have positively skewed his levels of on-task behavior.

Participant 2

For David, his baseline level of on-task behavior was between 27 and 100%, with a mean of 71.41 (*SD* = 20.16). In contrast to Peter, David's baseline levels of on-task behavior were the most variable of the four participants. In sessions one through 11, there was a gradual descending trend in his level of on-task responding. In contrast, for sessions 11 through 20, a steep ascending trend is evident, with the exception of session 17, in which there was a slight dip in on-task behavior. Toward the end of baseline, in sessions 20-26, a sharp descending trend is apparent.

Directly following the phase change, his rate of on-task behavior drastically increased from 38 to 78%; this rapid improvement was one indicator of a treatment effect

for David. Rates of on-task behavior in the intervention phase were even more variable than those in baseline. There were substantial shifts in David's rate of on-task behavior from one instructional session to the next. Furthermore, the scores in the intervention phase were devoid of any noticeable trends in either direction. In terms of overlapping data, 31% of the intervention data overlapped with baseline, although he did have more instructional sessions in intervention where he was on-task 100% of the time. His level of on-task behavior in intervention had a slightly narrower range than in baseline, and was between 43 and 100%, with a mean of 78.14 (*SD* = 18.80). The Tau-BC effect size for David did require a baseline correction and was statistically significant (τ = 0.69, p = 0.00). The LRR was 0.60 (*SE* = 0.09).

When analyzing David's results in terms of on-task behavior, it is important to consider the following factors. First, David was the most physically active of the four participants, which meant that he was often off camera during the instructional sessions. For any interval in which a participant was off camera and was not actively responding (e.g., reading aloud, commenting on the lesson), we scored it as "not applicable" because we could not accurately determine whether the participant was engaging in on-task behavior. The existence of this rule, combined with David's frequent movement, makes it difficult to reach a conclusion about his true level of on-task behavior.

Participant 3

For Simon, his baseline level of on-task behavior was between 43 and 100%, with a mean of 85.83 (*SD* = 16.02). Consistent with his performance on measures of nonsense word and oral reading fluency, Simon's rates of on-task behavior in baseline were highly

variable. Despite this variability, an ascending trend toward the end of the baseline phase, in sessions 28 through 37, is evident. The final two scores in baseline were both 100%. Directly following the phase change, his rate of on-task behavior remained at 100% for the next two instructional sessions. In the intervention phase, there were two descending trends, between sessions 41 and 43 and between sessions 46 and 50. There was no apparent change in level from baseline to intervention, although there was less variability after the phase change. In terms of overlapping data, 97% of his scores in intervention overlapped with those in baseline. His mean level of on-task behavior in intervention had a slightly narrower range than in baseline, and was between 50 and 100%, with a mean of 87.11 (SD = 12.40). The Tau-BC effect size for Simon did not require a baseline correction and was not statistically significant (τ = -0.03, p = 0.85). The LRR was 0.48 (SE = 0.09).

Perhaps the most important external factor to consider when analyzing Simon's results is the fact that his rate of on-task behavior was fairly high to begin with. This introduces the possibility of a ceiling effect, especially since it is impossible to exhibit on-task behavior more than 100% of the time. Simon's mean rate of on-task behavior essentially remained the same from baseline to intervention, yet the changes in his performance over time are still socially valid and clinically meaningful. For a student whose responding was consistently inconsistent across both academic dependent variables, it is interesting to see that he maintained a high level of on-task behavior throughout the course of the study, and that the variability in his responding decreased from baseline to intervention. In baseline, his rate of on-task behavior went up and down fairly often, but during the intervention phase, almost all of his data points were at or

above 80%. In spite of this progress, it cannot reasonably be concluded that the intervention was responsible for his change in behavior.

Participant 4

For Rebekah, her baseline level of on-task behavior was between 43 and 100%, with a mean of 67.87 (*SD* = 19.33). There was a great deal of variability in her levels of on-task behavior in baseline, especially for the first half of this phase. In sessions 31-36, there was an ascending trend in her rate of on-task behavior, which was followed by a descending trend in sessions 36-46, and then a sharp (but brief) increase in level of on-task behavior toward the end of baseline. Directly following the phase change, her rate of on-task behavior remained exactly the same. Across the intervention phase, there was no change in level and no clear ascending or descending trends. Her level of on-task behavior in intervention had a slightly narrower range than in baseline, and was between 36 and 93%, with a mean of 70.30 (*SD* =18.06). The Tau-BC effect size for Rebekah did not require a baseline correction and was not statistically significant (τ = 0.03, p = 0.85). The LRR was 0.52 (*SE* = 0.11). This evidence, in addition to the steep drop in on-task behavior during the last instructional session, suggests that the addition of self-monitoring and goal setting was not effective in increasing on-task behavior for Rebekah.

As with the other three participants, there are external variables that, when examined more closely, can help to explain Rebekah's results in greater detail. First, it is worth noting that Rebekah had a high number of absences throughout the semester. Her situation was similar to Peter's in that she did not receive as much of the treatment as she could have due to extenuating circumstances. In one sense, her dataset is incomplete, and without a full picture it is impossible to know what her true level of on-task responding

would have been if she had been at school more often. Additionally, being the fourth participant, Rebekah spent the majority of the study in baseline. If she had had a few extra instructional sessions in the intervention condition, it is possible that her rate of on-task behavior may have improved beyond the current results. The high rate of absenteeism along with the extended period of time spent in baseline are both factors that provide additional insight into Rebekah's results.

In summary, a great deal of variability for all four participants was evident through visual inspection. Outside factors such as motivation, interest in the content of the lesson, interest in the programmed consequences available, or antecedent events that occurred at home or earlier in the school day may have been responsible for the amount of variability in levels of responding. Across the board, there were no clear changes in level or trend upon introduction of the intervention, although there were small, positive, and statistically significant effect sizes for two out of the four participants (Peter and David). Without a replication of this effect across all participants upon introduction of the treatment, however, it cannot reasonably be concluded that the intervention was responsible for this growth. Although all four participants made some improvements in on-task behavior, this growth also may have been a result of increased rapport between the researcher and the students.

Woodcock Reading Mastery Test

On the word identification subtest of the WRMT III, there was little to no change from pretest to posttest for Peter, Simon, and Rebekah. David, however, made substantial progress in this area, increasing his raw score by five points, and improving from the 8th to the 42nd percentile (see Table 5). On the word attack subtest, there was a small increase

in scores for David, Simon, and Rebekah, while Peter increased his raw score by 10 points and improved from the 8th to the 58th percentile (see Table 6).

CHAPTER 5

Discussion

In the present study, a multiple baseline across participants single case design was used to examine the impact of a combination of systematic phonics and instruction in self-monitoring and self-evaluation via goal setting on the reading and behavior management skills of struggling readers with EBD. Participants were four students in 3rd through 8th grade who attended an alternative school for students with emotional or behavioral disorders (EBD). Instruction took place in a separate classroom at the alternative school five days a week for approximately 10-15 minutes. Baseline conditions consisted solely of systematic phonics instruction using lessons from the Peer Assisted Learning Strategies (PALS) program. During the intervention phase, students were taught to use self-monitoring and self-evaluation to track their reading performance and assess their progress during daily phonics instruction.

The research questions focused on whether an intervention package of both academic and behavioral supports could improve the reading achievement and behavior management skills of struggling readers with EBD above and beyond an individual reading or behavioral intervention on its own. Each research question aligned with one of the dependent variables: word identification/decoding, oral reading fluency, and on-task behavior, respectively. Findings indicated that adding self-monitoring and self-evaluation to regular phonics instruction resulted in minimal growth in terms of nonsense word fluency, oral reading fluency, and on-task behavior. Given that experimental control was not achieved for any of the dependent variables, even these small improvements cannot

reliably be attributed to the intervention but were more likely a result of outside factors. Interestingly, these results were not consistent with findings of other similar studies.

In this chapter, comparisons are made between the characteristics of the present study and previous, related research in terms of participants' reading levels, the severity of participants' problem behavior, and the focus of intervention efforts (i.e., academic, behavioral, or combined supports). The results of the present study are contextualized within the existing literature to both identify commonalities with similar studies as well as to discuss how the findings can expand upon existing research and move the field of intervention design forward for struggling readers with EBD. Limitations and directions for future research are also addressed.

Interpretations

One of the primary findings of the present study was that the combination of systematic phonics and instruction in self-monitoring and self-evaluation had little effect on participants' decoding skills, oral reading fluency, or on-task behavior. Although the intervention did not lead to notable improvements in reading achievement or behavior management skills for the participants, there is still much to be gained from the analysis of these seemingly null findings. In this case, it is of the utmost significance not only to discuss potential reasons why the intervention did not produce the intended results, but also how to take the conceptual framework of this study and improve upon it to hopefully achieve more favorable outcomes in future studies. Experimental control was not achieved for any of the dependent variables which implies that any progress made from baseline to intervention cannot reliably be attributed to the independent variables (i.e., the intervention package). In fact, there are several alternative explanations for the progress

that did occur. In the present study, the most prominent of these alternative explanations, also known as threats to internal validity (Kazdin, 2021) included history, maturation, and instrumentation.

History as a potential threat to internal validity refers to the possibility that specific events other than the intended treatment may have occurred between the beginning and end of the study and may have obscured the true effect of treatment (Christ, 2007; Kazdin, 2021; Ledford & Gast, 2018). In the case of the present study, one possible explanation for the lack of a treatment effect is that setting events such as incidents at home, interactions with peers earlier in the school day, or conflict with teachers could have led to shifts in mood, motivation, or level of distraction for the participants (Chan, 2016). As individuals in an alternative school for students with behavior disorders, it was a common occurrence for participants to have conflict with their peers and teachers, which included, but was not limited to, arguing, swearing, shouting, throwing objects, elopement, and sometimes physical altercations. Over the course of the study, the local sheriff's department was called during morning intervention sessions on more than one occasion to handle problem behavior from students. It follows that incidences such as verbal arguments, physical fights, and visits from law enforcement may have had a negative impact on the participants' ability to fully attend to and engage with individualized instruction to the best of their ability.

Another potential threat to internal validity that may have had an impact on the outcomes of the present study is maturation, which refers to changes in participant behavior over time, such as aging or learning, that could conceivably obscure treatment effects (Christ, 2007; Kazdin, 2021; Ledford & Gast, 2018). Possible maturation effects

were most evident in Peter and David's progress from pretest to posttest on the Woodcock Reading Mastery Test. It is evident that other factors were at work in regard to this assessment because it does not make sense for Peter to have made the largest gains in word attack out of all four participants when he received the smallest dosage of the treatment due to refusal. As opposed to attributing this progress to the intervention, a more likely explanation is that Peter's growth in decoding skills over the course of the semester was due to learning that occurred outside of one-on-one intervention. Similarly, David made large gains in word identification from pre to posttest, but some of the words he got right on the posttest contained far more complex phonetic elements than the words taught in the PALS program. Therefore, it is possible that David became familiar with these words by other means, such as in other classes or at home.

One final threat to internal validity that may have impacted the results of the present study is instrumentation, which refers to changes or inconsistencies in how phenomena are assessed in a study (Christ, 2007; Kazdin, 2021; Ledford & Gast, 2018). Instrumentation as a threat to internal validity likely had the most impact on the measurement of on-task behavior using momentary time sampling. As part of the training process, the researcher and the research assistant had several meetings to discuss the protocol for scoring each of the measures of the dependent variables. However, in the midst of scoring the instructional session videos to determine participants' rates of on-task behavior, there was likely some observer drift, which occurs when there is a gradual shift away from consistent scoring (Ledford & Gast, 2018). The presence of observer drift may have impacted the accuracy of scoring for on-task behavior, resulting in

potential over or underestimations of participants' true rates of on-task behavior during the baseline and intervention phases.

Implications

When considering the practical implications of the present study, it is important that the results are contextualized within the existing literature base. Results of individual studies cannot be analyzed in isolation but must be compared to previous research in order to identify which findings were consistent with those of past studies and how the results of new research studies expand upon the existing literature and move a particular field of study forward.

Commonalities with Previous Research

The results of the present study on struggling readers with EBD were consistent with previous research in that students with EBD, in general, are a heterogeneous group in terms of their academic achievement, pattern (i.e. internalizing or externalizing) and severity of challenging behavior, and their reception of special education services (i.e., at-risk students versus those receiving formal special education supports). One of the distinguishing factors in this study was the relative homogeneity of the participants in each of these categories, however, it is important to consider that all of the participants came from the same alternative school for students with severe emotional and behavioral challenges. While the homogeneity of the participants in this study may seem to be inconsistent with previous literature, the opposite is actually true. Other studies focused on academic and behavioral supports for students with EBD (e.g., Benner et al., 2010; Dunn et al., 2017; Popham et al., 2018) included students with and without reading difficulties as well as those at risk for and formally identified with EBD. Research teams

from these other studies also implemented their interventions in a variety of settings including general education classrooms, resource rooms, self-contained classrooms, special day schools, and residential facilities.

As compared to the diversity of other studies in terms of their participants' academic achievement, levels of problem behavior, and reception of special education services, the participants in this study are relative outliers. This fact provides further evidence (albeit in a roundabout way) that students with EBD have a wide variety of academic and behavioral needs. The special education supports they receive also have a range of intensity levels spanning from Tier II or Tier III academic and/or behavioral supports in the response to intervention (RTI) process to more restrictive placements in self-contained classrooms or alternative schools. The relative homogeneity of the participants in the present study proved to be challenging because all of the students had substantial reading difficulties and problem behaviors, which makes it a bit more difficult to predict how this intervention would impact the reading skills and on-task behavior of students with less severe academic and behavioral challenges, or even students still in the RTI process.

Expansion of Previous Research

The results of the present study expand the literature base on struggling readers with EBD by demonstrating that the effectiveness of an intervention can be impacted by the characteristics of the participants. This includes the extent of their skill deficits in reading, which require direct instruction in the content area. The importance of discussing participants' reading achievement is to highlight the gaps in their foundational literacy skills and how this impacted their performance on reading outcome measures. The results

of the present study may not have been as robust as previous research because participants in this study had substantially lower reading levels and displayed more reading difficulties than participants in other related studies. To be included in the present study, students needed to score at or below the 25th percentile on a screening measure of reading achievement. In contrast, other similar studies had inclusion criteria that was less stringent. For example, in a study by Nelson et al. (2005), the researchers included participants who scored below the 40th percentile on the DIBELS Letter Naming Fluency (LNF) and Phoneme Segmentation Fluency (PSF) subtests. In another study by Zeng et al. (2016), participants were included if they scored "below proficient" on a state standardized literacy assessment; however, knowing neither which standardized test nor the proficiency criteria made it difficult to gauge the reading level of participants in the study. As a result of less stringent inclusion criteria, it is possible that, prior to intervention, participants in these other studies were higher performing readers than those in the present study. This discrepancy may explain why the findings of these studies were more robust.

When assessing the effectiveness of a combined academic and behavioral intervention, it is also important to consider the severity of participants' performance deficits. If students have the necessary prerequisite skills but are not motivated to use them, it is critical to determine what measures need to be put in place to increase student engagement and motivation. Participants in the present study may not have improved as much as in other studies because the level of their problem behavior was higher than participants in similar studies. The participants in the present study were moved from their original schools and were being educated at an alternative school for students with

severe behaviors. In a similar case study by Gunter et al. (2003), which assessed the effects of self-monitoring of performance on the oral reading fluency of a 3rd grade girl identified with a "severe emotional/behavioral disorder," the authors reported that the participant spent half the day in a special education classroom and the other half in a general education classroom with her peers. This difference in placement provides some evidence that the participants in the present study had more severe behaviors.

Working with participants who exhibited severe challenging behavior served as an obstacle for effectively completing the intervention in the present study. This may, in turn, have impacted the overall results. Participants exhibited a variety of challenging behavior that interrupted the flow of instruction. For example, Peter often refused to participate in one-on-one instructional sessions. On some mornings, he would get upset and shout at the researcher just for showing up to his classroom. Sometimes, his behavior would escalate to the point where he began swearing and throwing objects. Conversely, Rebekah agreed to participate in intervention sessions the majority of the time, but during instruction she exhibited task avoidant behaviors such as playing with items on the desk, messing with her hair, and checking her reflection in the iPad screen. Although these are only a few examples, they illustrate how difficult it can be to implement an intervention effectively and efficiently when working with students who exhibit severe challenging behavior.

One final factor that must be taken into consideration is the overall focus of intervention. The intervention in the present study may not have been as effective because of the combination of systematic phonics as well as instruction in self-monitoring and self-evaluation, whereas other related studies had interventions that

focused exclusively either on improving reading achievement or decreasing students' problem behaviors during reading lessons. The inclusion of both academic and behavioral intervention components seemed to increase the cognitive load for participants, which may have contributed to the general lack of improvement on dependent measures of reading and on-task behavior. With that being said, a dual approach might be more effective for students with EBD who have higher reading achievement and/or less severe problem behavior.

When an intervention has a singular focus on either academic instruction or motivation strategies, these can be administered more intensively, which might lead to more positive results. The treatment in the present study did not focus on just one intervention area but two. The aim of the study, namely, to utilize a combination of academic and behavioral supports to improve the reading achievement and on-task behavior of struggling readers with EBD, may have been overly ambitious. Although this combined intervention approach was novel, the results of the present study, when compared with the findings of previous literature (e.g., Benner et al., 2010; Campbell et al., 2018; Mooney et al., 2005; Popham et al., 2018), may suggest that it is more effective to address one intervention area at a time, especially for students who struggle academically and behaviorally. Consistently high levels of reading difficulty and problem behavior across the participants in this study also limits the external validity because not all students with EBD have this extent of academic challenges. The same is true for severity of problem behavior, and students with externalizing patterns of behavior need different supports than students with internalizing behavior patterns. For example, a more

effective approach might be to focus on decreasing disruptive behavior for externalizers and increasing on-task behavior for internalizers.

Limitations

As is the case with all experimental research, especially studies that include human subjects, the present study had several notable limitations. These include a failure to establish experimental control, poor measurement sensitivity in terms of the procedures used to measure both the academic and behavioral dependent variables, and the potential strain on participants' executive function skills that may have been related to the addition of self-monitoring during the intervention phase.

Lack of Experimental Control

One limitation of this study was a failure to establish experimental control for each of the dependent variables. Although there were positive and statistically significant effect sizes for Peter on measures of nonsense word fluency and on-task behavior and for David on measures of all three dependent variables, these intervention effects were not replicated across all four participants. In order to establish experimental control in a multiple baseline design, there must be a staggered introduction of the independent variable(s) across different points in time (Kratochwill et al., 2010). There must also be a noticeable change in the level and/or trend of the dependent variable(s) immediately following the introduction of the independent variable(s) (Kazdin, 2021). In the present study, the introduction of the intervention was staggered across participants. However, the general lack of a clear change in level or trend directly following the phase change made it unreasonable to conclude that it was truly the intervention that was responsible for any improvements on measures of the dependent variables.

Measurement of Dependent Variables

To evaluate participants' improvements on the academic dependent variables, progress monitoring probes in nonsense word and oral reading fluency from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment package were administered intermittently over the course of the study. As a whole, the DIBELS assessment package has high technical adequacy in terms of both reliability and validity, making it a consistent and accurate set of measures for evaluating students' early literacy skills (University of Oregon, 2020). Regardless of the technical adequacy of these assessments, there was a disconnect between the instructional content of the PALS lessons and the reading material used in the progress monitoring probes to assess nonsense word and oral reading fluency. This lack of content overlap between what was taught and what was measured (i.e., poor measurement sensitivity) made it difficult to determine if the assessments were inadequate measures of student progress or if the intervention truly was ineffective at improving participants' basic early reading skills.

In addition to the poor measurement sensitivity for the academic dependent variables, there was also a notable limitation related to the measurement of the behavioral dependent variable of on-task behavior. An imperative part of measuring behavioral variables, such as the occurrence of problem behaviors or the rate of on-task behavior, is the creation of operational definitions (Kazdin, 2021; Ledford & Gast, 2018). Without clear examples and non-examples of what constitutes a particular behavior, even those as seemingly straightforward as hand raising or hitting peers, it is easy for observers to become subjective in their interpretations of students' actions. In the case of the present study, operational definitions of academic responding (AR) and passive on-task (POT)

behavior (Daly et al., 2020) were used to determine whether or not participants were on-task at any given moment. Nevertheless, there was still room for some ambiguity in the behavioral definitions, particularly when determining whether an interval should be scored as "off-task" or "not applicable." It is possible that there was room for error in the scoring of various forms of off-task behavior because these operational definitions were not as explicit as those used for characterizing on-task behavior.

The potential for observer drift when using momentary time sampling further complicated the accurate measurement of participants' on-task behavior. A gradual shift away from consistent scoring using the operational definitions for on-task behavior likely contributed to the lower level of interrater reliability (Ledford & Gast, 2018). The use of momentary time sampling to measure on-task behavior was further complicated due to the instructional sessions being video recorded and scored at a later time as opposed to conducting observations in real time. Results for participants' rates of on-task behavior over the course of the study may not have been an accurate reflection of their behavior because there were plenty of moments for all four participants in which they moved off camera and it was hard to tell what they were doing or where their focus was during these periods of time.

Strain on Executive Function Skills

One final limitation of the present study was the potential strain on participants' executive function skills. Contrary to its intended purpose, the addition of self-monitoring of academic accuracy in the intervention phase may have increased the cognitive load for students who were already experiencing substantial academic and behavioral challenges. One theory on the relationship between executive function and academics proposes that

the complexity of the academic task impacts the amount of cognitive resources necessary to effectively complete it. This theory, known as intrinsic cognitive load theory, (Chandler & Sweller, 1991; Spiegel et al., 2021; Sweller,1994), posits that more complex academic tasks require a greater amount of cognitive resources "because these tasks require both the completion of problem solving directly related to the goal of the task as well as completion of other activities that require the use of cognitive resources," (Spiegel et al., 2021, p. 330). As it applies to the present study, this theory introduces the possibility that combining phonics instruction with self-monitoring and self-evaluation, both of which were new skills for the participants, may have added demands to an already difficult task and, consequently, made the task harder rather than easier (Spiegel et al., 2021).

In addition to the increased cognitive load, the participants in the present study all had substantial academic and behavioral challenges as evidenced by their low scores on the screening assessments as well as their alternative academic placement due to high levels of problem behavior. This likely made the combined intervention even more burdensome than it might have been for other struggling readers with EBD. Of the four participants, two had mild intellectual disabilities in addition to EBD. Since this information was not shared with the researcher until after the study had concluded, the presence of co-occurring intellectual disability was not considered during the intervention design process. Consequently, the academic and behavioral supports that made up the intervention package may have been inadequate in terms of meeting the more intensive needs of students with multiple special education verifications.

Another factor that may have made it difficult for participants to make progress in reading over the course of the study is the comorbidity rate of EBD and communication disorders. Language impairment is known to frequently co-occur with emotional or behavioral disorders (Bonti et al., 2024; Hollo, 2012; Hollo et al., 2014; Hollo et al., 2019), although this particular challenge is likely to be overlooked in school-age children with EBD (Hollo et al., 2014). Although none of the participants had a formal special education verification of speech-language impairment (SLI), it is nevertheless possible that one or more of them exhibited characteristics of SLI. Given that language development is "the foundation for competence in social, emotional, behavioral, and academic performance," (Hollo, 2012), participants experiencing any symptoms of a potential communication disorder may have had greater difficulty demonstrating their understanding of phonics concepts and/or engaging in self-monitoring and self-evaluation of their academic performance. This strain on participants' executive function skill, the presence of co-occurring intellectual disability for half of the participants, and the high comorbidity rate between EBD and communication disorders may have played a role in the finding of no treatment effect.

Future Directions

Due to the scarcity of literature on combined academic and behavioral interventions for struggling readers with EBD, future research on this topic is warranted. Although the present study did not result in notable improvements in reading achievement and on-task behavior for the students who received combined academic and behavioral supports, it is possible that this method of providing dual supports could still be successful with students with less substantial academic and behavioral challenges. For

example, a combination of systematic phonics and instruction in self-monitoring and self-evaluation may be more effective for at-risk students receiving Tier II or Tier III academic and/or behavioral supports through the RTI process. For learners with more considerable reading difficulties and problem behavior, such as the participants in the present study, future research should account for and attempt to mitigate the limitations of the present study. This includes, but is not limited to, adjusting the study design and procedures to reduce potential threats to internal validity, increasing measurement sensitivity, and modifying the goal setting procedures in the intervention phase. Making such changes, may, in turn, produce more favorable results, or at least provide more evidence for making causal inferences.

Controlling for Threats to Internal Validity

The most notable threats to internal validity in the present study were history, maturation, and instrumentation. To control for possible history effects, future studies could extend the data collection process during the baseline phase until the data are stable. In other words, collecting more baseline data points may increase the evidence of a stable baseline trend (Ledford & Gast, 2018). A minimum of three data points for each phase is required to promote a stable set of observations, but collecting five or more data points is recommended to meet more rigorous standards for baseline stability (Kratochwill et al., 2010).

In terms of maturation, this threat to internal validity was most evident in the pre/posttest results for the Woodcock Reading Mastery Test, 3rd Edition (WRMT III, Woodcock, 2011). One potential solution to better control for maturation effects is to substitute the WRMT III for a researcher-created pre/posttest assessment that includes the

various phonics concepts covered throughout the PALS lessons. Researcher-created measures typically do not have the same level of technical adequacy as standardized, norm-referenced measures, but if the assessment were more closely aligned to the instruction, it is less likely that students would improve for reasons other than the effectiveness of the intervention. Finally, an option for future researchers in terms of controlling for instrumentation as a threat to internal validity is to carefully formulate and pilot definitions and recording systems, train observers to a criterion, and have discrepancy discussions (Ledford & Gast, 2018). The addition of these procedures may help to minimize changes or inconsistencies in how phenomena are assessed over the course of a study.

Increased Measurement Sensitivity

A second direction for future research includes increasing measurement sensitivity. To better align the progress monitoring measures in nonsense word and oral reading fluency with the content covered in PALS, future research teams could develop researcher-created measures in both areas that included the phonetic elements that had been explicitly taught as well as high frequency words from the instructional sequence. These researcher-created measures of nonsense word and oral reading fluency would cover the same general content covered in the PALS lessons but with novel pseudowords and different stories from the ones in the lessons to avoid teaching effects. To ensure that the progress monitoring measures aligned with participants' individual instructional levels, different measures could be created for each set of lessons. For example, there could be one set of researcher-created progress monitoring measures for PALS lessons 1-5, another for lessons 6-10, and so on. This way, students would be assessed on content

that was similar but not identical to the material they were covering during instructional sessions in baseline and intervention.

Closer alignment between the instructional content and the assessment material could provide the foundation for more sensitive measures in terms of detecting growth in response to the instruction. With greater overlap between the instructional content and the assessment material, this would ideally set participants up for greater success in terms of making noticeable progress in reading, and being more successful in reading might ease the burden of self-monitoring by making it more of an additional motivator as opposed to extra work for already struggling students.

Goal Setting Procedures

One final direction for future research is using an adjusted method for setting and evaluating goals. Instead of asking participants to align their goals with the content in each instructional section of PALS, it might be more advantageous to work with them to set fluency and accuracy goals for the researcher-created measures of nonsense word and oral reading fluency. As a clearer representation of their progress in decoding and oral reading fluency, the researcher could work with each participant to set up an Excel spreadsheet with an aim line based on their baseline scores to help them track their progress. After each instructional session in the intervention phase, participants could enter their scores into the spreadsheet and compare their performance with the aim line on the line graph as opposed to using bar graphs. Participants could earn a lower level/ less preferred reward for meeting or beating one of their goals for either nonsense word or oral reading fluency and a higher level, more highly preferred reward for meeting or beating their goals in both areas.

Conclusion

In summary, it is incredibly necessary to develop interventions that address both the academic and behavioral needs of struggling readers with EBD. When designing intervention studies for this population of learners, many factors must be considered including the academic proficiency of the students and the severity of their problem behaviors. It is also imperative to factor in the overall aim of the research, whether that be preventative early intervention or the remediation of existing academic challenges and/or problem behavior. With that in mind, it may be more efficacious to focus on one area of need at a time (i.e., academics or behavior) instead of addressing both simultaneously. Additionally, it is imperative for future research to address the limitations of the present study in order to take the conceptual framework of this study and improve upon it to hopefully achieve more favorable outcomes in the future.

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Table 1

Descriptive Statistics: Nonsense Word Fluency

	Baseline			Systematic Phonics + Self-Monitoring		
Participant	Mean	SD	Range	Mean	SD	Range
Peter	13.50	3.27	8-16	18.40	3.20	13-23
David	9.64	3.11	4-14	18.67	5.30	10-27
Simon	24.92	7.17	13-38	24.56	8.96	15-36
Rebekah	1.75	0.87	0-3	2.60	2.70	0-7

Note. *SD*, standard deviation

Table 2

Descriptive Statistics: Oral Reading Fluency

	Baseline			Systematic Phonics + Self-Monitoring		
Participant	Mean	SD	Range	Mean	SD	Range
Peter	41.17	9.70	27-56	46.45	14.15	22-66
David	63.55	14.58	38-86	76.67	12.09	53-91
Simon	99.50	23.58	64-132	101.56	20.82	69-140
Rebekah	18.50	7.77	8-32	29.40	7.77	21-39

Note. *SD*, standard deviation

Table 3

Descriptive Statistics: On-Task Behavior

	Baseline			Systematic Phonics + Self-Monitoring		
Participant	Mean	SD	Range	Mean	SD	Range
Peter	69.86	13.13	50-86	82.23	9.40	67-100
David	71.41	20.16	27-100	78.14	18.80	43-100
Simon	85.83	16.02	43-100	87.11	12.40	50-100
Rebekah	67.87	19.33	43-100	70.30	18.06	36-93

Note. *SD*, standard deviation

Table 4

Effect Sizes

Participant	Nonsense Word Fluency		Oral Reading Fluency		On-Task Behavior	
	Tau-BC (*p*)	LRR (*SE*)	Tau-BC (*p*)	LRR (*SE*)	Tau-BC (*p*)	LRR (*SE*)
Peter	0.49 (0.03)	0.83 (0.10)	0.16 (0.48)	0.66 (0.14)	0.32 (0.05)	0.75 (0.12)
David	0.64 (0.00)	0.94 (0.04)	0.40 (0.03)	0.77 (0.11)	0.69 (0.00)	0.60 (0.09)
Simon	-0.03 (0.89)	0.48 (0.14)	0.03 (0.89)	0.52 (0.13)	-0.03 (0.85)	0.48 (0.09)
Rebekah	0.12 (0.60)	0.59 (0.19)	-0.11 (0.61)	0.85 (0.09)	0.03 (0.85)	0.52 (0.11)

Note. *Tau-BC,* baseline-corrected Tau; *LRR*, log response ratio; *SE*, standard error

Table 5

Woodcock Reading Mastery Test Word Identification Pre/Post Scores

	Pretest				Posttest			
Participant	RS	SS	PR	GLE	RS	SS	PR	GLE
Peter	24	88	21	3.2	25	94	34	3.5
David	21	79	8	2.6	26	97	42	3.8
Simon	24	73	4	3.2	23	73	4	3.0
Rebekah	19	61	< 1	2.2	19	61	< 1	2.2

Note. *RS,* raw score; *SS,* standard score; *PR,* percentile rank; *GLE,* grade level equivalent

Table 6

Woodcock Reading Mastery Test Word Attack Pre/Post Scores

	Pretest				Posttest			
Participant	RS	SS	PR	GLE	RS	SS	PR	GLE
Peter	9	79	8	1.7	19	103	58	5.5
David	11	83	13	2.1	12	83	13	2.3
Simon	9	67	1	1.7	11	69	2	2.1
Rebekah	6	61	< 1	1.3	7	63	1	1.5

Note. *RS,* raw score; *SS,* standard score; *PR,* percentile rank; *GLE,* grade level equivalent

Figure 1

Nonsense Word Fluency

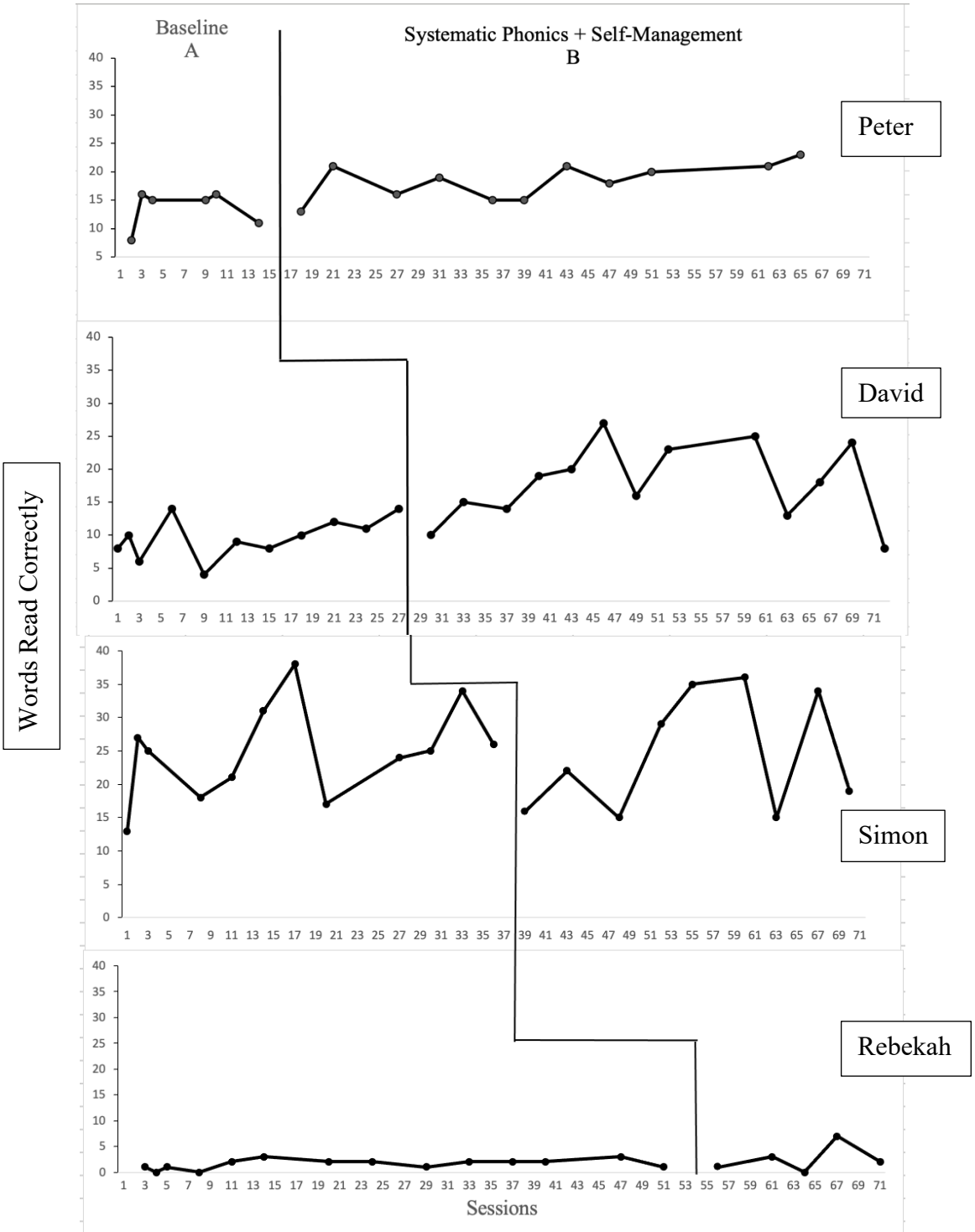


Figure 2

Oral Reading Fluency

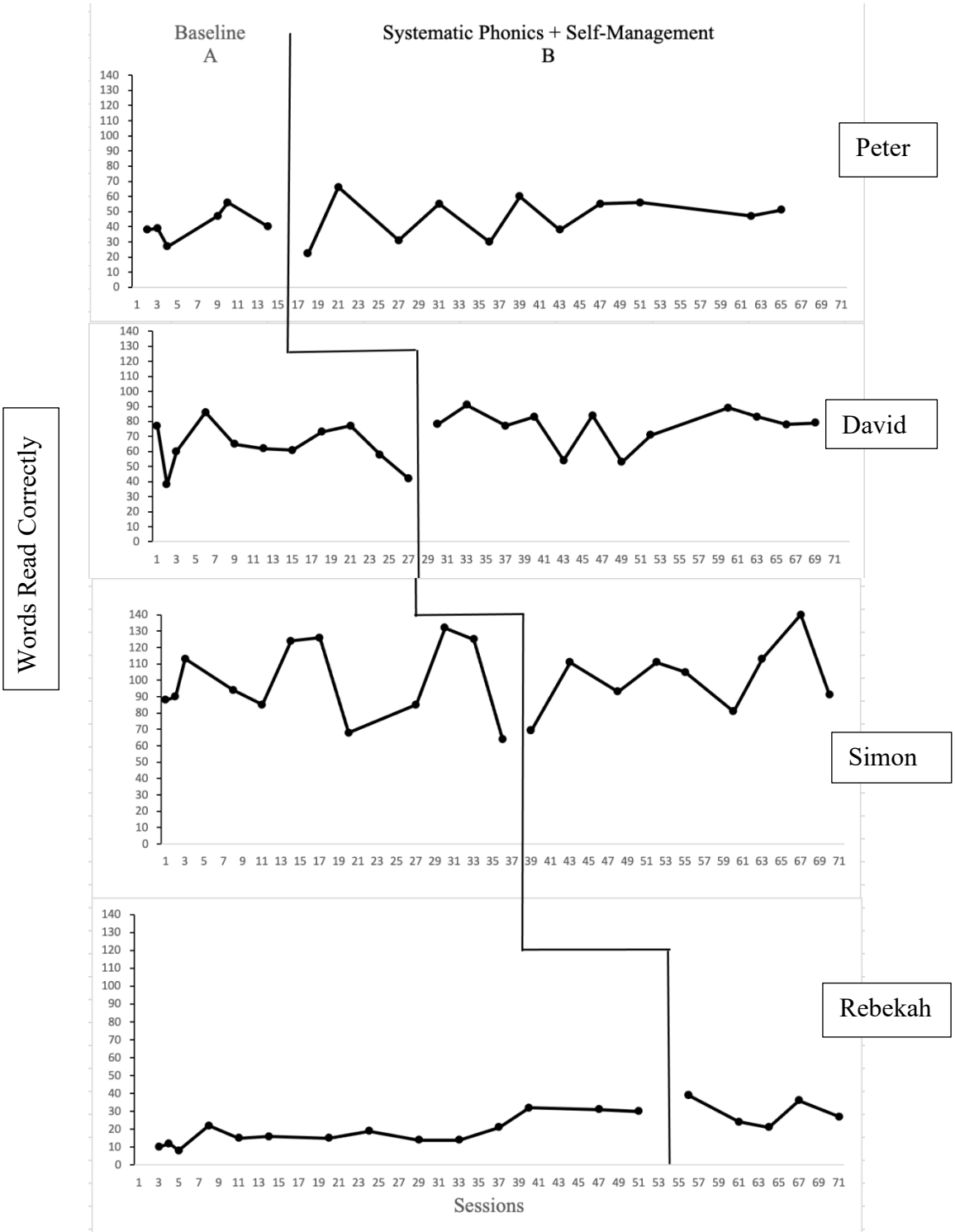
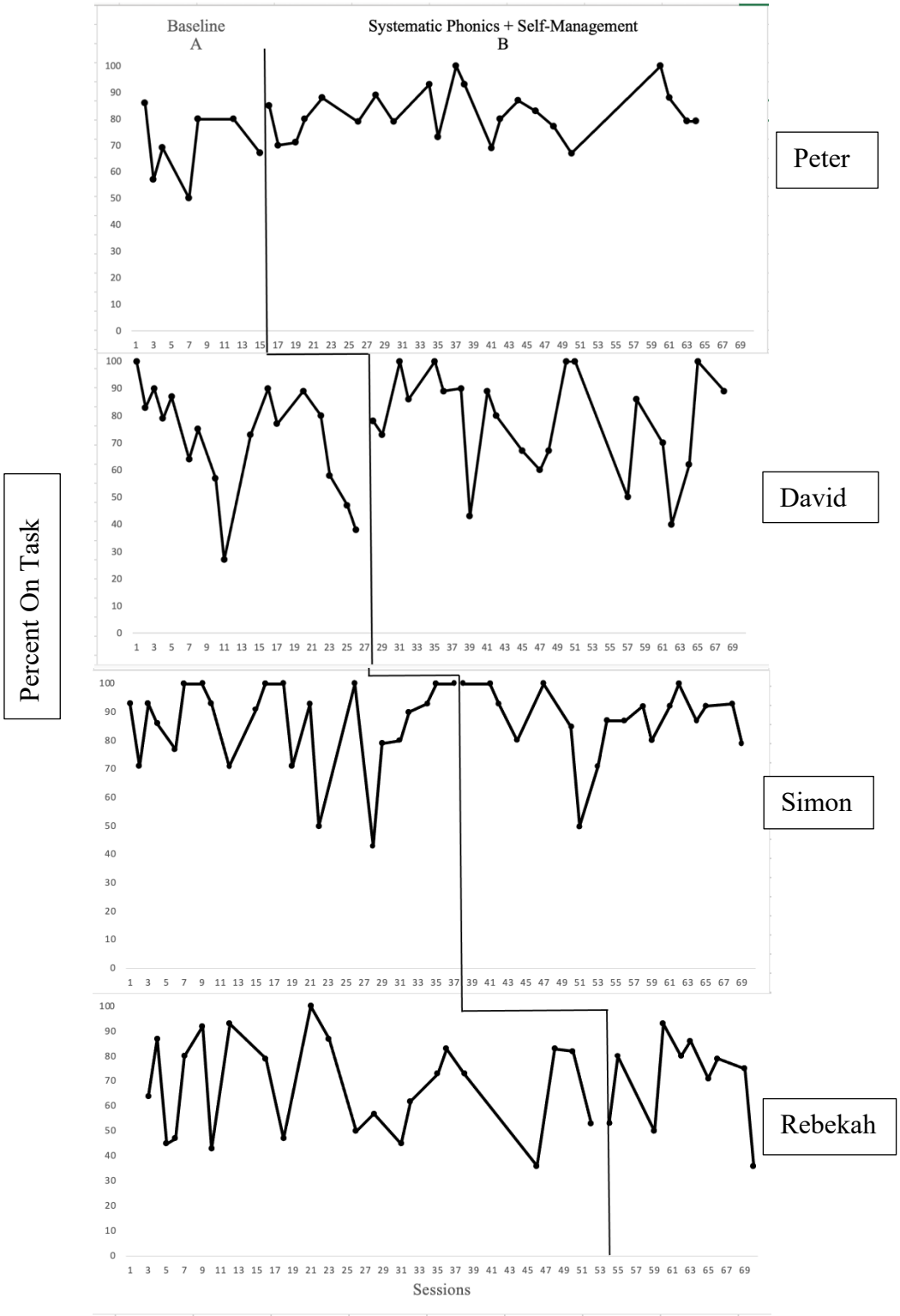


Figure 3

On-Task Behavior



APPENDIX A

SAMPLE OF SCORED DIBELS NONSENSE WORD FLUENCY PROBE

DIBELS 8th Edition *Nonsense Word Fluency* Progress Monitoring NWF 2.1

Examiner script	
Look at this word (Point to the first word on the practice form).	
It's a make-believe word. Watch me read the word: /h/ /a/ /p/ 'hap.' (Point to each letter then run your finger fast beneath the whole word).	
I can say the sounds of the letters, /h/ /a/ /p/ (point to each letter)**, or I can read the whole word 'hap.'** (Run your finger fast beneath the whole word).	
Your turn to read a make-believe word. Read this word the best you can. (Point to the word "lum").	
Make sure you say any sounds you know.	
CORRECT Student responds "lum" or with all of the sounds	**That's right. The sounds are /l/ /u/ /m/ or 'lum.'**
INCORRECT Student does not respond within 3 seconds or responds incorrectly	**Remember, you can say the sounds, or you can say the whole word. Watch me: the sounds are /l/ /u/ /m/** (point to each letter) **or 'lum.'** (Run your finger fast through the whole word). **Let's try again. Read this word the best you can.** (Point to the word "lum").
(Place the student copy of the form in front of the student.)	
Here are some more make-believe words (point to the student form). **Start here** (point to the first word) **and go across the page** (point across the page).	
When I say 'Begin', read the words the best you can. Point to each letter and tell me the sound or read the whole word. Put your finger on the first word. Ready? Begin.	

Reminders	
Start timer	After you say **Begin.**
Prompts	Student hesitates: wait 3 seconds; point to the next letter/word, and say "**Keep going**"; mark the missed sound/word as incorrect.
Discontinue	Student does not get any sounds correct in the first 5 words: discontinue NWF.

Progress Monitoring NWF 2.1
continued

					CLS	WRC
lom + /l//o//m/	neg − /n//e//g/	rep − /r//e//p/	ped + /p//e//d/	hon + /h//o//n/	/15	3/5
dut + /d//u//t/	rem + /r//e//m/	rab + /r//a//b/	tet − /t//e//t/	lut − /l//u//t/	/15	3/5
yan − /y//a//n/	sut − /s//u//t/	lun + /l//u//n/	hin + /h//i//n/	mun − /m//u//n/	/15	2/5
nern + /n//er//n/	dort + /d//or//t/	rup − /r//u//p/	fet /f//e//t/	mim /m//i//m/	/15	2/5
teb /t//e//b/	sime /s//l//m/	mome /m//O//m/	mur /m//er/	von /v//o//n/	/14	/5
lub /l//u//b/	deg /d//e//g/	sud /s//u//d/	dage /d//A//j/	fem /f//e//m/	/15	/5
gop /g//o//p/	dord /d//or//d/	nur /n//er/	nork /n//or//k/	dob /d//o//b/	/14	/5
dade /d//A//d/	trom /t//r//o//m/	nust /n//u//s//t/	thab /th//a//b/	mub /m//u//b/	/17	/5
ked /k//e//d/	tink /t//i//n//k/	mard /m//ar//d/	fime /f//l//m/	tolt /t//O//l//t/	/17	/5
dife /d//l//f/	dorn /d//or//n/	ven /v//e//n/	ib /i//b/	larm /l//ar//m/	/14	/5
quing /k/ /w//i//ng/	mabe /m//A//b/	thint /th//i//n//t/	yife /y//l//f/	deld /d//e//l//d/	/18	/5
plid /p//l//i//d/	shult /sh//u//l//t/	whup /w//u//p/	bote /b//O//t/	nilk /n//i//l//k/	/18	/5
strot /s//t//r//o//t/	chank /ch//a//n//k/	purk /p//er//k/	wune /w//oo//n/	tulk /t//u//l//k/	/19	/5
wrem /r//e//m/	reast /r//E//s//t/	phid /f//i//d/	noast /n//O//s//t/	thret /th//r//e//t/	/18	/5
knab /n//a//b/	thaid /th//A//d/	slish /s//l//i//sh/	phast /f//a//s//t/	noan /n//O//n/	/17	/5

Progress Monitoring NWF 2.1
continued

					CLS	WRC
breat /b//r//E//t/	leem /l//E//m/	spap /s//p//a//p/	kist /k//i//s//t/	whead /w//(E/e)//d/	/18	/5
choap /ch//O//p/	prasp /p//r//a//s//p/	treach /t//r//E//ch/	soom /s//oo//m/	stolt /s//t//O//l//t/	/20	/5
whoard /w//or//d/	sprum /s//p//r//u//m/	hinky /h//i//n//k//E/	troud /t//r//ow//d/	shunky /sh//u//n//k//E/	/22	/5
wrult /r//u//l//t/	sneat /s//n//E//t/	shram /sh//r//a//m/	frilt /f//r//i//l//t/	tucky /t//u//k//E/	/21	/5
wreach /r//E//ch/	sasty /s//a//s//t//E/	yead /y//(E/e)//d/	blesty /b//l//e//s//t//E/	frasp /f//r//a//s//p/	/22	/5

Total Correct ____ 10

APPENDIX B

SAMPLE OF SCORED DIBELS ORAL READING FLUENCY PASSAGE

DIBELS 8th Edition *Oral Reading Fluency* Benchmark ORF 3.End

Examiner script	Reminders	
Please read this (point to passage) **out loud.**	Start timer	When student says first word.
If you get stuck, I will tell you the word, so you can keep reading. When I say 'Stop' I may ask you to tell me about what you read, so do your best reading.	Prompts	Student hesitates: wait 3 seconds; give correct word; mark the missed word as incorrect.
Start here (point to first word of first paragraph of passage). **Ready? Begin.**	Discontinue	Student does not get any words correct within the first line: discontinue ORF.

Trees

A tree is a tall plant that is made of wood. Trees can live for (15)
many, many years. A tree has roots, a trunk, branches, and leaves. (27)
The roots are underground, but sometimes you can see them (37)
sticking out of the dirt. The roots help to keep the tree in place and (52)
they also get the food that the tree needs from the soil in the (66)
ground. The roots send the food to the trunk. The trunk is like a (80)
water pipe. It carries the food to the branches for the leaves. (92)
Some trees never lose their leaves and their leaves always (102)
stay green. These trees are called evergreen. The leaves on most (113)
other trees change colors when the seasons change. In the autumn (124)
you will see red, yellow and orange leaves. In the winter, you will (137)
see a lot of trees without any leaves at all. (147)
Leaves change colors because the tree does not get a lot of (159)
light from the sun. Trees need to save some food to live when there (173)
is not much sun and so they cannot give it all to the leaves. The (188)
leaves cannot live without the food and that is why they fall off. (201)

Total words read 80 Total errors 6 Total words correct 74

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APPENDIX C

MOMENTARY TIME SAMPLING RECORDING FORM

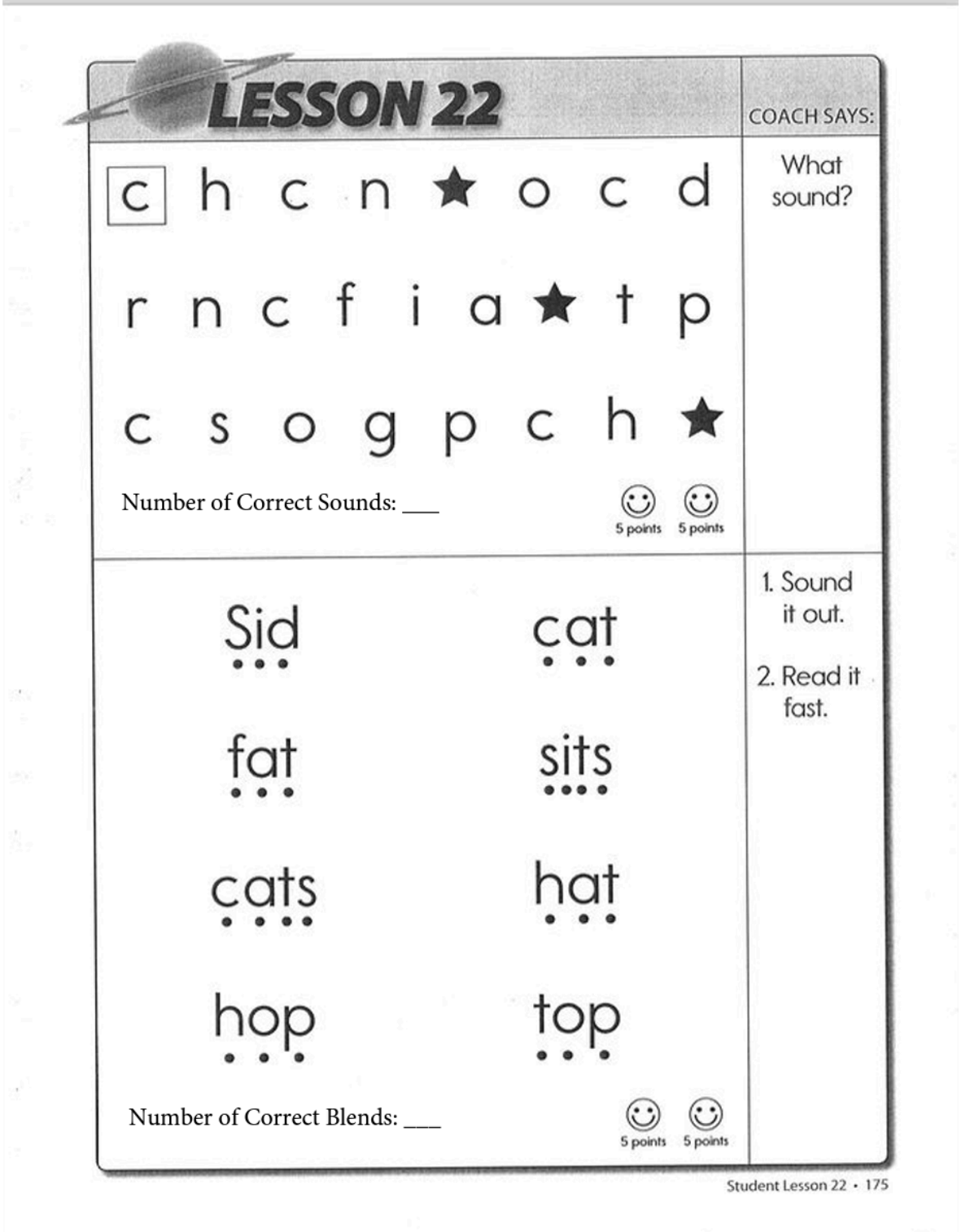
Momentary Time Sampling Data Sheet

Participant Number:		Date of Lesson:			Lesson Sections Covered:										
	1-19	**20**	21-39	**40**	41-59	**1 min**	1-19	**20**	21-39	**40**	41-59	**2 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**3 min**	1-19	**20**	21-39	**40**	41-59	**4 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**5 min**	1-19	**20**	21-39	**40**	41-59	**6 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**7 min**	1-19	**20**	21-39	**40**	41-59	**8 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**9 min**	1-19	**20**	21-39	**40**	41-59	**10 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**11 min**	1-19	**20**	21-39	**40**	41-59	**12 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**13 min**	1-19	**20**	21-39	**40**	41-59	**14 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
	1-19	**20**	21-39	**40**	41-59	**15 min**	1-19	**20**	21-39	**40**	41-59	**16 min**		AR	POT
Student	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Prob Bx:	AR	Target	/5	/5
		POT		POT		POT		POT		POT		POT			
		NA		NA		NA		NA		NA		NA			
														AR	POT
AR & POT: Divide column total by total number of observation intervals to determine percentage duration.											Column Totals:		Target	/	/
In Prob Bx cells, note any problem behaviors that may have occurred leading up to the interval.															

Adapted from Daly et al., 2020

APPENDIX D

SAMPLE MODIFIED PALS LESSON



LESSON 22

COACH SAYS: What sound?

c h c n ★ o c d

r n c f i a ★ t p

c s o g p c h ★

Number of Correct Sounds: ___ (5 points) (5 points)

COACH SAYS: 1. Sound it out. 2. Read it fast.

Sid cat

fat sits

cats hat

hop top

Number of Correct Blends: ___ (5 points) (5 points)

Student Lesson 22 • 175

LESSON 22

COACH SAYS:

Read the words.

he	he said	to come	one was	no blue
he was on		have no	he said	he has
see no	for	find	away for	he come find
have one	he has	he	no blue	away for

Number of Correct Sight Words: ___

☺ 5 points ☺ 5 points

Read the story.

The Fat Cat

Sid is a yellow cat.
He is a fat yellow cat.
He jumps **high**.
He sees a **roof**.
Sid jumps on to the **roof**.
He sits on the **roof**.

high

roof

Words Read Correctly in Story: ___

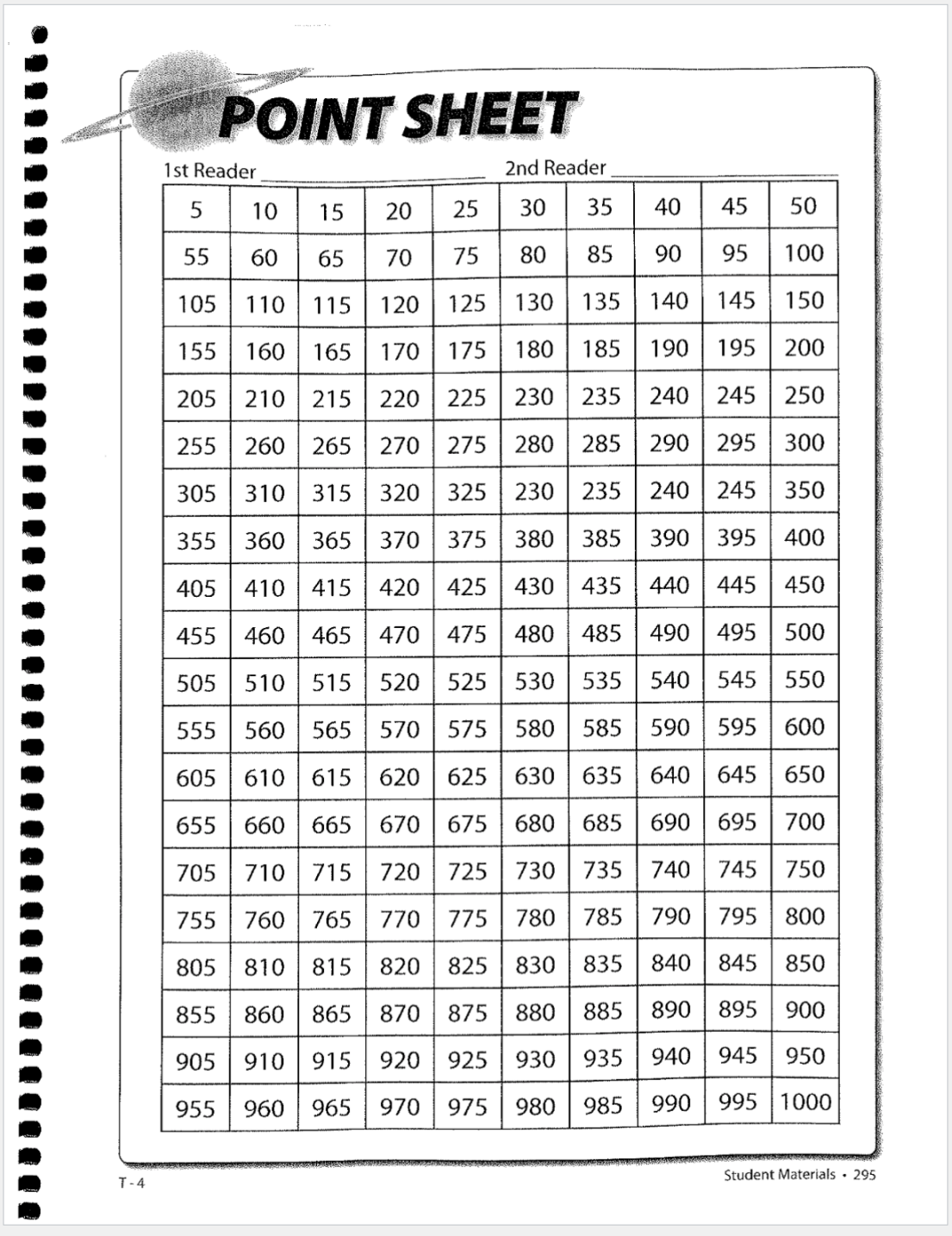
☺ 5 points ☺ 5 points ☺ 5 points ☺ 5 points ☺ 5 points ☺ 5 points

Go back to "Read the words."

rocket words

APPENDIX E

PALS POINT SHEET AND SCOREBOARD



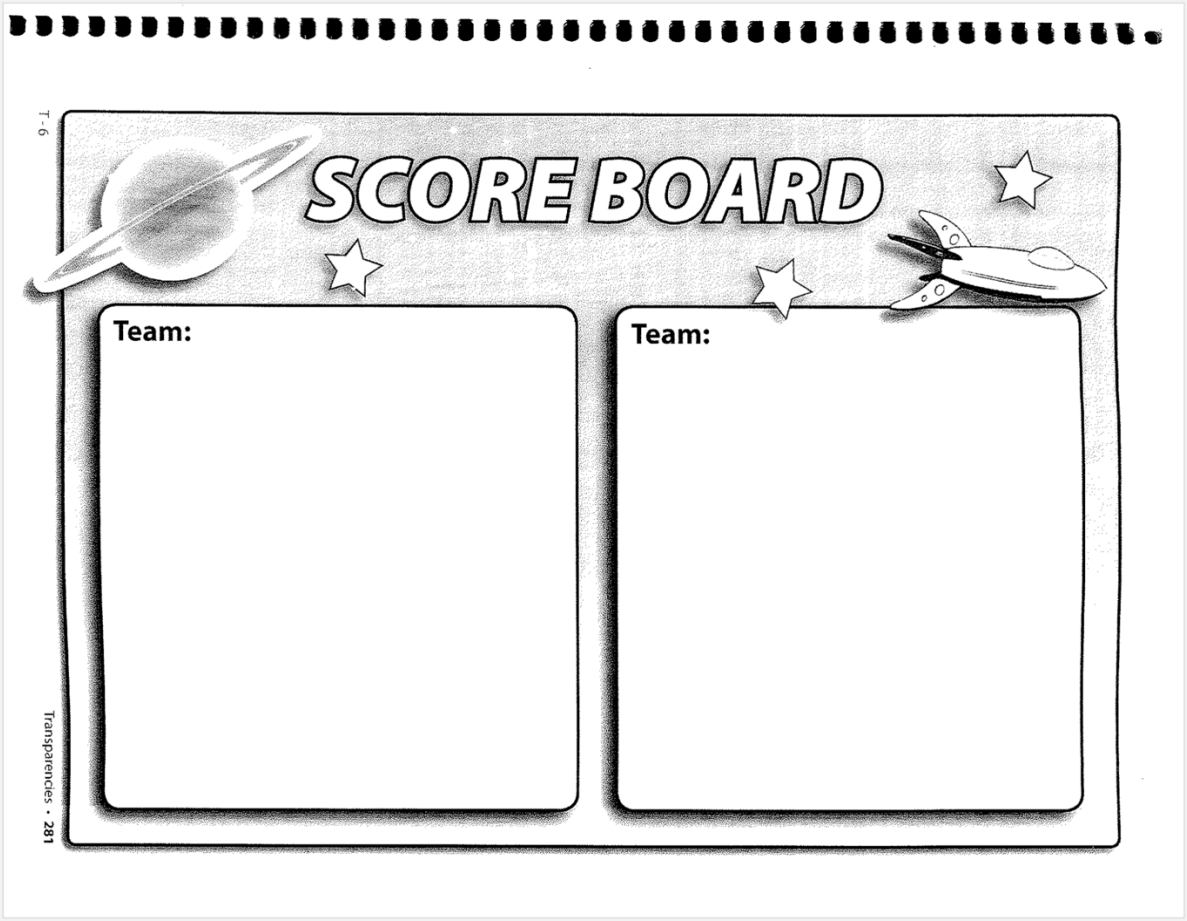
POINT SHEET

1st Reader _____ 2nd Reader _____

5	10	15	20	25	30	35	40	45	50
55	60	65	70	75	80	85	90	95	100
105	110	115	120	125	130	135	140	145	150
155	160	165	170	175	180	185	190	195	200
205	210	215	220	225	230	235	240	245	250
255	260	265	270	275	280	285	290	295	300
305	310	315	320	325	230	235	240	245	350
355	360	365	370	375	380	385	390	395	400
405	410	415	420	425	430	435	440	445	450
455	460	465	470	475	480	485	490	495	500
505	510	515	520	525	530	535	540	545	550
555	560	565	570	575	580	585	590	595	600
605	610	615	620	625	630	635	640	645	650
655	660	665	670	675	680	685	690	695	700
705	710	715	720	725	730	735	740	745	750
755	760	765	770	775	780	785	790	795	800
805	810	815	820	825	830	835	840	845	850
855	860	865	870	875	880	885	890	895	900
905	910	915	920	925	930	935	940	945	950
955	960	965	970	975	980	985	990	995	1000

T - 4

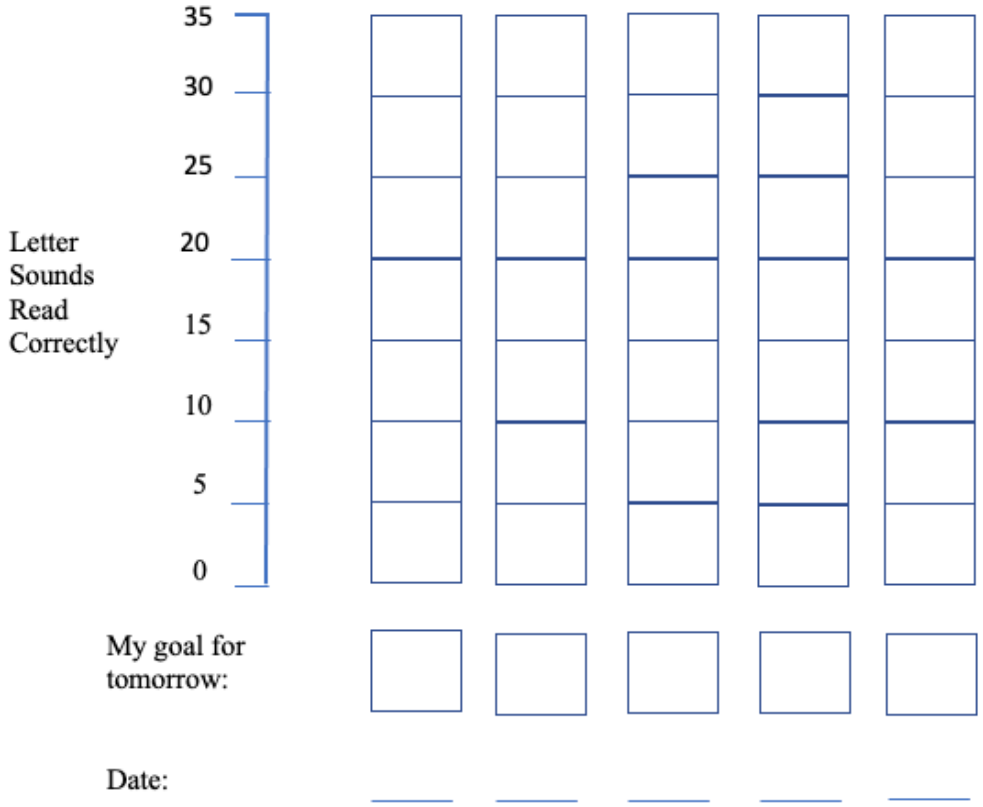
Student Materials • 295


T - 6
SCORE BOARD
Team:
Team:
Transparencies • 281

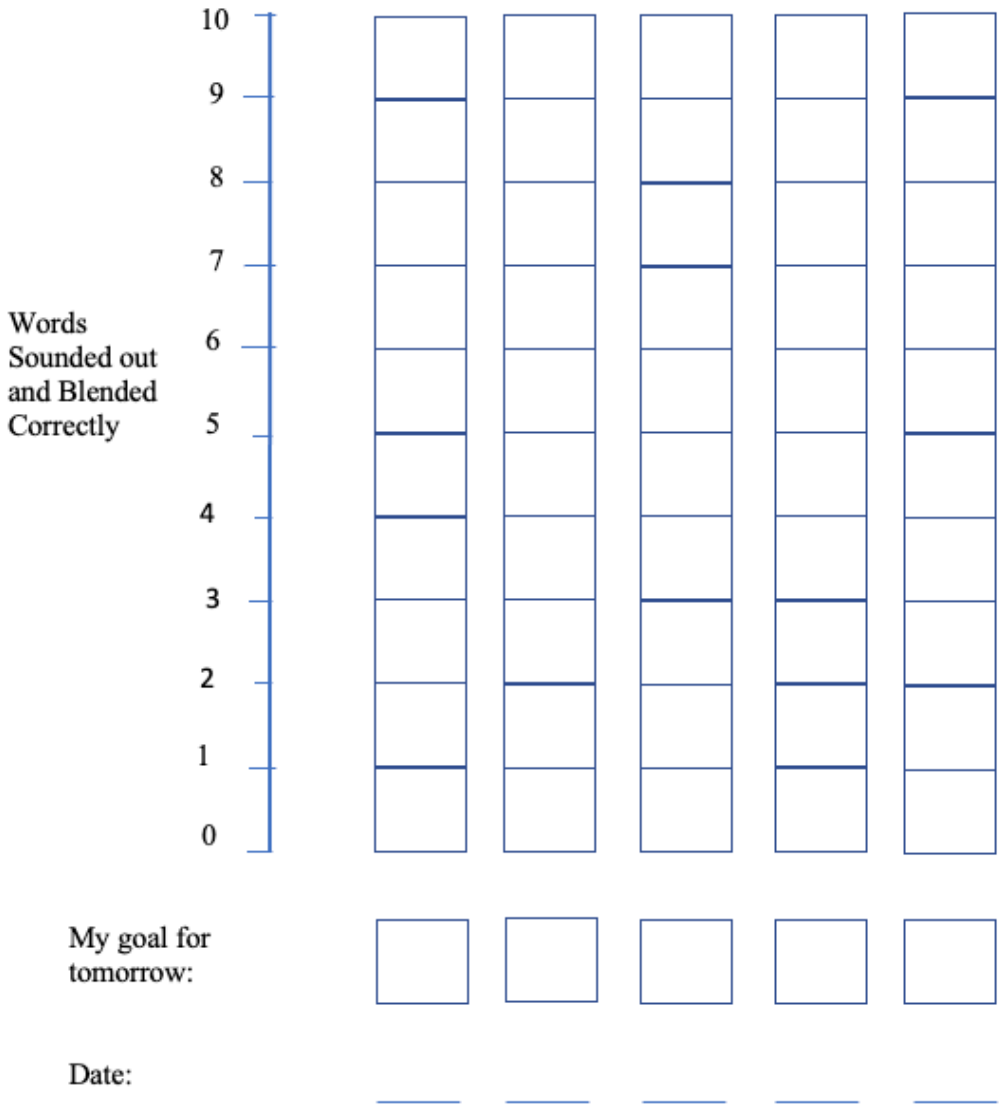
APPENDIX F

PALS SELF-MONITORING GRAPHS

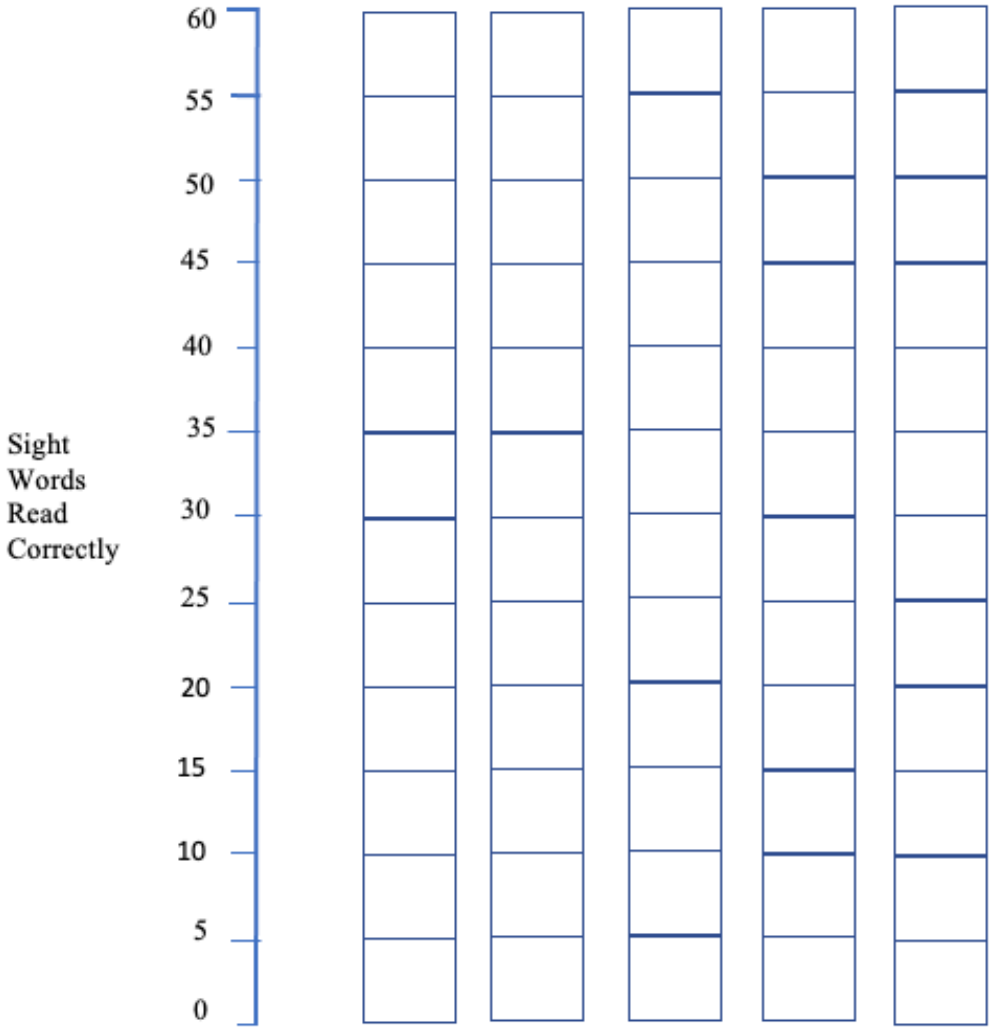
PALS Weekly Correct Sounds Graph



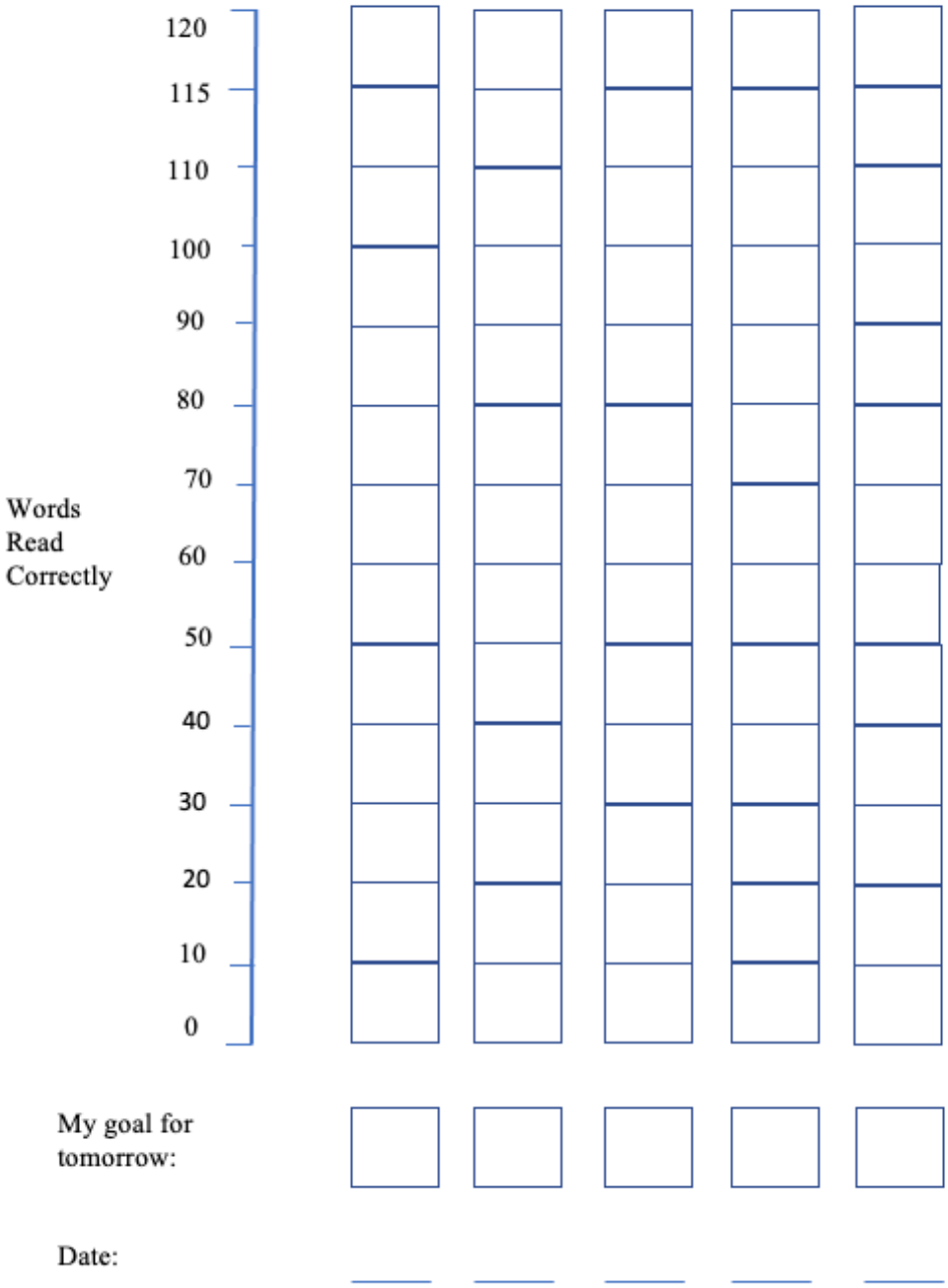
PALS Weekly Correct Blends Graph



PALS Weekly Correct Sight Words Graph

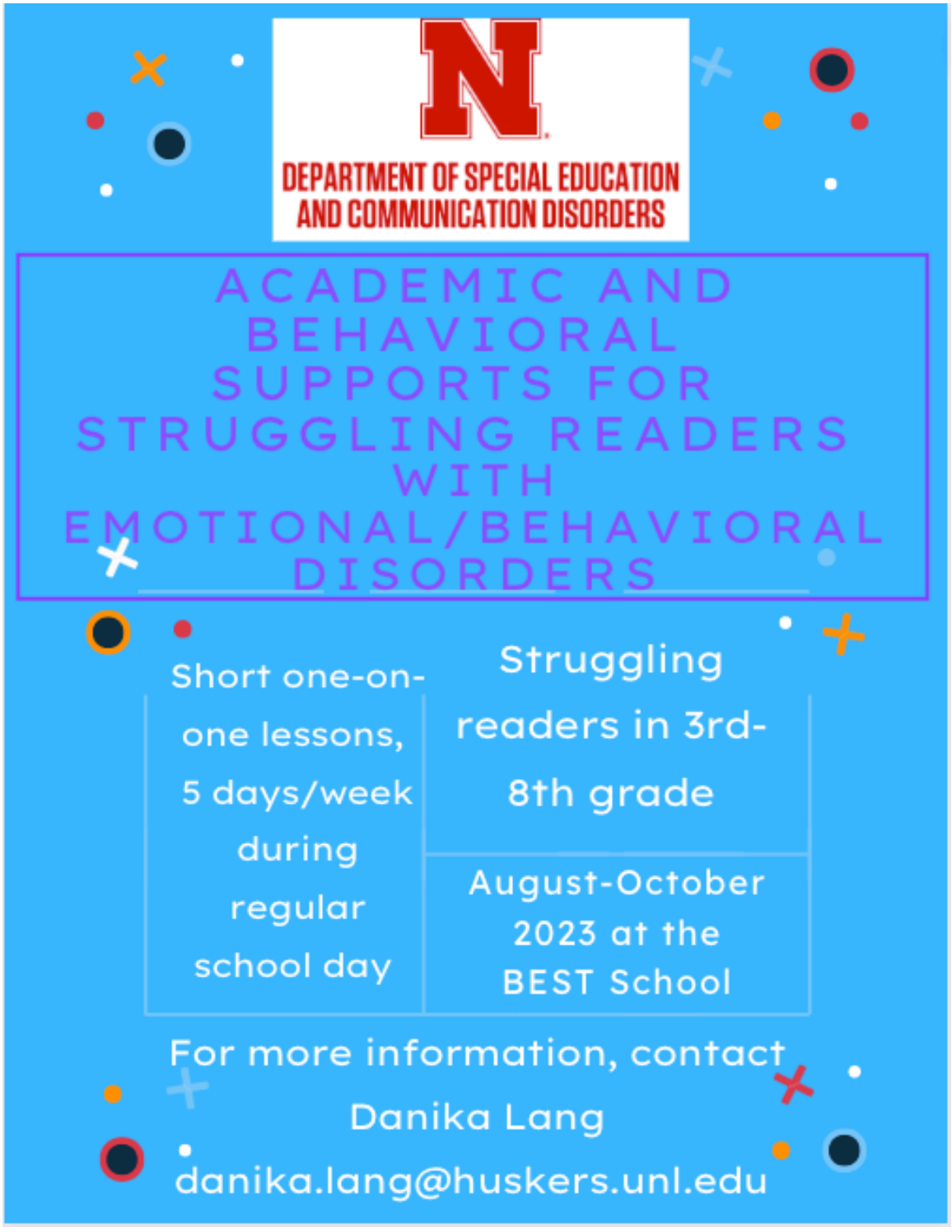


PALS Weekly Story Graph



APPENDIX G

RECRUITMENT FLYER



APPENDIX H

SITE APPROVAL LETTER

11401 South 70th Street
70th & Saltillo Road
Lincoln, NE 68516

Berniklau Education
-Solutions Team-

Office: 402-420-2888
Fax: 402-420-2942
Cell: 402-580-1742
402-580-1743

February 24, 2023

Dear UNL officials:

We are so pleased to have Dr. Kemp introduce us to Danika Lang. We will be happy to offer her a space in our school program and support from staff when reasonable. We have the required age group and we will create the most positive atmosphere possible for Ms. Lang.

We have been a private program in Lincoln for twenty seven years serving students contracted by Lincoln Public Schools and many surrounding school districts.

Sincerely,

Jacqueline Berniklau, MS, MA, Ed.S

Director

Berniklau Education Solutions Team

APPENDIX I

PARENT/GUARDIAN INFORMED CONSENT FORM

University of Nebraska Lincoln

IRB Project ID#: 22376

Study Title: Combined Academic and Behavioral Supports for Struggling Readers with Emotional/Behavioral Disorders

Principal Investigator: Danika Lang, M.Ed. Email: dlang4@unl.edu
Secondary Investigators: Suzanne Kemp, Ph.D. Email: sue.kemp@unl.edu
John Maag, Ph.D. Email: jmaag1@unl.edu
Erin Pfister, M.Ed., M.A. Email: epfister2@huskers.unl.edu

Dear parent/guardian,

We're inviting your child to take part in a one-on-one intervention study through the University of Nebraska-Lincoln. This research is a doctoral dissertation study that involves explicit instruction in phonics and self-management procedures.

If you agree to allow your child to participate in this research study, the project will involve:

- Research participants between the ages of 8 and 14 years old
- Procedures will include a one-on-one intervention program that consists of explicit instruction in phonics and self-management procedures. These self-management procedures include self-monitoring, self-evaluation, and goal setting, which help students independently manage, monitor, and assess their own academic learning and behavior
- Approximately 40 instructional sessions are required with each session lasting 30 minutes for a total of 20 hours
- Instructional sessions will take place during the regular school day
- There are minimal risks associated with this study as described below
- Your child's data collected from this study may be shared as described below
- Your child will receive a $25 Amazon gift card for their time and participation
- You will be provided a copy of this consent form
- Your child's participation is voluntary, and they can decide not to participate at any time

The information in this form is meant to help you decide whether or not they may participate. If you have any questions, please ask.

1. **Why is your child being asked to be in this research study?**

IRB# 20230222376EP
Date Approved: 02/28/2023

Your child is being asked to be in this study because they are enrolled at the BEST school and have been identified by school personnel to be struggling in reading. To determine eligibility as a struggling reader, your child will be given a set of screening measures that assess their foundational early literacy skills as well as their ability to identify real words, decode nonsense words, and accurately and fluently read a grade level passage. These screening measures will not be administered until parent/guardian informed consent and student assent have both been provided.

2. What is the reason for doing this research study?

The purpose of this study is to measure the potential impact of an intervention program for elementary and middle school students who are struggling readers with emotional/behavioral disorders (EBD).

3. What will be done during this research study?

Your child will be asked to take part in approximately 40 one-on-one intervention sessions that consist of direct instruction in phonics and self-management procedures. Each instructional session will last 30 minutes.

4. How will my child's data be stored or shared?

This study is collecting data from your child. We would like to make that data available for other research studies that may be done in the future. The research may be about similar study aims or topics. However, research could also be about unrelated topics, or other types of research. These studies may be done by researchers at this institution or other institutions, including commercial entities. Our goal is to make more research possible.

We will protect the confidentiality of your child's information to the extent possible. The data will be coded to protect your child's identity before they are shared with other researchers.

At the conclusion of the study, if you so desire, the principal investigator will set up a meeting with you to provide additional information about your child's scores and progress over the course of the study. At this time, you may also ask any questions you have related to your child's progress. If you would like to set up a meeting, you may contact the principal investigator (Danika Lang) using the contact information provided at the beginning of this form.

5. What are the possible risks of being in this research study?

We will do our best to protect your child's data during storage or if they are shared. However, there remains a possibility that someone could identify your child. There is also the possibility that unauthorized people might access your data. In either case, we cannot reduce the risk to zero.

Given the more intensive and individualized instruction, this research presents risk of your child experiencing additional emotional or mental stress. The research team will work to minimize this

risk by allowing your child to request a break in instruction at any time, should they find it necessary.

6. What are the possible benefits to your child?

Student participants will receive one-on-one instruction in phonics as well as practice using the self-management procedures of self-monitoring, self-evaluation, and goal setting to track their progress towards academic and behavioral goals. It is expected that your child's oral reading fluency will increase as well as the frequency of on-task behaviors. Additionally, the frequency of your child's disruptive behaviors is expected to decrease. However, your child may not get any benefit from being in this research study.

7. What are the possible benefits to other people?

The benefits to science and/or society may include further development and distribution of an intervention that provides academic and behavioral supports to other students with EBD who are struggling readers, beyond the students involved in this research study.

8. What are the alternatives to being in this research study?

Instead of being in this research study, you can choose not to allow your child to participate.

9. What will being in this research study cost you or your child?

There is no cost to you or your child to be in this research study.

10. Will your child be compensated for being in this research study?

Your child will be receiving a $25 gift card to Amazon

11. What should you do if your child has a problem during this research study?

Your child's welfare is the major concern of every member of the research team. If there is a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

12. How will information about your child be protected?

Reasonable steps will be taken to protect the privacy and the confidentiality of your child's study data; however, in some circumstances we cannot guarantee absolute privacy and/or confidentiality.

The research records will be securely stored electronically through university approved methods and will only be seen by the research team and/or those authorized to view, access, or use the records during and after the study is complete.

Those who will have access to your child's research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law or contract or institutional responsibility. The information from this study may be published in scientific journals or presented at scientific meetings and may be reported individually, or as group or summarized data but your child's identity will be kept strictly confidential.

13. What are your child's rights as a research subject?

Your child may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form.

For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):

- Phone: 1(402) 472-6965
- Email: irb@unl.edu

As the parent/legal guardian providing consent, you have the right to review the instructional content related to this research before providing consent to participate. To do so, please contact the investigator(s) listed at the beginning of this form.

14. What will happen if you decide not to allow your child to be in this research study or decide they need to stop participating once they start?

You can decide that your child should not be in this research study, or you can have your child stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect you or your child's relationship with the investigator or with the University of Nebraska-Lincoln.

You and your child will not lose any benefits to which you are entitled.

15. Documentation of informed consent

You are voluntarily making a decision whether or not to allow your child to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered, (4) you have decided to allow your child to be in the research study and (5) you are legally authorized to consent to the child's participation. Be aware that a foster parent is typically not legally authorized to consent for a foster child's participation in research.

You will be given a copy of this consent form to keep.

Name of Child to be included:

Name of Parent/Legal Guardian (please print) | Date

Signature of Parent/Legal Guardian | Relation to subject:
☐ Parent ☐ Legal Guardian

Thank you so much for your assistance with this important project. If you have questions or concerns about your rights as a study participant that have not been answered by the investigators, or to report any concerns about the project, please contact the University of Nebraska-Lincoln Institutional Review Board at 402-472-6965.

APPENDIX J

STUDENT ASSENT FORM

University of Nebraska Lincoln

IRB Project ID#: 22376

Study Title: Combined Academic and Behavioral Supports for Struggling Readers with Emotional/Behavioral Disorders

Principal Investigator: Danika Lang, M.Ed. Email: dlang4@unl.edu
Secondary Investigators: Suzanne Kemp, Ph.D. Email: sue.kemp@unl.edu
John Maag, Ph.D. Email: jmaag1@unl.edu
Erin Pfister, M.Ed., M.A. Email: epfister2@huskers.unl.edu

Key Information:

If you agree to participate in this study, the project will involve:

- Students between the ages of 8 and 14 years old
- Procedures will include a one-on-one intervention program that focuses on improving your reading skills while also allowing you to practice self-management skills like self-monitoring and goal setting
- Approximately 40 instructional sessions are required
- These sessions will take 20 hours total
- There are few risks associated with this study, as described below
- You will be paid a $25 Amazon gift card for your participation

Why are you being asked to be in this research study?

We are inviting you to be in this study because you are enrolled at the BEST school and are receiving extra support in managing challenging issues and situations. You are also being invited to participate because you have been identified by the school staff to be struggling with reading. We are interested in how direct instruction in reading and self-management strategies could impact how well you do in school.

What will be done during this research study?

For this research project, you will be asked to take part in 40 one-on-one lessons to give you extra practice in reading and using self-management skills. Each lesson will last 30 minutes. Before instruction starts, you will be given some screening assessments to determine your reading skills. If your scores qualify you for the study, you will have one-on-one reading instruction with a researcher once a day, Monday through Friday.

During these sessions, you will work on important reading skills like decoding and fluency. You will also learn how to set goals for your reading progress and be able to track your progress towards those goals. The researcher will test your reading fluency each week to see how close to your goal you are. Each time you meet or beat your goal, you will receive a reward of your choice.

What are the possible risks of being in this research study?

Since you'll be working one-on-one every day, there's a chance that you may get tired, overwhelmed, or frustrated during your reading lessons. To help with this, you can ask the researcher to take a break from the lesson if you ever feel like you need one.

What are the possible benefits to you?

Being in the study may help you get better at reading more quickly and accurately. You will also have more practice in how to set goals and monitor your progress towards those goals. You can use this skill in the future in other subjects like math or science. Being in the study will also help researchers and teachers understand what works best to support struggling readers with emotional/behavioral disorders. However, you may not get any benefit from being in this research study.

Will you be compensated for being in this research study?

You will receive a $25.00 Amazon gift card for your participation in this study.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your study data. There will be no way for us to know which responses belong to you or someone else. We may publish a summary of everybody's responses or present such a summary at a scientific meeting, but your identity and responses will be kept completely confidential.

Your scores on all assessments will be provided to your parents/guardians at their request.

What will happen if you decide not to be in this research study or decide to stop participating once you start?

You can decide not to be in this research study, or you can stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. If you have any questions at this time, please ask one of the researchers.

Participant Signature:

_____ _____

(Signature of Subject) Date

Investigator Signature:

_____ _____

Signature of Investigator Date

APPENDIX K

STUDENT SCREENING SCRIPT

IRB #: 22376

Formal Study Title:
Combined Academic and Behavioral Supports for Struggling Readers with Emotional/Behavioral Disorders

Principal Investigators:
Danika Lang, M.Ed Email: dlang4@unl.edu
Suzanne Kemp, Ph.D. Email: sue.kemp@unl.edu
John Maag, Ph.D. Email: jmaag1@unl.edu
Erin Pfister, M.Ed., M.A. Email: epfister2@huskers.unl.edu

Child Assent Script for Testing

Hi, _____(student's name), my name is _____(researcher's name). I am going to be giving you a few short assessments to test your reading skills. In these assessments, I will be asking you to read real words and sound out nonsense words. These tests should take about 10-15 minutes total. If you want to take a break at any time during assessment, please let me know. When we're done, I will score each of the assessments. Your scores will tell me if you would be a good fit for the research project I'm doing to improve students' reading and self-management skills. If you score in a certain range for each test, you are eligible to do one-on-one instruction with me for the next few weeks.

For qualifying students, use the following statement after testing:

Your scores are in the right range for being a student participant in my research study. If you are interested in participating, I can tell you more about what the study involves and what we would be working on. You can ask me any questions you have. Would you be interested in participating?

University of Nebraska Lincoln
Department of Special Education and Communication Disorders
301 Barkley Memorial Center | P.O. Box 830738 | Lincoln, NE 68583-0738 | 402.472.2145 | Fax 402.472.7697
cehs.unl.edu/secd

For students who do not qualify, use the following statement after testing:

Your scores are too high for you to be a student participant in my research study. This means that you are doing pretty well with reading, which is awesome! Thank you so much for taking the time to help me with my project by doing these screening assessments with me.

APPENDIX L

SCRIPT FOR SELF-MONITORING INSTRUCTION

Self-Monitoring Script

Today, we are going to adjust our reading lessons just a bit. You may notice something different about the PALS lesson for today. At the bottom of the first section is a box that says "number of correct sounds" with a line next to it. Similarly, the second section has a box for "number of correct blends." The third section has a box for "number of correct sight words," and finally, the fourth section has a box for "words read correctly in the story." From now on, you will be monitoring your own progress in reading. After both of us have been the reader and coach for the first section of our PALS lesson, I want you to count up how many letter sounds you read correctly and write that number on the line at the bottom of the section. I wil be taking notes and l will show you on my copy of the PALS lesson where you may have made a mistake. This will help you to make sure that you write down the right number of correct letter sounds. At the end of the "sound it out, read it fast" section, I want you to do the same thing and count up the number of words you correctly blended and write that number on the line at the bottom of the section next to where it says, "number of correct blends." You'll do this after the sight words and reading stories sections as well, so you'll end up with 4 scores total. At the end of our lesson, I want you to record your scores for letter sounds, blended words, sight words, and words read correctly in the story on the corresponding bar graphs by coloring the column up to the correct line to match the number of letter sounds or words you read correctly. From now on, we'll work together to set goals for how many letter sounds or words you think you can read correctly. Every time you meet a goal for one, two, or three of the four sections, you'll earn a small prize. If you meet your goals for all sections of the lesson, you'll earn a larger prize. Every time you meet one of your goals, we'll work together to set a new goal that you can work toward.

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cehs.unl.edu/secd

APPENDIX M

FIDELITY CHECKLISTS

Fidelity Checklist—Assessment Only Days (Baseline and Intervention)

Please mark whether the researcher performed or did not perform each step in the instructional sequence.

	Yes	No
1. Places student copy of DIBELS nonsense word fluency benchmark or progress monitoring probe in front of the student.	☐	☐
2. Provides student with a brief set of instructions on the administration of the assessment.	☐	☐
.		
3. Starts timer after saying "begin."	☐	☐
4. Follows along and marks the scoring book as the student responds.	☐	☐
5. Says "stop" at the end of the 60 second timer.	☐	☐
6. Places student copy of DIBELS oral reading fluency benchmark or progress monitoring probe in front of the student.	☐	☐
	☐	☐
7. Provides student with a brief set of instructions on the administration of the assessment.	☐	☐
8. Starts timer when the student says the first word.	☐	☐
9. Follows along and marks the scoring book as the student responds.	☐	☐
10. Says "stop" at the end of the 60 second timer.	☐	☐

Fidelity Checklist—Baseline Instruction Days

Please mark whether the researcher performed or did not perform each step in the instructional sequence.

	Yes	No	N/A
1. Places copy of PALS lesson on table where both the instructor and the student can see.	☐	☐	☐
2. Reminds student of "reader" and "coach" roles and that the coach is responsible for immediate corrective feedback whenever the reader makes a mistake.	☐	☐	☐
3. Instructor begins with the "saying sounds" section of the PALS lesson as the reader and points to each sound and verbally identifies it.	☐	☐	☐
4. As necessary, instructor discusses their own mistake with the student, receives correction from the student and begins the line again.	☐	☐	☐
5. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "saying sounds" section of the lesson.	☐	☐	☐
6. Instructor and student switch roles so that the student is the reader and the instructor is the coach for the "saying sounds" section of the lesson.	☐	☐	☐
7. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
8. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during "saying sounds" section of the lesson.	☐	☐	☐

9. Instructor proceeds to the "sounding out" section of the PALS lesson as the reader and points to each word, verbally identifies each individual sound, and then blends it to form the whole word.	☐	☐	☐
10. As necessary, instructor discusses their own mistake with the student, receives correction from the student and rereads the word.	☐	☐	☐
11. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "sounding out" section of the lesson.	☐	☐	☐
12. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐
13. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
14. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "sounding out" section of the lesson.	☐	☐	☐
15. Instructor proceeds to the "sight words" section of the PALS lesson as the reader and points to each word, and verbally identifies it.	☐	☐	☐
16. As necessary, instructor discusses their own mistake with the student, receives correction from the student and starts the line again.	☐	☐	☐
17. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "sight words" section of the lesson	☐	☐	☐
18. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐

19. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
20. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "sight words" section of the lesson.	☐	☐	☐
21. Instructor proceeds to the "reading stories" section of the PALS lesson as the reader and reads the whole story, modeling fluent reading.	☐	☐	☐
22. As necessary, instructor discusses their own mistake with the student, receives correction from the student and starts the sentence again.	☐	☐	☐
23. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "reading stories" section of the lesson	☐	☐	☐
24. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐
25. Instructor prompts the student to read the story all the way through two times.	☐	☐	☐
26. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the sentence again.	☐	☐	☐
27. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "reading stories" section of the lesson.	☐	☐	☐
28. Instructor prompts student to fill in the points they have earned during that lesson by coloring in the appropriate amount of squares on their points chart.	☐	☐	☐

Fidelity Checklist—Intervention Instruction Days

Please mark whether the researcher performed or did not perform each step in the instructional sequence.

	Yes	No	N/A
1. Instructor and student have a conversation about setting reasonable goals.	☐	☐	☐
2. Instructor assists student in setting a reasonable goal for the amount of sounds they can identify in the "saying sounds" section of the lesson, how many words they can blend correctly in the "sounding out" section of the lesson, how many sight words they can identify correctly in the "sight words" section of the lesson, and how many words they can read correctly in the final story.	☐	☐	☐
3. Instructor records student's goals on a separate sheet of paper.	☐	☐	☐
4. Places copy of PALS lesson on table where both the instructor and the student can see.	☐	☐	☐
5. Reminds student of "reader" and "coach" roles and that the coach is responsible for immediate corrective feedback whenever the reader makes a mistake.	☐	☐	☐
6. Instructor begins with the "saying sounds" section of the PALS lesson as the reader and points to each sound and verbally identifies it.	☐	☐	☐
7. As necessary, instructor discusses their own mistake with the student, receives correction from the student and begins the line again.	☐	☐	☐
8. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "saying sounds" section of the lesson.	☐	☐	☐

9. Instructor and student switch roles so that the student is the reader and the instructor is the coach for the "saying sounds" section of the lesson.	☐	☐	☐
10. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
11. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during "saying sounds" section of the lesson.	☐	☐	☐
12. Student records the number of sounds they identified correctly in the box in the lower lefthand corner of the "saying sounds" section of the lesson.	☐	☐	☐
13. Instructor proceeds to the "sounding out" section of the PALS lesson as the reader and points to each word, verbally identifies each individual sound, and then blends it to form the whole word.	☐	☐	☐
14. As necessary, instructor discusses their own mistake with the student, receives correction from the student and rereads the word.	☐	☐	☐
15. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "sounding out" section of the lesson.	☐	☐	☐
16. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐
17. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
18. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "sounding out" section of the lesson.	☐	☐	☐

19. Student records the number of words they sounded out correctly in the box in the lower lefthand corner of the "sounding out" section of the lesson.	☐	☐	☐
20. Instructor proceeds to the "sight words" section of the PALS lesson as the reader and points to each word, and verbally identifies it.	☐	☐	☐
21. As necessary, instructor discusses their own mistake with the student, receives correction from the student and starts the line again.	☐	☐	☐
22. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "sight words" section of the lesson	☐	☐	☐
23. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐
24. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the line again.	☐	☐	☐
25. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "sight words" section of the lesson.	☐	☐	☐
26. Student records the number of sight words they identified correctly in the box in the lower lefthand corner of the "sight words" section of the lesson.	☐	☐	☐
27. Instructor proceeds to the "reading stories" section of the PALS lesson as the reader and reads the whole story, modeling fluent reading.	☐	☐	☐
28. As necessary, instructor discusses their own mistake with the student, receives correction from the student and starts the sentence again.	☐	☐	☐

29. Instructor records points for themselves and the student on the point sheet for performing reader and coach roles during the "reading stories" section of the lesson	☐	☐	☐
30. Instructor and student switch roles so that the student is the reader and the instructor is the coach.	☐	☐	☐
31. Instructor prompts the student to read the story all the way through two times.	☐	☐	☐
32. As necessary, instructor provides immediate corrective feedback to the student and prompts them to start the sentence again.	☐	☐	☐
33. Instructor records points for themselves and the student on the point sheet for performing coach and reader roles during the "reading stories" section of the lesson.	☐	☐	☐
34. In the box in the lower lefthand corner of the "reading stories" section of the lesson, student records the number of words in the story that they read correctly the second time through.	☐	☐	☐
35. Instructor prompts student to graph the number of sounds correctly identified, the number of words blended correctly, the number of sight words correctly identified, and the total number of words read correctly in the story on the appropriate bar graphs.	☐	☐	☐
36. Together, the student and instructor set new goals for each section of the following lesson.	☐	☐	☐
37. Instructor provides student with tangible reinforcer for achievement of one or more goals.	☐	☐	☐
38. Instructor prompts student to fill in the points they have earned during that lesson by coloring in the appropriate amount of squares on their points chart.	☐	☐	☐