



# Academic and Behavior Combined Support: Evaluation of an integrated supplemental intervention for early elementary students

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## ABSTRACT

In current multi-tier models, students who are not responsive to universal instruction receive supplementary support. Despite most students having co-occurring academic and behavior challenges, their needs are often addressed through separate academic or behavior interventions. This approach may not only be costly for schools, but it also fails to acknowledge the well-documented link between behavior and academic performance. The purpose of this study was to evaluate *Academic and Behavior Combined Support (ABC Support)*, a newly developed supplemental intervention that merges a combined focus on reading fluency and engagement. Six teachers implemented the intervention for 6–8 weeks with Grade 2 students. Students' oral fluency on standard and training reading passages and occurrence of engagement and disruptive behaviors during classroom reading instruction were measured repeatedly across baseline and intervention phases in a multiple-baseline design. Visual and statistical analyses revealed significant improvement from baseline to intervention for both reading and behavior outcomes. Post-intervention surveys and interviews revealed a high level of acceptability among teachers and students. Theoretical and empirical contributions as well as practice implications are addressed.

## 1. Introduction

Schools are tasked with dual goals of promoting academic success and supporting positive behavior development. In multi-tiered models of service delivery, students who fail to meet grade-level academic or behavior expectations are given supplementary support. Although students who require Tier 2 support often have co-occurring academic and behavior challenges, their needs are typically addressed through separate academic or behavior interventions (Kuchle et al., 2015). This approach may be costly for schools and fails to acknowledge the inextricable link between behavior and academic performance (Miles & Stipek, 2006).

In recent years, schools have focused on blending academic Response to Intervention (RTI) with Positive Behavioral Interventions and Support (PBIS; McIntosh & Goodman, 2016). The aim of blended RTI and PBIS approaches, or integrated multi-tiered systems of support (MTSS), is to provide academic and behavior support for all students in an integrated manner (Noltemeyer & Sansosti, 2012).

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Integrated MTSS “is not simply implementing both academic RTI and PBIS systems. There is a systematic and careful integration of these systems to enhance the efficiency and effectiveness of all school systems” (McIntosh & Goodman, 2016; p. 6).

Integrated approaches at the universal level have proven to be effective in supporting behavioral and academic competence. McIntosh et al. (2006), for example, found higher academic skill performance and fewer disciplinary referrals in schools that implemented school-wide positive behavior support embedded within high-quality core academic instruction. According to these researchers, reducing problem behavior through positive behavior support made responding to reading instruction more likely, while improving reading skills through research-based reading instruction improved engagement and enhanced social adjustment.

Bradshaw et al. (2009) examined long-term outcomes associated with an integrated “classroom-centered” (CC) program designed to promote early learning skills and behavior competence. The CC program combined a universal behavior intervention (*Good Behavior Game*; Embry, 2002) with a prescribed set of curriculum enhancements and teaching strategies to strengthen academic responding (*Dialogic Reading* [Whitehurst et al., 1994] and *Directed Reading-Thinking Activity* [Stauffer, 1969]). Bradshaw et al. found substantial benefits for multiple outcomes (e.g., achievement, reduced special education participation); they concluded that the behavior component of the intervention provided students with a greater opportunity to learn by reducing off-task behavior, while the academic component enhanced academic skills.

In other research, Domitrovich et al. (2010) evaluated an integrated Tier 1 approach called P2P, which combined two interventions: (a) *Promoting Alternative Thinking Strategies* (PATHS; Kusche & Greenberg, 1994), a social-emotional curriculum to improve friendship skills, understanding and expression of emotions, and problem-solving ability; and (b) an adaptation of the *Good Behavior Game* (PAX-GBG; Embry et al., 2003), a group-contingency token economy aimed at reducing disruptive and off-task behavior. Domitrovich et al. found that the blending of two evidence-based interventions within P2P had multiplicative positive effects on students’ social-emotional and behavior outcomes. Specifically, the PATHS curriculum provided explicit instruction and supported goal setting, while the PAX-GBG created opportunities for students to be reinforced for displaying appropriate behaviors.

Despite significant progress toward merging academic and behavior supports within Tier 1 systems, a combined academic-behavior focus has yet to be extended to supplemental interventions. In current practice, Tier 2 interventions typically address academic or behavior problems independently, most often using separate procedures to treat and monitor either achievement or behavior outcomes (Kuchle et al., 2015; Stewart et al., 2007). To date, the benefit of a merged focus on both academic skills and behavior within a single, integrated Tier 2 intervention has not been systematically evaluated. To address this research and practice void, the authors conducted a preliminary evaluation of an intervention called *Academic and Behavior Combined Support (ABC Support)*. *ABC Support* is an integrated, supplemental intervention for early elementary students that merges a combined focus on developing reading fluency and strengthening positive behaviors (engagement and compliance).

### 1.1. Conceptualization of integrated interventions

Integrated interventions result from “the fusing of independent strategies or programs into one enhanced, coherent intervention approach” (Domitrovich et al., 2010, p. 74). A benefit of integrated interventions is their potential for synergistic effects. Integrated academic-behavior interventions may be more powerful than separate, single-focus approaches because the complementary “active ingredients” interact synergistically (Cook et al., 2012). For example, a behavior intervention may incorporate reinforcement procedures to strengthen learning-related behaviors (e.g., attention) yet lack sufficient opportunities for students to practice new behaviors in the context of learning tasks. When merged with an academic intervention, opportunities to practice academic skills complement the reinforcement strategies of the behavior intervention. Similarly, the effectiveness of an academic intervention may be undermined by students’ noncompliant or inattentive behavior. When merged with a behavior intervention to minimize challenging behavior, the effective use of reading time is maximized to increase skill acquisition.

Integrated interventions differ from sequential (“stacked”) and simultaneous (“parallel”) interventions. Sequential implementation of two discrete interventions occurs when an academic intervention is followed by a behavior intervention, or vice versa. Simultaneous implementation of two separate interventions occurs when there is parallel implementation of one intervention to strengthen academic skills and another to support positive behavior. Unlike sequential or simultaneous approaches, integrated interventions retain the unique strategies of each separate intervention, while merging their common elements, such as a high level of contingent praise or performance feedback (McIntosh & Goodman, 2016). Neither sequential nor simultaneous interventions take advantage of the natural link between academic performance and behavior; they fail to build on the shared features of academic and behavior interventions.

### 1.2. Rationale for integrated supplemental interventions

The repertoire of academic and behavior interventions with strong research support has increased in recent years (Burns et al., 2012; Stormant et al., 2012). Given the number of effective single-focus interventions, why is an integrated approach needed? This question can be addressed from an empirical as well as efficiency perspective.

#### 1.2.1. Empirical rationale

An empirical rationale for integrated interventions derives from research demonstrating a strong link between behavior and academic performance (Algozzine et al., 2011; Metcalfe et al., 2013). According to Walker et al. (2004), “academic achievement and behavior reinforce each other. Experiencing success academically is related to decreases in acting out; conversely, learning positive behaviors is related to doing better academically” (p. 10). Studies suggest that behavior problems co-occur with academic concerns approximately 50% to 80% of the time (Fessler et al., 1991). Moreover, the academic-behavior connection becomes stronger as

students advance through school (Benner et al., 2005).

The link between academic performance and behavior occurs as early as kindergarten. Young learners with reading difficulties may engage in disruptive behavior to avoid reading activities, which, in turn, limits their access to instruction and opportunities to learn (Metcalfe et al., 2013). Not surprisingly, students' difficulties in one domain (reading or behavior) predict problems in the other domain. Children with reading problems in Grade 1 are likely to display behavior problems in Grade 3; similarly, children who are disruptive and poorly engaged in Grade 1 are at risk for reading problems in Grade 3 (Bennett et al., 2003; Morgan et al., 2008). This negative spiral of achievement and behavior puts students at high risk for long-term negative outcomes, including school dropout and juvenile delinquency (Miles & Stipek, 2006).

Well-designed integrated approaches are aimed at combining academic and behavior supports within one intervention, without compromising the integrity or undermining the benefits of each single-focus strategy (Algozzine & Algozzine, 2009; McIntosh & Goodman, 2016). Although effectiveness research with integrated interventions is lacking, there is evidence that sequential models of academic and behavior support produce larger gains in academic and behavior outcomes compared to single-focus models (Stewart et al., 2007).

### 1.2.2. Efficiency rationale

An efficiency rationale for integrated interventions stems from the potential for maximizing cost-effective uses of time, personnel, and resources in schools. Merging a focus on behavior and academic skills within one intervention package that is implemented during a single time period is efficient and cost-effective in that it reduces the resource burden associated with implementing separate academic and behavior interventions (Becker & Domitrovich, 2011). Additionally, integrated interventions may be in the best interests of students. To provide separate interventions for students with academic and behavior problems, either the dosage for each intervention may need to be reduced to fit a standard intervention period or schools are forced to prioritize one domain over the other and deliver interventions sequentially (Domitrovich et al., 2010). Neither option is optimal for promoting students' success in school.

### 1.3. Conceptual framework for integrated interventions

A reciprocal-deficit pathway (RDP) model provides a useful conceptual framework for integrated interventions. This perspective posits that behavior and academic problems exert reciprocal influences on one another, which, over time, can lead to a negative cycle of escalating problem behavior and academic failure (Barriga et al., 2002; Hojnoski & Woods, 2012). This cycle typically begins in the early grades and becomes difficult to break as children progress through school (Arnold, 1997).

As shown in Fig. 1, some children enter school with limited academic skills and fail to benefit from instruction [1]. Over time, they fall behind and may develop patterns of low engagement and disruptive behavior that further restrict their academic success. Alternately, some children enter school with challenging behaviors that restrict the quantity and quality of instruction they receive [2]. They may display low attention, engage in negative interactions with teachers and peers, and have fewer opportunities to learn, which contribute to low academic success. Integrated interventions have simultaneous intervention entry points at [1] and [2], thereby maximizing both academic and behavior outcomes.

Integrated approaches have the advantage of merging two function-based interventions to address escape- and attention-maintained behaviors simultaneously. Non-compliance allows children with low academic skills to avoid (escape) difficult academic tasks; escape-maintained behaviors are often strengthened over time (Filter & Horner, 2009). Conversely, children with challenging behaviors may exhibit disruptive and non-compliant behaviors to access teacher (e.g., reprimands) and/or peer attention (e.g., giggling); attention-maintained behaviors are also strengthened over time (Carr et al., 2009). Integrated interventions address escape- and attention-maintained behaviors simultaneously by bolstering academic skills to minimize the difficulty of tasks, while providing teacher attention to support positive behaviors.

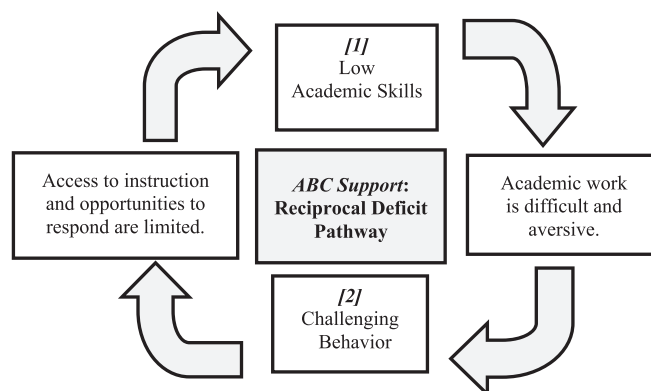


Fig. 1. Reciprocal deficit pathway model underlying the conceptualization of ABC support.

#### 1.4. Development of Academic Behavior Combined (ABC) support

*ABC Support* is an integrated intervention developed through a three-phase iterative process that incorporated (a) a review of evidence-based interventions targeting reading fluency and engagement to delineate both shared and unique intervention elements, (b) collaboration with “end users” (e.g., teachers) to translate evidence-based elements into integrated intervention procedures and materials, and (c) feasibility trials during which school-based interventionists received training and coaching to “try out” *ABC Support* and provide evaluative feedback. The design of *ABC Support* was guided by a three-step approach to intervention integration.

##### 1.4.1. Step 1: determine target skills and grade levels

The first step was to determine the targeted skills and grade levels. *ABC Support* focuses on academic skills and behaviors that put students at risk for low school success – namely, reading fluency and engagement. Many elementary students with reading problems have poor fluency; they have difficulty reading connected text with enough accuracy and speed for good comprehension (Chard et al., 2002). Despite its importance for reading success, fluency is often neglected in universal reading instruction (Fuchs et al., 2001). A national survey found that 40% of students in Grades 1–3 are “non-fluent” readers and require supplemental instruction to develop fluency (Daane et al., 2005). Similarly, the extent to which students are disengaged or exhibit disruptive behavior affects their learning outcomes. It is estimated that 30% of students exhibit low engagement to the degree that it interferes with their ability to learn (Campbell et al., 2013). Moreover, there is evidence that the academic-behavior link is strongest for reading fluency and engagement behaviors (Lassen et al., 2006).

*ABC Support* targets fluency and engagement specifically in early elementary students. This focus on young learners is supported by research documenting the critical need for early intervention (Hojnoski & Woods, 2012). The longer academic and behavior problems persist, the less likely interventions will be effective (Anderson & Borgmeier, 2010). Students who are not reading at grade level by Grade 4 have a low probability of becoming proficient readers (Juel, 1988); likewise, challenging behavior patterns that do not improve by the end of Grade 3 often become chronic and difficult to remediate (Walker et al., 2004). *ABC Support* is aimed at providing early intervention to avert more severe, long-term academic or behavior challenges.

In sum, *ABC Support* was developed for early elementary students who fall below grade-level expectations for reading fluency and engagement. Given the focus on fluency, students who lack proficiency in pre-reading skills (e.g., alphabet knowledge) are not likely to benefit from *ABC Support*. Likewise, students who are fluent readers but demonstrate deficiencies in vocabulary knowledge or comprehension skills may not benefit directly from *ABC Support*, unless weak comprehension is due to limited fluency. In terms of behavior deficiencies, *ABC Support* was designed for students who demonstrate challenges in engagement and compliance. Students with internalizing behaviors (e.g., social withdrawal) or severe externalizing behaviors (e.g., aggression) may be less likely to have their needs addressed through *ABC Support*.

##### 1.4.2. Step 2: delineate research-supported intervention elements

The second step was to identify evidence-based elements shared across academic and behavior interventions. According to Chorpita, Becker, and Daleiden (2007), shared or common elements are overlapping treatment components across interventions that target different domains – in the case of *ABC Support*, reading fluency and engagement. Chorpita et al.’s common-elements approach

**Table 1**  
Integrated application of evidence-based intervention elements in ABC support.

Element	Integrated application of evidence-based element in <i>ABC support</i>
Expectations	Expectations are clear, positively stated, address both reading and behavior, and reviewed at the beginning of each intervention session. Expectations are displayed on a laminated card, called the <i>READ Expectations Card</i> .
Goal setting	Goals for reading fluency (words correct per minute; WCPM) and behavior points are set at the beginning of each intervention session. Goals are determined based on prior performance; goals are attainable yet challenging. WCPM and behavior point goals are written on the reading graph and behavior graph, respectively.
Modeling	Teacher demonstrates both reading and behavior expectations (i.e., fluent oral reading and engaged/compliant behavior) while reading aloud a short passage. Student follows along, pointing to each word as the teacher reads.
Repeated practice	Student reads a training passage aloud three times during each intervention session. Each passage reading serves as an opportunity to practice both fluent reading and engaged/compliant behaviors.
Prompts and reminders	Teacher verbally reminds the student of the reading and behavior expectations prior to each repeated passage reading and points to the <i>READ Expectations Card</i> .
Feedback and praise	Teacher provides specific feedback and praise statements relative to both reading and behavior expectations following each repeated passage reading.
Error correction and behavior redirection	Following one passage reading per intervention session, the teacher selects 1–3 challenging words and implements a letter-word-phrase error correction procedure. Throughout the session, the teacher redirects the student, as needed to exhibit positive examples of expected behavior.
Recording and graphing	WCPM is recorded and graphed after each passage reading on the reading graph. Behavior points are recorded on the <i>Behavior Points Card</i> following each passage reading and graphed on the behavior graph after three passage readings are completed.
Rewards	At the end of each session, student receives a reward (stickers on a <i>Reward Chart</i> ) contingent on meeting reading and/or behavior goals.
Self-monitoring and generalization	Student monitors progress in reading and behavior across each intervention session through the graphs and reward charts. Student monitors progress in reading and behavior in the classroom between intervention sessions through a small version of the expectations card displayed on their desk ( <i>I CAN READ card</i> ).

allows for the distillation of shared “evidence-based kernels” from academic and behavior interventions. Delineating these shared elements is central to intervention integration. Over a nine-month period, the authors conducted a review of multiple data sources to identify 10 elements of effective reading fluency and behavior interventions. Table 1 lists these intervention elements and explains the application of each element in the context of *ABC Support*. *ABC Support* is structured to ensure that all elements in Table 1 are clearly present within the intervention procedures to simultaneously support the development of reading fluency and engagement behaviors. For example, an integrated set of reading and behavior expectations is taught using the acronym READ (Read carefully; Enthusiasm and excitement in voice; Attention and positive attitude; Do best reading and behavior). These expectations are demonstrated by the teacher and practiced by the student. In addition, students receive feedback and praise for both reading and behavior, and they graph their reading and behavior performance over time.

1.4.3. Step 3: incorporate a balance of shared and single-focus intervention elements

The final step was to balance shared elements of effective interventions (academic or behavior) with explicit single-focus strategies to support development of a specific academic skill or behavioral competence. Certain elements may be necessary to ensure the effectiveness of a single-focus intervention. In the case of *ABC Support*, for example, word-error correction is an evidence-based element of fluency interventions, but not behavior interventions. Eliminating or modifying word-error correction to achieve integration would likely undermine the effectiveness of the reading intervention. The goal of integration is to extract and adapt, as necessary, the common intervention elements to provide combined academic and behavior support, while preserving and maintaining the integrity of practices that are essential for the effectiveness of each single-focus intervention.

1.5. Purpose of study

Research provides evidence that universal integrated academic and behavior systems are effective in promoting student success (McIntosh & Goodman, 2016). The question remains, however, whether integrated Tier 2 interventions will yield comparable benefits for students who, based on screening, have academic and behavior challenges that limit their responsiveness to Tier 1 approaches. The current study was designed to address this question.

Based on our theory of change (see Fig. 2), we predicted that an integrated implementation of evidence-based elements shared across effective fluency and behavior interventions will have a positive effect on both academic and behavior intervention outcomes (proximal). Second, we predicted that students’ use of the *ABC Support* self-checklist to monitor their performance during regular reading instruction (through teacher prompts) will facilitate generalization of reading and behavior expectations from the treatment to non-treatment classroom setting. Third, we predicted that strengthening reading fluency and engagement during intervention sessions, combined with generalizing reading and behavior expectations to the classroom setting, will improve reading fluency on non-training passages (words read correctly in one minute) and behaviors (percentage of occurrence of engagement and disruptive behavior) during universal reading instruction (distal outcomes). Finally, we predicted that both teachers and students will perceive the *ABC Support* intervention as acceptable.

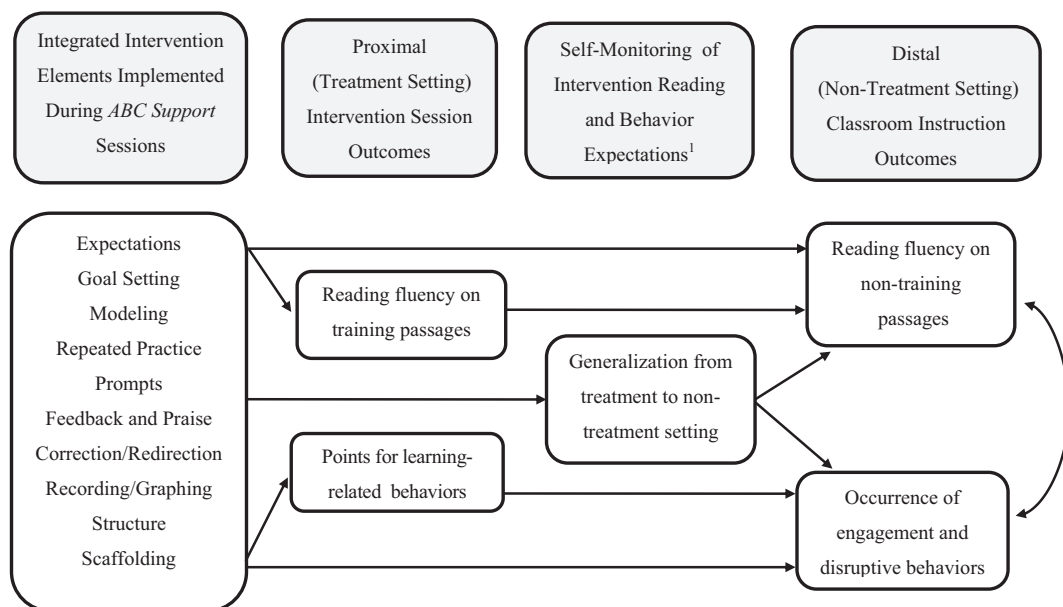


Fig. 2. ABC support theory of change.  
<sup>1</sup>Use of *I CAN READ* self-monitoring card.

## 2. Method

### 2.1. Teacher participants and training

Six teacher-student dyads participated in the study. Fig. 3 summarizes the recruitment and participation rates for teachers. Administrators for 16 school districts in south central Wisconsin that reported implementing MTSS were contacted to request permission to recruit teachers for participation. Of these, five (31%) initially agreed to participate; however, one district withdrew prior to the initiation of the study. In the four remaining districts, building principals for five of the eight existing elementary schools (62.5%) agreed to participate. Across all schools, 26 teachers who taught second-grade students were invited to participate. Of these, eight (31%) initially consented to participate. One teacher withdrew from participation due to personal time restrictions. Another teacher implemented the study procedures; however, her student refused to participate in the outcome assessment. This circumstance resulted in having usable data for six teacher-student dyads. Table 2 provides a summary of the characteristics of participating teachers and their classrooms. Due to COVID-19, schools closed prior to full completion of the intervention phase, resulting in four teachers being able to implement *ABC Support* for 8 consecutive weeks (the planned implementation period), one teacher implementing the intervention for 7 weeks, and another for 6 weeks.

Near the beginning of the school year, members of the research team conducted an informational session with teachers to obtain signed consent, gather information about classroom schedules and routines, review student recruitment and screening procedures, and schedule training sessions. Two on-site, teacher-training sessions (one week apart) occurred within the following 2–3 months, prior to the initiation of data collection. During training, teachers received a procedural manual and all intervention materials. The 60-min training sessions included an explanation and detailed “walk-through” of implementation, with video demonstrations of each procedural step. Throughout the intervention period, the research team conducted fidelity checks (scheduled at random every 1–2 weeks) followed by feedback and coaching. All teacher training, implementation fidelity checks, and coaching procedures were implemented according to a training and coaching manual (available online at <https://projects.wcer.wisc.edu/abcsupport>).

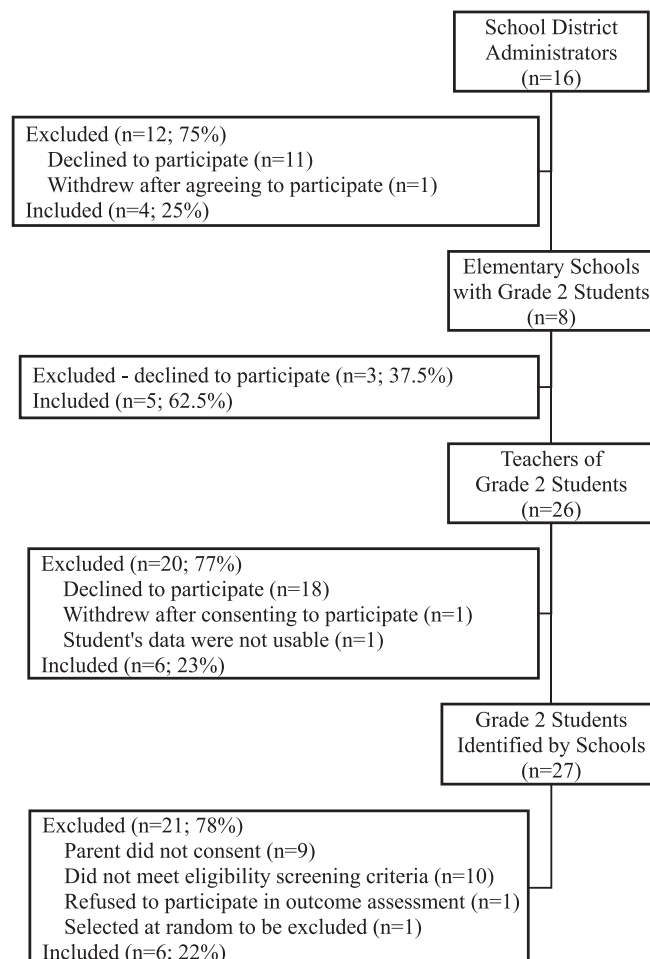


Fig. 3. CONSORT diagram for ABC support recruitment and participation.



**Table 2**  
Characteristics of teachers and classrooms of participating students.

Teacher characteristics					Classroom characteristics		
Race and gender	Highest degree	Years teaching experience	Knowledge of MTSS for reading <sup>a</sup>	Knowledge of MTSS for behavior <sup>a</sup>	Total students	Gender	Race
100% white	50% bachelors	5–22 years	3.00 (5) 2.00 (1)	3.00 (4) 2.00 (2)	15–21 students	37%–67% boys	42%–95% white
100% female	50% post-bachelors	Median: 12.0	Mean: 2.83	Mean: 2.67	Median: 19	Median: 54%	Median: 90%

<sup>a</sup> Based on 4-point self-rating of knowledge (1 = very low; 4 = very high) teachers completed prior to the initiation of the intervention.

## 2.2. Student participants

One student for each teacher was selected to participate using a four-step process:

1. Teachers/staff used their school's existing screening procedures to identify 27 prospective student participants who fell below the school's benchmark cut-offs for behavior and reading.
2. Parents of school-identified students received consent information requesting permission for the research team to conduct further screening of their student for possible participation in *ABC Support*. Parents of 18 students (67%) provided consent.
3. Students with parent consent participated in follow-up screening. Students were eligible to participate in *ABC Support* if their scores on fluency and behavior screening measures fell at or below the risk cut-off (see *Student Screening*). Eight students (44% of screened students) met the criteria for participation, including two students in the same classroom. By design, teachers implemented *ABC Support* with only one student in their classroom; therefore, one of the two qualifying students in the same classroom was selected at random to participate.
4. Each of the seven eligible students gave oral assent for participation. As noted previously, one student withdrew his assent to participate in outcome assessment. This withdrawal resulted in having complete data for six (4 boys and 2 girls) students. All student participants were in Grade 2; four students were White, and two were Black.

## 2.3. Measurement

Measurement involved multiple procedures that were administered prior to, during, and following implementation of the *ABC Support* intervention. Copies of all measures and detailed psychometric information are available online at <https://projects.wcer.wisc.edu/abcsupport>.

### 2.3.1. Student screening

A screening process including behavior and reading fluency measures was conducted to select students for *ABC Support*. Because each participating school utilized different universal screening procedures to identify students for supplemental interventions, the use of follow-up measures ensured a comparable level of risk across all participants.

**2.3.1.1. Behavior screening.** Teachers completed a behavior screening tool that included two measures: (a) *Social, Academic, and Emotional Behavior Risk Screener* (SAEBRS; Kilgus et al., 2014), and (b) *Engagement with Learning: Teacher Report Scale* (EWL; Skinner et al., 2009). The SAEBRS is comprised of 19 items corresponding to social (6 items), academic (6 items) and emotional (7 items) behaviors that predict school success. Teachers rate students by indicating how frequently they have displayed each behavior during the previous month. Item ratings range from 0 (*never*) to 3 (*almost always*). Total scores range from 0 to 57, with higher scores indicative of more appropriate functioning. As a screening tool, the SAEBRS demonstrates strong internal consistency ( $\alpha = 0.93$ ), concurrent validity ( $r = 0.61$ – $0.93$ ), and diagnostic accuracy ( $0.81$ – $0.97$ ; Kilgus et al., 2017). Students with scores at or below the cut points for risk were eligible to participate in *ABC Support*, specifically  $\leq 36$  for Total Behavior,  $\leq 17$  for Emotional Behavior,  $\leq 9$  for Academic Behavior, and  $\leq 12$  for Social Behavior.

The EWL focuses specifically on student engagement (behavioral and emotional). On the EWL, teachers rate students by indicating how frequently 10 statements about behavioral engagement (e.g., “When I explain new material, this student listens carefully.”) and emotional engagement (e.g., “When reading, this student seems to enjoy it.”) are true for the student. Like the SAEBRS, item ratings on the EWL range from 0 (*never*) to 3 (*almost always*). Total scores range from 0 to 30, with higher scores indicative of a higher level of engagement. Skinner et al. (2009) reported internal consistency estimates ranging from 0.89 to 0.92 and stability coefficient of 0.78. Students with EWL scores at or below the risk cut point ( $\leq 15$ ) were eligible to participate.

**2.3.1.2. Reading fluency screening.** Members of the research team administered oral reading fluency (ORF) screening passages from the *Dynamic Indicators of Basic Early Literacy Skills® Next* (Good et al., 2011). Students read aloud three grade-level passages for one minute, while the examiner recorded reading errors to determine the number of words correct per minute (WCMP). Estimates of reliability for WCMP on Grade 2 ORF passages are above 0.80, including alternate-form ( $r = 0.96$ ), test-retest ( $r = 0.90$ ), and inter-rater reliability ( $r = 0.99$ ; Good et al., 2019). Students were eligible to participate if their scores were below the Grade 2 fall benchmark

score (median WCPM  $\leq 53$ ).

### 2.3.2. Outcome assessment

Outcome assessment included direct and indirect measures of reading fluency and classroom behavior. Assessment occurred continuously and repeatedly (1–2 times per week) throughout the study period in a single-case, multiple-baseline observation format (see Kratochwill & Levin, 2014).

**2.3.2.1. Classroom behavior.** An adaptation of *Direct Behavior Rating* (DBR; Chafouleas et al., 2009) was used to code occurrence of engagement and disruptive behavior during universal reading instruction. DBR is a hybrid of rating scale and systematic direct observation (SDO) procedures with evidence of generalizability and validity for assessing the classroom behaviors targeted in *ABC Support* (Christ et al., 2009). Riley-Tillman et al. (2008), for example, found a strong correlation between DBR and SDO for both on-task (0.81) and disruptive behavior (0.87).

Trained data collectors completed observations 1–2 times weekly across the study period. For each observation, data collectors coded the occurrence (percentage of time) of two operationally defined behaviors (engaged behavior and disruptive behavior) within a 20-min period. Each 20-min period was divided into shorter intervals ( $\leq 5$  min), the length of which was determined by a shift in the instructional format (independent work, small group, or large group). At the end of each observation period, data collectors also (a) rated five specific engagement behaviors (e.g., “Did the student pay attention?”) using a 3-point scale, and (b) provided 2–3 narrative comments regarding the student’s behavior and/or classroom instruction. In sum, three types of information were derived from each observation: (a) average percentage of occurrence of engaged behavior and disruptive behavior (0%–100%); (b) average item ratings (1.0–3.0) for each engagement behavior; and (c) narrative data regarding student behavior and/or classroom reading instruction. All observation recording forms were checked for accuracy in calculating percentage of occurrence.

**2.3.2.2. Passage reading.** Oral reading fluency (ORF) probes were used to assess students’ reading proficiency. We used two types of probes: (a) standard Grade 2 reading passages to assess generalization of reading fluency skills to non-training passages, and (b) training passages (used for repeated practice during intervention sessions) to assess short-term maintenance of reading fluency skills on trained materials.

Data collectors administered ORF passages 1–2 times weekly to participating students. For each assessment, the student read a grade-appropriate standard passage for 1 min. Assessors recorded reading errors on a separate copy of the passage while the student read aloud. The student also read a training passage for 1 min. The training passage had been used for repeated reading practice during an intervention session occurring 3–5 days prior to the assessment. The order in which standard and training passages were read was counterbalanced across assessment sessions. For both standard and training passages, the fluency score was the number of words correct per minute (WCPM). All recording forms were double-scored to ensure accuracy in the calculation of scores.

**2.3.2.3. Reliability of outcome measurement.** Nine trained data collectors completed the outcome assessment procedures. Data collectors participated in at least one training session conducted by members of the research team, who also served as master coders. The training included an explanation, demonstration, practice implementation, and scoring of all outcome measures. Following the training session, data collectors underwent an individual certification process during which they independently scored ORF passages and coded videotaped classroom behaviors. Once data collectors achieved a criterion level of agreement with the master coder ( $\geq 90\%$  agreement), they were certified to implement the assessment procedures.

Data collectors were “blind” to the experimental phase and assigned randomly to conduct assessment sessions with individual students (i.e., ORF probe administration and classroom observation). Four student participants were assessed by all data collectors, and two students were assessed by eight (of nine) data collectors. Inter-rater reliability (IRR; agreement with master coder) was assessed periodically for 20%–25% of each data collector’s assessment sessions. If agreement with the master coder fell below 80%, data collectors received additional “booster” training. On average, IRR was 90.5% for engagement (89.8% baseline; 91.2% intervention) and 83.9% for disruptive behaviors (82.8% baseline; 85% intervention). Although IRR for both classroom behaviors met the 80% criterion, agreement was lower for disruptive behavior than for engagement. Anecdotally, data collectors reported greater difficulty in coding disruptive behavior due, in part, to the complexity of the behavior definition and the need to determine whether a student’s behavior disrupted classroom learning. IRR averaged 97.4% for WCPM on both standard passages (97.9% baseline; 96.8% intervention) and training passages (96.7% baseline; 98% intervention).

**2.3.2.4. Goal attainment scaling.** Teachers completed two goal attainment scaling (GAS) ratings weekly during the study period. For the first rating, teachers evaluated the student’s progress toward the engagement goal (“Student consistently is engaged during reading instruction – consistently pays attention; follows directions; participates appropriately; and shows interest and enthusiasm without prompts, reminders or redirection.”) using a 7-point scale (–3 to +3). For the second rating, teachers evaluated the student’s progress toward the reading fluency goal (“Student consistently reads grade-level material with fluency [100% of the time] – consistently reads with accuracy, vocal expression, confidence, and reading speed [not too slow] so as not to impede comprehension.”), again using a 7-point scale (–3 to +3).



### 2.3.3. Social validity

**2.3.3.1. Teacher acceptability.** An adaptation of the *Intervention Rating Profile* (IRP; Witt & Elliott, 1985) was used to assess teachers' acceptability of *ABC Support*. We expanded the IRP to include parallel items to assess acceptability of *ABC Support* as an intervention for reading and for behavior. The final scale, entitled *Teacher Evaluation of ABC Support*, included 22 items (statements) that teachers rated using a 4-point Likert scale (1 = *strongly disagree*; 4 = *strongly agree*); total scores ranged from 23 to 92.

Three teachers also consented to participate in an individual post-intervention interview conducted by members of the research team. The purpose of the 30-min interview was to supplement the outcome data by soliciting teachers' perspectives about ways in which students benefited from *ABC Support*, in particular changes that teachers noticed in their classrooms that could not be seen through objective measures and observations.

**2.3.3.2. Student acceptability.** Members of the research team administered an expanded version of the *Kids Intervention Profile* (KIP; Eckert et al., 2017), entitled *Student Evaluation of ABC Support*, to assess student acceptability of *ABC Support*. The KIP is an 8-item scale to measure acceptability of school interventions from the perspective of students who participate in the intervention. The KIP includes questions to which students respond using a five-point scale, ranging from *not at all* to *very, very much*. The response format (five boxes of increasing size) allows students to respond using a visual indicator of the relative strength of their response (e.g., largest box means "very, very much"). Because *ABC Support* targets both reading fluency and classroom behavior, two parallel items were added to the original 8-item scale to allow students to rate improvement (or worsening) of reading separate from behavior. Item ratings ranged from 1 to 5; total scores across 10 items had a possible range from 10 to 50.

## 2.4. Intervention implementation

Following a pre-intervention phase that included baseline measurement, teacher training, and student orientation sessions, teachers implemented *ABC Support* three times weekly (20 min per session) with their student. Teachers conducted individual student orientation and intervention sessions in their classrooms during regularly scheduled periods allocated for supplemental instruction. Four teachers implemented *ABC Support* for 8 consecutive weeks, one teacher implemented the intervention for 7 weeks, and one teacher implemented the intervention for 6 weeks.

Teachers received two manualized resources during the teacher training sessions to guide implementation of the intervention, including (a) an implementation manual providing a detailed explanation of procedural guidelines and semi-scripted intervention steps to enable teachers to implement *ABC Support* with fidelity and (b) a handbook of implementation materials containing all materials, including training passages, necessary for implementing the *ABC Support* intervention (available at <https://projects.wcer.wisc.edu/abcsupport/>). During the week prior to the start of the intervention, teachers conducted two 20-min orientation sessions with their student to provide explanations, demonstrations, and opportunities to practice the key implementation features of *ABC Support* (e.g., how to record and graph performance).

In consultation with classroom teachers, the research team created 24 training passages to use for repeated reading practice during the intervention sessions (available at <https://projects.wcer.wisc.edu/abcsupport/>). Each passage was 145–150 words in length. The difficulty level of the passages was approximately late second grade. Using the Spache readability formula (Spache, 1953), the average grade level was 2.95 (range = 2.76–3.10). Half of the passages were narrative (fiction) and half were expository (non-fiction). Narrative and expository passages were alternated across intervention sessions.

Each *ABC Support* session incorporated the same sequence of intervention steps (see Table 3). Teachers used a laminated self-guide to implement steps accurately and in the specific order as prescribed in the manual. *ABC Support* was designed to be implemented with fidelity to ensure all students were exposed to the evidence-based elements in Table 1, as well as flexibility to ensure students received individualized support as needed. Teachers were encouraged to adapt the amount of direction and support to accommodate individual

**Table 3**

Sequence of steps for ABC support intervention sessions.

- 
1. Review reading and behavior expectations (*READ Expectations Card*).
  2. Determine reading goal and record on reading graph; determine behavior goal and record on behavior graph.
  3. Prompt reading and behavior expectations. Implement first timed reading of training passage.
  4. Provide feedback relative to reading expectations and goal; record words correct per minute (WCPM) for first timed reading on reading graph; give specific praise.
  5. Provide feedback relative to behavior expectations and goal; circle/record points for behavior during first timed reading on points card; give specific praise.
  6. Prompt reading and behavior expectations. Demonstrate fluent reading and engaged behavior while reading aloud the training passage (modeling).
  7. Prompt reading and behavior expectations. Implement second timed reading of passage.
  8. Use letter-word-phrase correction procedure for 1–3 difficult words.
  9. Provide feedback relative to reading expectations and goal; record WCPM for second timed reading on reading graph; give specific praise.
  10. Provide feedback relative to behavior expectations and goal; circle/record points for behavior during second timed reading on points card; give specific praise.
  11. Prompt reading and behavior expectations. Implement third timed reading of passage.
  12. Provide feedback relative to reading expectations and goal; record WCPM for third timed reading on reading graph; give specific praise.
  13. Provide feedback relative to behavior expectations and goal; circle/record points for behavior during third timed reading on points card; give specific praise.
  14. Graph WCPM on reading graph and give feedback. Record total behavior points on behavior graph and give feedback. Give rewards for meeting reading and/or behavior goals.
  15. Remind student to use *I CAN READ* checklist of reading and behavior expectations to self-monitor performance during regular classroom instruction.
-

needs for scaffolding. Commonly-used adaptations were incorporated into a table in the implementation manual; the table describes strategies for providing more versus less support for each intervention element, while maintaining a necessary level of adherence to manualized procedures.

### 2.5. Intervention fidelity

To assess intervention fidelity, three external observers (research team members) conducted observations of approximately 25% of all intervention sessions at randomly determined time points during the implementation period (one fidelity check every 1–2 weeks). Observers used a structured implementation observation measure to code their observations. This measure incorporated a checklist format with operational definitions of intervention steps, whereby the observer noted the occurrence or nonoccurrence of each step. Overall integrity was high (95%), ranging from 90% to 98% across teachers. Integrity for individual sessions (across all teachers) varied from 82% (during the first intervention session observed) to 100% (during the last intervention session observed), indicating higher integrity in later sessions.

### 2.6. Research design and data analysis

#### 2.6.1. Multiple-baseline design

The *ABC Support* evaluation was designed to meet the What Works Clearinghouse (WWC) *Single-Case Design Pilot Standards* for design standards and evidence criteria (including the current WWC *Standards 4.1*; Kratochwill et al., 2010). In addition, we designed the study to meet the *Single-Case Reporting guidelines In BEhavioural interventions* (SCRIBE: Tate et al., 2016) and the American Psychological Association reporting standards for single-case quantitative research in psychology (Appelbaum et al., 2018).

The intervention was evaluated with a randomized multiple-baseline design (MBD) across participants (Kratochwill & Levin, 2010) on WCPM (standard and training passages) and occurrence of behavior (engaged and disruptive). Initially, we structured the design with 1–2 teacher-student dyads per each of four baseline conditions. Teacher-student dyads were randomly assigned to a pre-determined baseline “wait-time” length of 1, 2, 3, or 4 weeks. Each baseline period was followed by a 2-week teacher training phase, 1-week student orientation phase, and intervention phase initially planned with a length of 8 weeks. A follow-up phase was originally planned for 3–6 weeks (depending on baseline condition). The MBD was selected as it does not require a withdrawal of the intervention once implemented (Kazdin, 2021). Because of unforeseen logistical issues, however, the teacher dyad design-and-analysis strategy could not be executed as planned. A reasonable alternative was implemented instead, with all analyses based on six participating teacher-student dyads, couched within a nonconcurrent (with respect to the study’s chronological time frame) MBD and associated randomization-test analyses.

#### 2.6.2. Primary analyses of multiple-baseline data

We conducted both visual and statistical analysis of the data to meet the WWC *Single-Case Design Pilot* standards (Kratochwill et al., 2010). Visual analysis was completed in accordance with the WWC guidelines, taking into consideration changes in level (mean), trend (slope), and variability in graphic displays of the data. In the present study, only the first of these summary measures (level) was of a priori interest and is reported.

Because we incorporated randomization into the MBD, the data were analyzed statistically with an appropriate randomization statistical test. We structured the analyses by session numbers (rather than actual dates), which serendipitously were ordered with either a one- or two-observation stagger for each of the six participant dyads. Based on these procedures, we adopted the Wampold and Worsham (1986) randomized design and associated randomization test (see Ferron & Levin, 2014 for detailed information). The test was conducted through a statistical software program, *ExPRT (Excel® Package of Randomization Tests Version 4.1)* (Gafurov & Levin, 2020), to determine whether there were statistical differences between the baseline and intervention levels (means). All analyses were conducted with a Type I error probability of 0.05 based on directional (one-tailed) statistical tests, insofar as we predicted that implementation of *ABC Support* would improve students’ reading fluency and behavior outcomes. Effect sizes were calculated with Parker et al.’s (2014) “nonoverlap of all pairs” (NAP) nonparametric measure (adjusted so that it ranges from 0 to 1), as well as Busk and Serlin’s (1992) “no assumptions” standardized mean difference,  $d$  (i.e., treatment mean minus baseline mean divided by baseline standard deviation) and its bias-corrected  $g$  for a small number of baseline observations (Pustejovsky & Ferron, 2017).

#### 2.6.3. Secondary data analysis

In addition to the primary outcome data analyzed in the nonconcurrent MBD, we conducted secondary statistical and descriptive analyses of multiple student outcomes: (a) GAS ratings collected during pre-intervention and intervention phases, (b) observers’ behavior ratings and narrative comments from classroom observations conducted during baseline and intervention phases, (c) pre- and post-intervention teachers’ behavior ratings (SAEBRS and EWL) and students’ oral reading fluency (DIBELS), and (d) post-intervention treatment acceptability.

### 3. Results

#### 3.1. Primary analyses of multiple-baseline data

##### 3.1.1. Oral reading fluency outcomes

3.1.1.1. *Standard reading passages.* Multiple-baseline outcomes for the standard reading passages are shown in Fig. 4. Based on visual analysis of these data, all students exhibited an increase in WCPM level on standard passages from baseline (A phase) to intervention (B phase); the increase in WCPM coincided with the introduction of the intervention and continued throughout the intervention phase. Some variability in this overall pattern is apparent. For example, interpretation of the outcomes for Student 1 is difficult, owing to an increase in the final three A-phase outcomes just prior to the introduction of the intervention. Also, as shown in Fig. 4, the average WCPM for Students 1 and 4 was noticeably higher in the A phase compared to other participants. Teachers for these two students

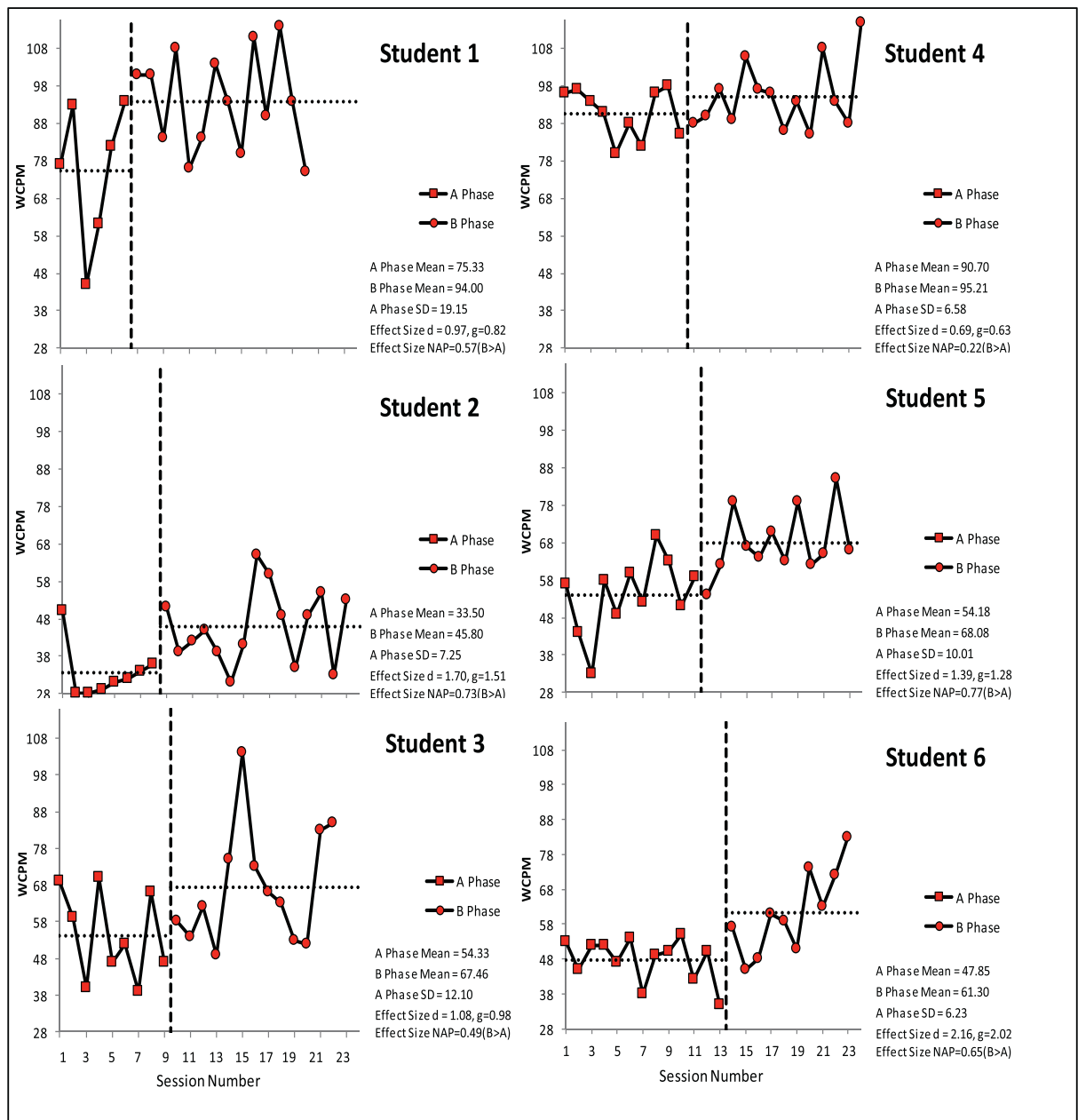


Fig. 4. Multiple-baseline graphs of student performance on standard reading passages.

acknowledged there had been improvement in oral reading fluency for all students in their classrooms during the 4–6 week period between screening and initiation of baseline. Even with improvement, however, Students 1 and 4 remained among the lowest readers relative to classroom peers and were considered by their teachers to be appropriate for *ABC Support*.

The visual analysis was supported by a multiple-baseline randomization test that yielded a statistically significant increase in WCPM from baseline ( $M = 59.3$ ) to intervention ( $M = 72.0$ ),  $p = .006$ . The average effect-size  $d$  was 1.33, with an associated  $g$  of 1.21 and adjusted NAP of 0.57. Approximately 60% of A- and B-phase reading fluency outcomes on standard passages were nonoverlapping. It is important to note that the summary statistics are based on a general comparison of students' A- and B-phase observations, which are not directly connected to the structured omnibus multiple-baseline randomization test that was conducted.

**3.1.1.2. Training reading passages.** A similar pattern of results was found for WCPM on training passages (see Fig. 5) with more pronounced intervention effects. All students exhibited substantial increases in WCPM level on training passages from baseline to

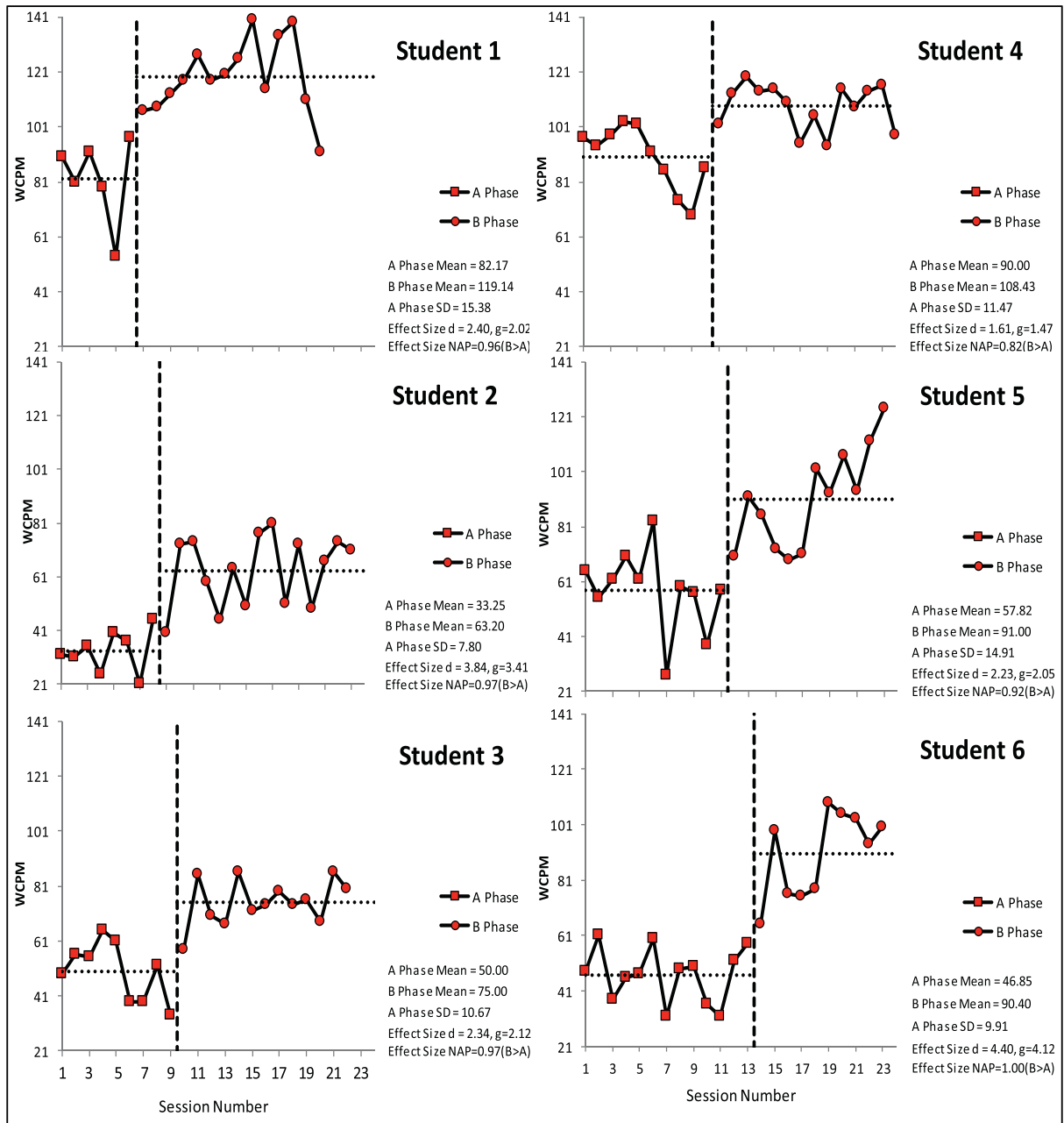


Fig. 5. Multiple-baseline graphs of student performance on training reading passages.

intervention, again coinciding with the introduction of the intervention.

A randomization test conducted on these data revealed a statistically significant change in level across students following the introduction of the intervention ( $p = .001$ ), from a baseline mean of 60.0 WCPM to an intervention mean of 91.2. The average effect-size  $d$  was 2.80, with an associated  $g$  of 2.53 and adjusted NAP of 0.94. The high NAP value indicates there is little overlap between students' baseline and intervention data points.

### 3.1.2. Behavior outcomes

3.1.2.1. *Engaged behavior.* An increase in the occurrence of engaged behavior during regular classroom reading instruction was evident based on both visual and statistical analyses. Despite some variance in each data series, visual inspection of the graphs in Fig. 6

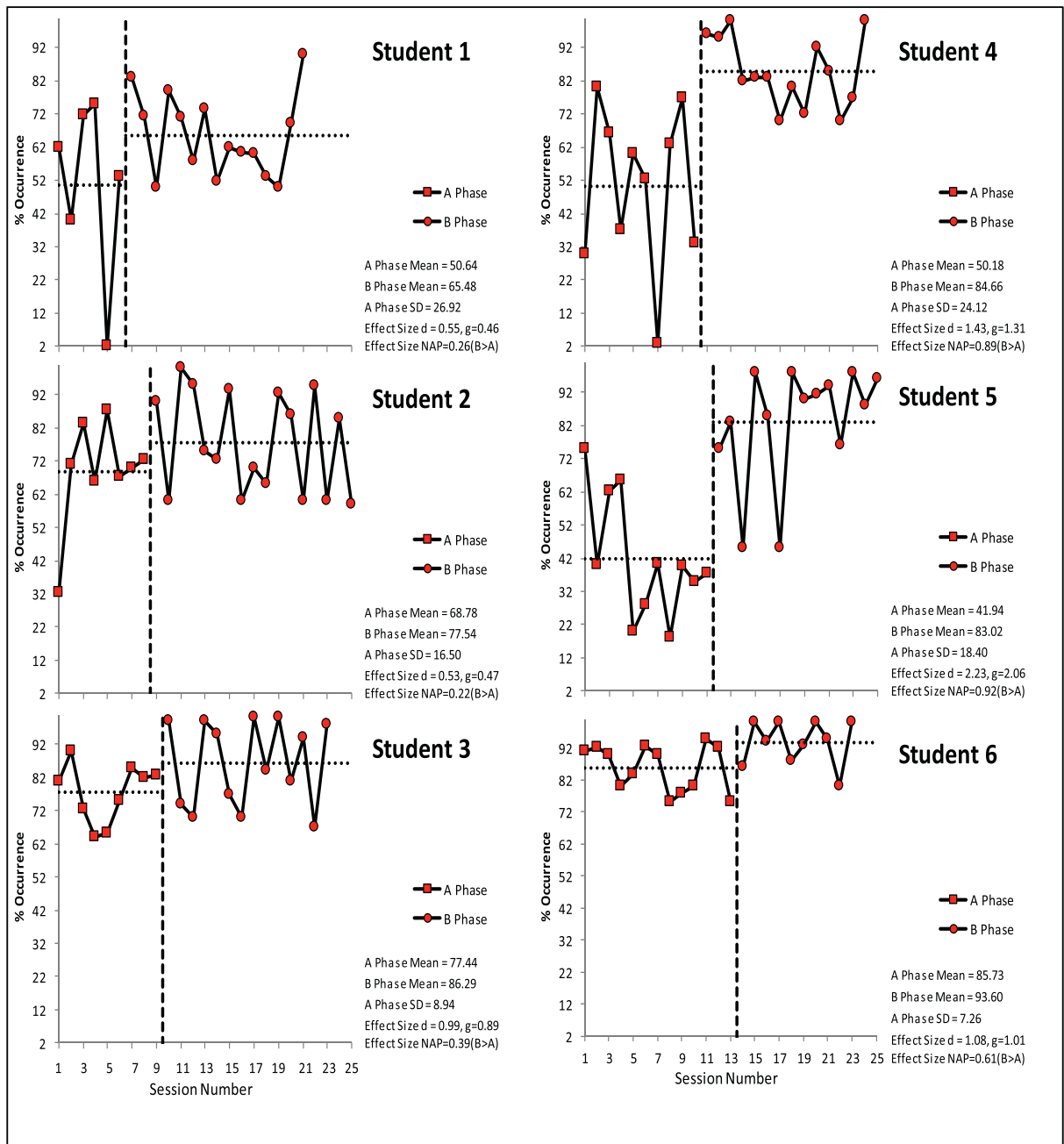


Fig. 6. Multiple-baseline graphs of student engagement during reading instruction.

indicates that engagement improved in level for all students from baseline to intervention. The graphs also reveal that Students 3 and 6 had relatively higher levels of engagement during baseline than what might be expected based on initial screening. It should be noted, however, that behavior screening relied on global teacher ratings, not direct observation of behavior during reading instruction. It is plausible that students fell below screening cut-points on broad ratings of social, academic, and emotional behavior, yet still exhibited high engagement during a specific instructional period. Moreover, similar to the screening for reading fluency, behavior screening occurred early in the school year, approximately 4–6 weeks prior to the initiation of baseline data collection; engagement may have improved for some students as a function of time.

The intervention effect observed visually in Fig. 6 is supported by statistical analyses. Specifically, there was a statistically significant increase in frequency of engaged behavior ( $p = .001$ ), from an average of 63% engagement during baseline to 82% during

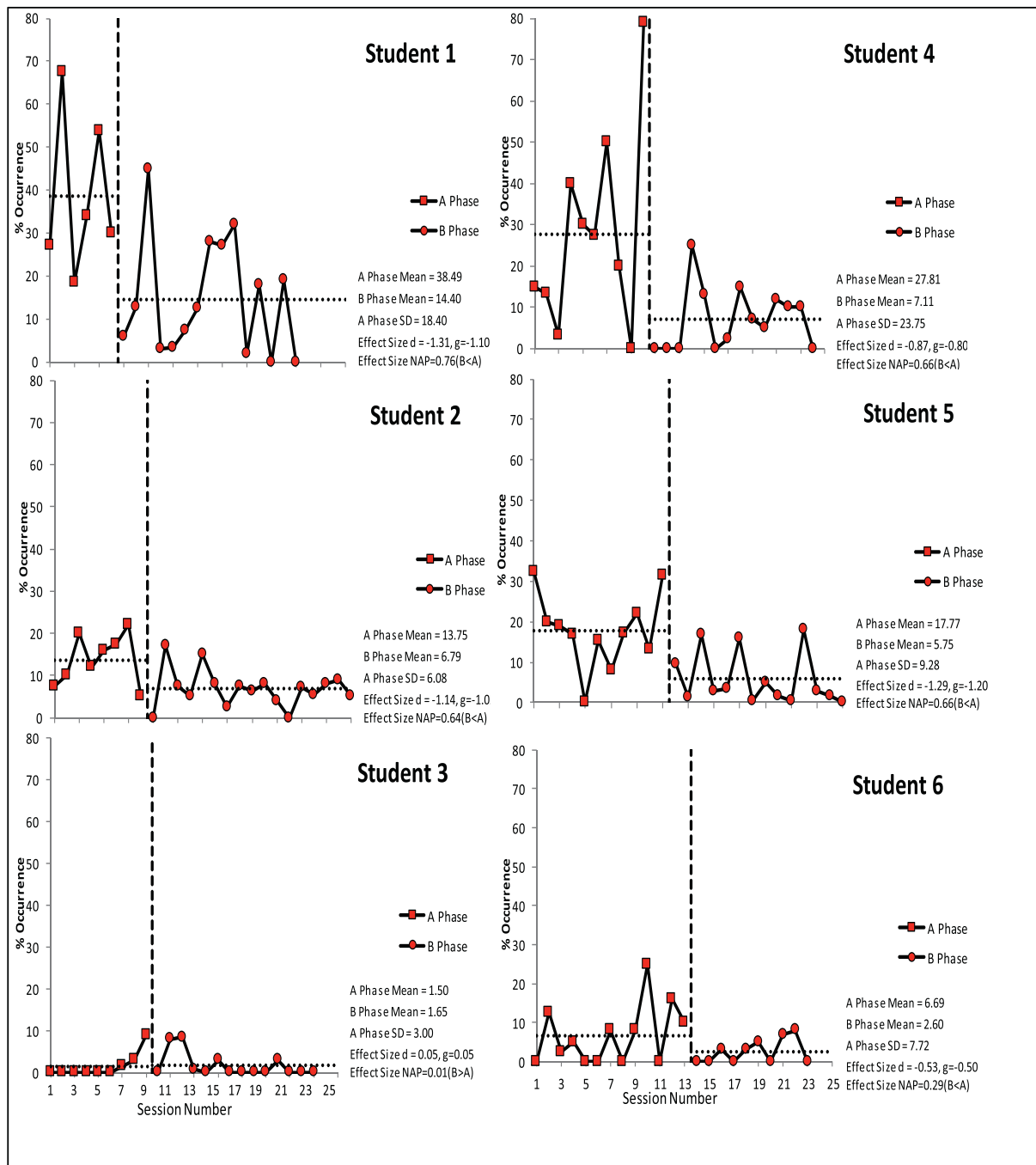


Fig. 7. Multiple-baseline graphs of student disruptive behavior during reading instruction.



intervention. The average effect-size  $d$  was 1.14, the average  $g$  was 1.03, and the average adjusted NAP was 0.55.

**3.1.2.2. Disruptive behavior.** Reduction of disruptive behavior is visually apparent in Fig. 7 for five of the six students. Similar to engagement, baseline disruptive behavior was relatively low for Students 3 and 6. Nevertheless, there was a clear level change that was not compromised by variability or trend. The visual analysis was also supported by statistical analyses. There was a statistically significant decrease in students' disruptive behavior ( $p = .001$ ), from an average of 18% occurrence during baseline to 7% during intervention. The average effect-size  $d$  was  $-0.85$ , with an associated  $g$  of  $-0.76$  and average adjusted NAP of 0.50.

### 3.2. Secondary data analyses

#### 3.2.1. GAS ratings

GAS oral reading and behavioral engagement ratings were analyzed by means of a one-sample permutation test applied to the mean preintervention-to-intervention change scores. GAS ratings ranged from  $-3$  to  $+3$  so that negative values can move to positive to assess effectiveness. For both types of GAS ratings, there was a statistically significant increase in mean scores,  $p = .008$ . For oral reading, scores improved from  $-0.33$  to  $1.13$ ,  $d = 1.67$ ; and for engagement, scores improved from  $-0.10$  to  $1.19$ ,  $d = 1.70$ . Because the data are derived from a one-sample, pre-post design with no randomized control condition, there are multiple factors apart from *ABC Support* that could account for improvement in GAS ratings, including student development/maturation, as well as the effects of classroom instruction and teacher behavior throughout the school year.

#### 3.2.2. Observer behavior ratings and narrative comments

In addition to frequency data, classroom observers provided global ratings of five learning-related behaviors at the conclusion of every 20-min observation period. Each behavior (i.e., paying attention, following directions, participating appropriately, showing interest, and displaying enthusiasm) was rated using a scale ranging from 1 (*mostly did not occur*) to 3 (*mostly did occur*). Ratings were averaged across all students for observations that occurred during baseline and observations that occurred during intervention. Although these data are descriptive, on average, students received higher overall behavior ratings during the time in which they were participating in *ABC Support* (see Table 4).

At the end of every observation period, observers also provided open-ended comments about students' behavior, attitude, and engagement; and/or significant aspects of the classroom instruction. A total of 131 comments were generated across all observations. The comments were transcribed, listed in random order, and rated by two independent coders using a 4-point scale: 1 = *mostly negative comments*; 2 = *slightly more negative than positive comments*; 3 = *slightly more positive than negative comments*; and 4 = *mostly positive comments*. Coders agreed on their numerical ratings for 98 (75%) of the comments. When coders disagreed, their ratings differed by only one point and were averaged to derive a final rating. Descriptively, the average ratings of comments for observations that occurred during intervention were higher than ratings of comments for observations during baseline (see Table 4). Interestingly, although observers were not specifically directed to note whether teachers prompted use of the *I CAN READ* card, more than 20% of the comments included some reference to students' use of the self-monitoring tool during reading instruction. Overall, these descriptive changes in both behavior ratings and narrative comments align with the statistically significant improvements in observed engagement and disruptive behaviors from baseline to intervention.

#### 3.2.3. Teacher behavior ratings and students' reading fluency at pre- and post-intervention

At the conclusion of the intervention period (approximately 5 months post-screening), teachers completed the behavior screening measures (SAEBRS and EWL) a second time for participating students. Descriptively, students had higher post-intervention scores for social behavior ( $M_{pre} = 8.6$ ;  $M_{post} = 11.4$ ), academic behavior ( $M_{pre} = 7.7$ ;  $M_{post} = 11.9$ ), emotional behavior ( $M_{pre} = 14.0$ ;  $M_{post} = 15.7$ ), and engagement ( $M_{pre} = 11.1$ ;  $M_{post} = 15.9$ ). Moreover, at post-intervention, all students received ratings that were above the risk cut-off for two behaviors specifically targeted by *ABC Support* (i.e., academic behavior and engagement).

Three students were re-administered the reading fluency screening measure at post-intervention. Because of COVID-19 school closures, the research team was unable to administer the reading fluency probes to the remaining three students. At post-intervention, two of three students (Students 2 and 3) obtained a median WCPM score above the risk cut-off ( $> 75$ ); one student (Student 1) obtained a WCPM (61) that was higher than screening, but still below the cut-point for risk.

**Table 4**  
Means and standard deviations for observer behavior ratings and narrative comments.

	Baseline phase, M (SD)	Intervention phase, M (SD)
Observer ratings <sup>a</sup>		
Paying attention	1.95 (0.20)	2.58 (0.21)
Following directions	2.06 (0.23)	2.55 (0.29)
Participating appropriately	1.90 (0.18)	2.47 (0.21)
Showing interest	2.01 (0.19)	2.45 (0.25)
Displaying enthusiasm	2.02 (0.23)	2.42 (0.30)
Ratings of narrative comments <sup>b</sup>	2.21 (0.41)	2.94 (0.56)

<sup>a</sup> Possible range: 1 (*mostly did not occur*) to 3 (*mostly did occur*);  $n = 6$  students.

<sup>b</sup> Possible range: 1 (*mostly negative*) to 4 (*mostly positive*);  $n = 131$  comments.

### 3.2.4. Treatment acceptability ratings

At post-intervention, all teachers completed a 22-item measure (*Teacher Evaluation of ABC Support*) to report their level of acceptability of the *ABC Support* intervention. On this measure, teachers rated their agreement with 22 statements related to perceived effectiveness (e.g., “*ABC Support* is effective for improving reading fluency.”), implementation features (e.g., “Overall, the *ABC Support* materials are easy to use.”), and satisfaction with *ABC Support* (e.g., “I would use *ABC Support* again.”). Each item was rated using a 4-point scale, ranging from *strongly disagree* (1) to *strongly agree* (4). Overall, teachers provided a positive evaluation of *ABC Support*, with an average item rating of 3.27.

Three teachers also participated in a post-intervention interview. Teachers described multiple benefits for students who received the intervention, including improvement in reading fluency as well as more positive attitude and enthusiasm about reading. The focus on positive expectations in *ABC Support* was reported by teachers as useful in building a stronger relationship with their student. Beyond an increase in positivity toward reading, teachers also observed an increase in students’ focus and on-task behavior during independent and small-group reading activities – although not necessarily during whole-group instruction. Teachers believe these benefits would have been maintained if the school year had continued. Each teacher also identified intervention components that were “most effective,” including graphing, using the reinforcement chart, modeling of fluent reading and engaged behavior, providing error correction, and offering specific praise; all teachers said the *I CAN READ* card helped students to generalize the READ expectations to regular reading instruction. At the conclusion of the interview, teachers were asked to rate the efficiency and effectiveness of *ABC Support*’s combined focus on reading and behavior on a scale from 1 (lowest in terms of efficiency and effectiveness) to 4 (highest in terms of efficiency and effectiveness); the average rating across teachers was 3.67. They also indicated that *ABC Support* is equally or more effective in strengthening reading fluency and engagement behaviors compared to other Tier 2 academic and/or behavior interventions used in their schools.

Due to COVID-19 school closures, only three students completed a 10-item *Student Evaluation of ABC Support* measure. On this measure, six items addressed acceptability of the intervention (e.g., “How much did you like reading the short passages and practicing the READ expectations each week?”) and four addressed the student’s improvement (e.g., “Do you think your reading improved?”). Students answered each question using a 5-point scale (5 = *very, very much*; 1 = *not at all*). Students used the same 5-point scale to rate the benefit of the *I CAN READ* card. Like the teachers, students reported high acceptability of *ABC Support* ( $M = 4.50$ ) and improvement in their reading and behavior ( $M = 5.00$ ). They also indicated the *I CAN READ* card helped them in the classroom “very, very much” ( $M = 5.00$ ).

## 4. Discussion

Based on empirical, efficiency, and theoretical rationales, we developed an integrated supplemental intervention, called *ABC Support*, that merged shared and unique evidence-based elements of academic and behavior interventions for early elementary students. To date, an integrated academic-behavior focus has not been extended systemically to supplementary interventions. Instead, Tier 2 interventions typically target academic and/or behavior deficits independently, with separate protocols to treat these problems (Stewart et al., 2007). As predicted, implementation of *ABC Support* contributed to significant benefits for both targeted behavior and academic skills based on visual and statistical analysis. These findings lend support for an empirical link between behavior and academic performance (Algozzine et al., 2011; Morgan et al., 2008). Moreover, the findings suggest there is efficiency and effectiveness with an integrated approach that may not always be achieved with a parallel or sequential approach for delivering academic and behavior interventions. Because the emergence of intervention effects was synchronous with the staggered intervention start points of a case-randomized multiple-baseline design, the credibility of conclusions stemming from those randomization-test analyses is strengthened.

Based on our theory of change, we predicted that students’ use of the *ABC Support* self-checklist (*I CAN READ* card) to monitor their performance during regular reading instruction would facilitate generalization of reading and behavior expectations from the intervention context to the non-intervention classroom setting. Although we did not directly assess students’ use of the self-checklist, three sources of supplementary descriptive data converge to offer some support for this prediction. First, 20% of observer comments during the classroom observations specifically referenced the *I CAN READ* card (e.g., “Teacher directed student to use his *I CAN READ* card when he started to go off-task”, “Student repeated the READ expectations to herself at the start of reading instruction”). Second, during post-intervention interviews, teachers reported the self-checklist was effective in helping students remember the READ expectations during regular classroom instruction. Lastly, every student who completed the post-intervention acceptability measure indicated the *I CAN READ* card helped them in the classroom “very, very much.”

We also found support for our prediction that strengthening reading fluency and engagement during the *ABC Support* intervention sessions, combined with generalizing reading and behavior expectations to the classroom setting through the *I CAN READ* self-checklist, would improve reading fluency on non-training passages and learning-related behaviors during reading instruction outside of the treatment setting. First, students demonstrated significant gains in WCPM on standard reading passages that were not used for repeated reading practice during the intervention. The average gain in reading fluency from baseline to intervention was 12.9 WCPM. Depending on the number of weeks of implementation (6–8 weeks), the expected normative growth across this time period is 7.2–9.6 WCPM (1.2 WCPM gain per week; Tindal & Nese, 2013). Thus, *ABC Support* resulted in 35% to 80% more growth in reading fluency than what would be expected normatively. In addition, through the integration of a simultaneous focus on behavior during each *ABC Support* intervention session (i.e., clear expectations, behavior goals, earning and graphing points, feedback and praise, behavior redirection, and reinforcement), students displayed higher rates of engagement (19% increase) and lower disruptive behavior (11% decrease) during classroom reading instruction from baseline to intervention. Importantly, these positive behavior outcomes

were achieved *without* delivering a separate behavior intervention.

#### 4.1. Facilitative implementation factors

Two facilitative factors related to *ABC Support* implementation – low cost and high fidelity – likely contributed to the positive outcomes. In conducting an analysis of the costs associated with *ABC Support* implementation, we focused on incremental costs, which are expenditures incurred above and beyond the resources, time allocations, and space already available in the classroom or school (Boardman et al., 2011). Overall, the intervention was low in cost because it involved minimal, if any, new or additional expenditures to implement. That is, *ABC Support* implementation required already-available classroom space, relied on the existing school-wide screening procedures, and involved classroom teachers already employed by schools to implement Tier 2 interventions. Moreover, the training and implementation materials for *ABC Support* were easily accessible and available online at no cost.

Overall, teachers displayed a high level of integrity of *ABC Support* implementation. Average integrity scores were high across all the teachers (90%–98%) and integrity for individual sessions (across all teachers) improved over the duration of intervention sessions. Although the intervention dosage effect is often considered part of the integrity construct (Sanetti & Kratochwill, 2014), we learned that even with a shorter-than-planned duration of the program (6–7 weeks versus 8 weeks), positive outcomes can be achieved for students. We also surmise that the high acceptability of the intervention contributed to these positive effects.

#### 4.2. Limitations and future research

Despite these promising findings, there are limitations of our evaluation study that underscore the need for future research. First, due to school closings, we were unable to implement the planned 3–6 week follow-up phase to examine the durability of our findings. During post-intervention interviews, teachers reported that treatment gains would likely be maintained to some degree following the intervention. Nonetheless, there remains a need for future research to study the maintenance of treatment effects once the *ABC Support* intervention is discontinued. Second, for research purposes, the intervention was delivered in a controlled, one-to-one format; the positive outcomes may be due, in part, to the individualized nature of the treatment protocol. Additional implementation features associated with a research project may also have enhanced our findings. For example, research staff provided on-site training and coaching for teachers. Moreover, teachers consented to participate in the research and, as such, were likely motivated to achieve positive outcomes. To examine practice-based implementation and effects, we are currently extending our research to learn more about the efficacy of *ABC Support* in typical Tier 2 school applications, such as in a small-group format, using self-guided manualized training without the benefit of on-site coaching, and with implementation by diverse school personnel.

Third, classroom teachers implemented the intervention. Although teacher implementation is typical for many supplemental interventions, an extension of *ABC Support* implementation to parents may increase the potency of the intervention for academic and behavior outcomes. A conjoint extension of the protocol to incorporate parent involvement would not only facilitate stronger outcomes, but also promote generalization of students' skills and positive behavior across settings (Garbacz et al., 2018). Fourth, the sample size in our single-case design experiment necessitates replication with other students and with a larger and more diverse sample. Indeed, some supplementary analyses were descriptive, rather than statistical, owing to the small number of participants. Fifth, we had planned to use two types of randomization in our multiple-baseline design, specifically case randomization and start point randomization. We were unable to adopt start point randomization due to practical and logistical challenges in the school settings. Although this is a limitation of the current design that should be addressed in future research, our statistical analyses were correctly based on case randomization and yielded positive outcomes.

Implementation fidelity checks revealed a consistently high level of fidelity across participating teachers. A limitation of the current study, however, is the lack of inter-observer agreement (IOA) data on the fidelity checks; obtaining implementation IOA data is another methodological feature to incorporate into future research. Finally, although research supports the use of DBR as a valid measure of classroom behaviors (Chafouleas et al., 2009), alternative methods of direct observation that incorporate systematic time-sampling procedures can also be used in future research to assess engagement and disruptive behavior.

#### 4.3. Implications for practice

We achieved important findings for school psychologists and other school-based professionals that have implications for future practice. Our results suggest that an integrated academic-behavior intervention, such as *ABC Support*, has potential for providing students with a strong Tier 2 intervention. Integrated academic-behavior interventions may be more powerful than traditional single-focus approaches because the intervention “ingredients” are merged to produce combined and collateral effects greater than each separate intervention (Cook et al., 2012; Kuchie et al., 2015). Our findings also underscore the importance of assessing both academic and behavior dimensions of students who present with reading problems. Likewise, careful assessment of academic literacy skills is necessary for a complete understanding of student behavior problems and for the design of interventions. Ultimately, an understanding of both academic and behavior domains and subsequent integrated intervention approach are more likely to result in positive outcomes for students overall than a traditional single-focus approach.

*ABC Support* also appears to be a cost-effective intervention. All *ABC Support* materials are available on the website and accessible to professionals interested in adopting the program. Given the availability of structured training, coaching, and intervention materials, the program requires minimal time for a school psychologist to set up and monitor. From a cost-analysis perspective, the resources to implement *ABC Support* do not result in significant expenditures. Beyond teacher training time (1–2 h), current resources within a

classroom/school may require some reallocation to use *ABC Support* in lieu of other Tier 2 interventions. Overall, the anticipated benefits (effectiveness) of *ABC Support*, based on our experimental test of outcomes, contribute to the cost-effectiveness of the intervention.

#### 4.4. Conclusion

The development of *ABC Support* was grounded in a reciprocal-deficit pathway framework and predicated on the assumption that educators can improve effectiveness and efficiency by integrating a combined focus on behavior and academic skills. Through *ABC Support*, evidence-based strategies for separate reading fluency and behavior interventions were retained, while merging their common intervention components. Our evaluation of *ABC Support* yielded promising evidence that an integrated, supplemental intervention can simultaneously address both academic and behavior deficits in early elementary students. Integrated supplemental interventions are not limited to the reading-fluency skills and engagement behaviors targeted in *ABC Support*. Given the well-documented academic-behavior connection and growing need for efficient school-based practices, our findings underscore the value of providing integrated interventions.

#### Declaration of Competing Interest

We have no known conflict of interest to disclose.

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#### References

- Algozzine, B., & Algozzine, K. M. (2009). Facilitating academic achievement through schoolwide positive behavior support. In W. Sailor, G. Dunlap, G. Sugai, & R. H. Horner (Eds.), *Handbook of positive behavior support* (pp. 521–550). Springer.
- Algozzine, B., Wang, C., & Violette, A. S. (2011). Reexamining the relationship between academic achievement and social behavior. *Journal of Positive Behavior Interventions*, 13(1), 3–16. doi: 10.1177%2F1098300709359084.
- Anderson, C. M., & Borgmeier, C. (2010). Tier II interventions within the framework of schoolwide positive behavior support: Essential features for design, implementation, and maintenance. *Behavior Analysis in Practice*, 3(1), 33–45. <https://doi.org/10.1007/BF03391756>.
- Appelbaum, M., Klien, R. B., Nezu, A. M., Cooper, H., Mayo-Wilson, E., & Rao, S. M. (2018). Journal article reporting standards for quantitative research in psychology: The APA Publications and Communications Board Task Force report. *American Psychologist*, 73(1), 3–25. <https://doi.org/10.1037/amp0000191>.
- Arnold, D. (1997). Co-occurrence of externalizing problems and emergent academic difficulties in young high-risk boys: A preliminary evaluation of patterns and mechanisms. *Journal of Applied Developmental Psychology*, 18(3), 317–330. [https://doi.org/10.1016/s0193-3973\(97\)80003-2](https://doi.org/10.1016/s0193-3973(97)80003-2).
- Barriga, A. Q., Doran, J. W., Newell, S. B., Morrison, E. M., Barbetti, V., & Robbins, B. D. (2002). Relationships between problem behaviors and academic achievement in adolescents. *Journal of Emotional and Behavioral Disorders*, 10(4), 233–340. <https://doi.org/10.1177/10634266020100040501>.
- Becker, K. D., & Domitrovich, C. E. (2011). The conceptualization, integration, and support of evidence-based intervention in the schools. *School Psychology Review*, 40(4), 582–589. <https://doi.org/10.1080/02796015.2011.12087531>.
- Benner, G. J., Beaudoin, K., Kinder, D. M., & Mooney, P. (2005). The relationship between beginning reading skills and social adjustment of a general sample of elementary aged children. *Education and Treatment of Children*, 28(3), 250–264. <https://www.jstor.org/stable/42899848>.
- Bennett, K. J., Brown, K. S., Boyle, M., Racine, Y., & Offord, D. (2003). Does low reading achievement at school entry cause conduct problems? *Social Science and Medicine*, 56(12), 2443–2448. [https://doi.org/10.1016/S0277-9536\(02\)00247-2](https://doi.org/10.1016/S0277-9536(02)00247-2).
- Boardman, A. E., Greenberg, D. H., Vining, A., & Weimer, D. L. (2011). *Cost-benefit analysis: Concepts and practice* (4th ed.). Pearson Prentice Hall.
- Bradshaw, C. P., Zmuda, J. H., Kellam, S. G., & Ialongo, N. S. (2009). Longitudinal impact of two universal preventive interventions in first grade on educational outcomes in high school. *Journal of Educational Psychology*, 101(4), 926–937. <https://doi.org/10.1037/a0016586>.
- Burns, M. K., Riley-Tillman, T. C., & VanDerHeyden, A. M. (2012). *RTI applications* (Volume 1: Academic and Behavioral Interventions). Guilford.
- Busk, P. L., & Serlin, R. C. (1992). Meta-analysis for single-case research. In T. R. Kratochwill, & J. R. Levin (Eds.), *Single-case research design and analysis* (pp. 187–212). Erlbaum.
- Campbell, A., Rodriguez, B. J., Anderson, C., & Barnes, A. (2013). Effects of a tier 2 intervention on classroom disruptive behavior and academic engagement. *Journal of Curriculum and Instruction*, 7(1), 32–54. <https://doi.org/10.3776/joci.%25y.v7i1p32-54>.
- Carr, J., Grow, L., & Leblanc, L. (2009). Treatments for attention-maintained problem behavior: Empirical support and clinical recommendations. *Journal of Evidence-Based Practices for Schools*, 10(1), 70–92. <https://www.researchgate.net/publication/255949566>.
- Chafouleas, S. M., Riley-Tillman, T. C., & Christ, T. J. (2009). Direct behavior rating (DBR): An emerging method for assessing social behavior within a tiered intervention system. *Assessment for Effective Intervention*, 34(4), 195–200. <https://doi.org/10.1177/1534508409340391>.
- Chard, D. J., Ketterlin-Geller, L. R., Baker, S. K., Doabler, C., & Apichatabutra, C. (2002). Repeated reading interventions for students with learning disabilities: Status of the evidence. *Exceptional Children*, 75(3), 263–281. <https://doi.org/10.1177%2F001440290907500301>.
- Chorpita, B. F., Becker, K. D., & Daleiden, E. L. (2007). Understanding the common elements of evidence-based practice: misconceptions and clinic examples. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(5), 647–652. <https://doi.org/10.1097/chi.0b013e318033ff71>.
- Christ, T. J., Riley-Tillman, T. C., & Chafouleas, S. M. (2009). Foundation for the development and use of direct behavior rating (DBR) to assess and evaluate student behavior. *Assessment for Effective Intervention*, 34(4), 201–213. <https://doi.org/10.1177/1534508409340390>.
- Cook, C. R., Dart, E., Collins, T., Restori, A., Daikos, C., & Delport, J. (2012). Preliminary study of the confined, collateral, and combined effects of reading and behavioral interventions: Evidence for a transactional relationship. *Behavioral Disorders*, 38(1), 38–56. doi: 10.1177%2F019874291203800104.
- Daane, M. C., Campbell, J. R., Grigg, W. S., Goodman, M. J., & Oranje, A. (2005). *Fourth-grade students reading aloud: NAEP 2002 special study of oral reading* (NCES 2006-469). National Center for Education Statistics, Department of Education. <https://nces.ed.gov/nationsreportcard/pubs/studies/2006469.asp>.



- Domitrovich, C. E., Bradshaw, C. P., Greenberg, M. T., Embry, D., Poduska, J. M., & Ialongo, N. S. (2010). Integrated models of school-based prevention: logic and theory. *Psychology in the Schools*, 47(1), 71–88. <https://doi.org/10.1002/pits.20452>.
- Eckert, T. L., Hier, B. O., Hamsho, N. F., & Malandrino, R. D. (2017). Assessing children's perceptions of academic interventions: The Kids Intervention Profile. *School Psychology Quarterly*, 32(2), 268–281. <https://doi.org/10.1037/spq0000200>
- Embry, D. D. (2002). The Good Behavior Game: A best practice candidate as a universal behavioral vaccine. *Clinical Child and Family Psychology Review*, 5(4), 273–297. <https://doi.org/10.1023/A:1020977107086>
- Embry, D. D., Staatemeier, G., Richardson, C., Lauger, K., & Mitich, J. (2003). *The PAX good behavior game*. Haselden.
- Ferron, J. M., & Levin, J. R. (2014). Single-case permutation and randomization statistical tests: Present status, promising new developments. In T. R. Kratochwill, & J. R. Levin (Eds.), *Single-case intervention research: Methodological and statistical advances* (pp. 153–183). American Psychological Association. <https://doi.org/10.1037/14376-006>.
- Fessler, R., Rosenberg, M. S., Mercer, C. D., & Rosenberg, L. A. (1991). Concomitant learning disabilities and learning problems among students with behavioral/emotional disorders. *Behavioral Disorders*, 16(2), 97–106. <https://doi.org/10.1177/019874299101600205>.
- Filter, K. J., & Horner, R. H. (2009). Function-based academic interventions for problem behavior. *Education and Treatment of Children*, 32(1), 1–9. <https://www.jstor.org/stable/42900004>.
- Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, 5(2), 239–256. [https://doi.org/10.1207/S1532799XSSR0503\\_3](https://doi.org/10.1207/S1532799XSSR0503_3).
- Gafurov, B. S., & Levin, J. R. (2020). ExPRT (Excel Package of Randomization Tests): Statistical analyses of single-case intervention data. <http://ex-prt.weebly.com>.
- Garbacz, S. A., Hirano, K., McIntosh, K., Eagle, J. W., Minch, D., & Vatland, C. (2018). Family engagement in schoolwide positive behavioral intervention and supports: barriers and facilitators to implementation. *School Psychology Quarterly*, 33(3), 448–459. <https://doi.org/10.1037/spq0000216>.
- Good, R. H., Kaminski, R. A., Cummings, K., Defour-Martel, C., Petersen, K., Powell-Smith, K., Stollar, S., & Wallin, J. (2011). *DIBELS next assessment manual*. Dynamic Measurement Group.
- Good, R. H., Kaminski, R. A., Dewey, E. N., Wallin, J., Powell-Smith, K. A., & Latimer, R. J. (2019). *DIBELS next technical manual*. Dynamic Measurement Group.
- Hojnoski, R. L., & Woods, B. K. (2012). Challenging behavior and early academic skill development: An integrated approach to assessment and intervention. *Young Exceptional Children*, 15(4), 29–40. <https://doi.org/10.1177/1096250612455033>.
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, 80(4), 437–447. <https://doi.org/10.1037/0022-0663.80.4.437>.
- Kazdin, A. E. (2021). *Single-case research designs: Methods for clinical and applied settings* (3rd ed.). Oxford University Press.
- Kilgus, S. P., Bowman, N. A., Christ, T. J., & Taylor, C. N. (2017). Predicting academics via behavior within an elementary sample: An evaluation of the Social, Academic, and Emotional Behavior Risk Screener (SAEBRS). *Psychology in the Schools*, 54(3), 246–260. <https://doi.org/10.1002/pits.21995>
- Kilgus, S. P., Chafouleas, S. M., Riley-Tillman, T. C., & von der Embse, N. P. (2014). *Social, Academic, and Emotional Behavior Risk Screener (SAEBRS)*. Theodore J. Christ & Colleagues.
- Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). Single-case designs technical documentation. [https://ies.ed.gov/ncee/www/Docs/ReferenceResources/www\\_scd.pdf](https://ies.ed.gov/ncee/www/Docs/ReferenceResources/www_scd.pdf).
- Kratochwill, T. R., & Levin, J. R. (2010). Enhancing the scientific credibility of single-case intervention research: Randomization to the rescue. *Psychological Methods*, 15(2), 122–144. <https://doi.org/10.1037/a0017736>.
- Kratochwill, T. R., & Levin, J. R. (Eds.). (2014). *Single-case intervention research: methodological and statistical advances*. American Psychological Association.
- Kuchle, L. B., Edmonds, R. Z., Danielson, L. C., Peterson, A., & Riley-Tillman, T. C. (2015). The next big idea: A framework for integrated academic and behavioral intensive intervention. *Learning Disabilities Research and Practice*, 30(4), 150–158. <https://doi.org/10.1111/ldrp.12084>.
- Kusche, C. A., & Greenberg, M. T. (1994). *The PATHS curriculum*. Developmental Research and Programs.
- Lassen, S. R., Steele, M. M., & Sailor, W. (2006). The relationship of school-wide positive behavior support to academic achievement in an urban middle school. *Psychology in the Schools*, 43(6), 701–712. <https://doi.org/10.1002/pits.20177>.
- McIntosh, K., Chard, D., Boland, J. B., & Horner, R. H. (2006). Demonstration of combined efforts in school-wide academic and behavioral systems and incidence of reading and behavior challenges in early elementary grades. *Journal of Positive Behavior Interventions*, 8(3), 146–154. <https://doi.org/10.1177/10983007060080030301>.
- McIntosh, K., & Goodman, S. (2016). *Integrated multi-tiered systems of support: Blending RTI and PBIS*. Guilford.
- Metcalf, L. A., Harvey, E. A., & Laws, H. B. (2013). The longitudinal relation between academic skills and externalizing behavior problems in preschool children. *Journal of Educational Psychology*, 105(3), 888–894. <https://doi.org/10.1037/a0032624>.
- Miles, S. B., & Stipek, D. (2006). Contemporaneous and longitudinal associations between social behavior and literacy development in a sample of low-income elementary school children. *Child Development*, 77(1), 103–117. <https://doi.org/10.1111/j.1467-8624.2006.00859.x>.
- Morgan, P. L., Farkas, G., Tufis, P. A., & Sperling, R. A. (2008). Are reading and behavior problems risk factors for each other? *Journal of Learning Disabilities*, 41(5), 417–436. <https://doi.org/10.1177/0022219408321123>.
- Noltemeyer, A., & Sansosti, F. J. (2012). Tiered models of integrated academic and behavioral support: Effect of implementation level on academic outcomes. *Contemporary School Psychology*, 16, 117–127. <https://doi.org/10.1007/BF03340980>.
- Parker, R. I., Vannest, K. J., & Davis, J. L. (2014). Non-overlap analysis for single-case research. In T. R. Kratochwill, & J. R. Levin (Eds.), *Single-case intervention research: Methodological and statistical advances* (pp. 127–151). American Psychological Association.
- Pustejovsky, J. E., & Ferron, J. M. (2017). Research synthesis and meta-analysis of single-case designs. In J. M. Kaufmann, D. P. Hallahan, & P. C. Pullen (Eds.), *Handbook of special education* (2nd ed., pp. 168–186). Routledge.
- Riley-Tillman, D., Chafouleas, S. M., Sassu, K. A., Chanese, J. A. M., & Glazer, A. D. (2008). Examining the agreement of direct behavior ratings and systematic direct observation data for on-task and disruptive behavior. *Journal of Positive Behavior Interventions*, 10(2), 136–143. <https://doi.org/10.1177/1098300707312542>.
- Sanetti, L. M., & Kratochwill, T. R. (Eds.). (2014). *Treatment integrity: A foundation for evidence-based practice in applied psychology*. American Psychological Association.
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in the academic activities in the classroom. *Educational and Psychological Measurement*, 69(3), 493–525. <https://doi.org/10.1177/0013164408323233>.
- Spache, G. (1953). A new readability formula for primary-grade reading materials. *The Elementary School Journal*, 53(7), 410–413. <https://doi.org/10.1086/458513>.
- Stauffer, R. G. (1969). *Directing reading maturity as a cognitive process*. Harper & Row.
- Stewart, R. M., Benner, G. J., Martella, R. C., & Marchand-Martella, N. E. (2007). Three-tier models of reading and behavior: A research review. *Journal of Positive Behavior Interventions*, 8(3), 239–253. <https://doi.org/10.1037/h0100308>.
- Stormant, M., Reinke, W. M., Herman, K. C., & Lembke, E. S. (2012). *Academic and behavior supports for at-risk students: tier 2 Interventions*. Guilford.
- Tate, R. L., Perdices, M., Rosenkoetter, U., Shadish, W., Vohra, S., Barlow, D. H., Horner, R., Kazdin, A., Kratochwill, T., McDonald, S., Sampson, M., Shamsseer, L., Togher, L., Albin, R., Backman, C., Douglas, J., Evans, J. J., Gast, D., Manolov, R., ... Wilson, B. (2016). The Single-Case Reporting guideline in BEhavioural interventions (SCRIBE) 2016 statement. *Journal of School Psychology*, 56(4), 133–142. <https://doi.org/10.1016/j.jsp.2016.04.001>.
- Tindal, G., & Nese, J. F. T. (2013). *Oral reading fluency growth: A sample of methodology and findings*. National Center on Assessment and Accountability for Special Education. <http://ncaase.com/publications/in-brief>.
- Walker, H. M., Ramsey, E., & Gresham, F. M. (2004). *Antisocial behavior in school*. Wadsworth/Thomson Learning.
- Wampold, B., & Worsham, N. (1986). Randomization tests for multiple-baseline designs. *Behavioral Assessment*, 8(2), 135–143.
- Whitehurst, G. J., Epstein, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an emergent literacy intervention in head start. *Journal of Educational Psychology*, 86(4), 542–555. <http://psycnet.apa.org/journals/edu/86/4/542.pdf>.
- Witt, J. C., & Elliott, S. N. (1985). Acceptability of classroom intervention strategies. In T. R. Kratochwill (Ed.), *Vol. 4. Advances in school psychology* (pp. 251–288). Erlbaum.