The Impact of Schoolwide Prevention Efforts: Lessons Learned from Implementing Independent Academic and Behavior Support Systems

Beth Harn
University of Oregon, Eugene, OR (USA)

Deni Basaraba
David Chard
Southern Methodist University, Dallas, TX (USA)

Ronda Fritz
University of Oregon, Eugene, OR (USA)

Great progress has been made in learning how to provide more responsive instructional and behavioral supports to students through efforts in Response to Intervention and Positive Behavior and Intervention Supports. This article presents information and data on a longitudinal study designed to accelerate first graders at-risk for reading difficulties until the end of third grade. Interventions are described along with outcomes following students across this time including data on students' progress across each year and information on how many continued to need instructional supports. The paper finishes with a discussion on students continuing to demonstrate significant reading difficulties even after this level of intensive support. Lessons learned and reflections are provided on how these efforts may have been improved through more coordinated academic and behavioral supports with implications for implementing Multi-tiered Systems of Support (MTSS).

Keywords: Response to Intervention, Positive Behavior and Intervention Supports, Reading Difficulties, Longitudinal Study.

INTRODUCTION

Successful implementation of Multi-tiered System of Supports (MTSS) requires schools to implement a continuum of systematic, coordinated, evidence-based practices targeted to being responsive to the varying intensity of needs students have related to their academic and social emotional/behavioral development (Harn, Chard, Biancarosa, & Kame`enui, 2011; Horner, Sugai, & Anderson, 2010). This inherently preventive approach is built upon the understanding that we can do more to prevent students from developing intractable academic and behavioral difficulties while students are in early elementary grades than attempting remediation efforts later in schooling (Bradley, Danielson, & Doolittle, 2005; Torgeson, 2000). While MTSS was initially developed and implemented in relation to Response to Intervention (RTI) and focused on improving reading outcomes, Positive Behavioral and Intervention Supports (PBIS) uses similar features and components to promote social development and prevent the development of significant challenging behavior
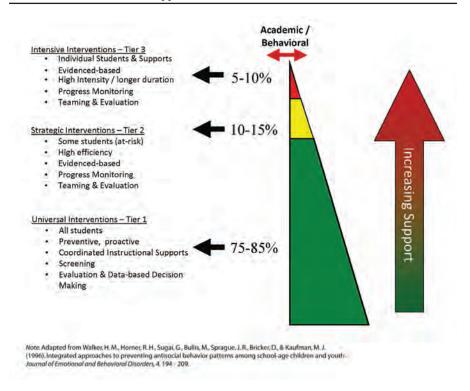
---

with great success (Bradshaw, Mitch, & Leaf, 2010; Horner, Sugai, & Anderson, 2010; Simonsen & Sugai, 2013). While there is a call for the integration of academic and behavioral MTSS due to the known interaction of academic and behavioral issues in many students who struggle (Mclntosh, Horner, Chard, Boland, & Good, 2006), in general most schools are operating these schoolwide efforts independently (McIntosh, Goodman, & Bohanan, 2010).

The common features to implementing RTI and PBIS include the following: (a) coordination of schoolwide prevention efforts and systems, (b) universal screening and progress monitoring, (c) selection and use of evidence-based practices, (d) professional development that targets evidence-based practice, (e) evaluating outcomes using data-based decision making, and (f) leadership commitment from administrators and school-based teams that supports school-wide implementation (Kame'enui, Good, & Harn, 2005; Sugai & Horner, 2006). See Figure 1 for a depiction of how these elements work together to support a responsive support system. Coordinating schoolwide prevention efforts means that schools regularly teach and reinforce the behavioral expectations for appropriate social and learning behavior as well as teach the essential skills in literacy development. Both PBIS and RTI collect data regularly to identify students early on that are at risk for later challenges. For RTI, formative evaluation measures such as the Dynamic Indicators of Basic Early Literacy Skills (Good & Kaminski, 2006) or AIMSWeb (Shinn, 2008) have developed technically adequate measures to screen all students quarterly as well as progress monitoring tools for monitoring students learning in response to intervention efforts. For PBIS, the most commonly used measure is office discipline referrals (ODRs) to identify students who are displaying inappropriate behaviors at an alarming rate (Sugai & Horner, 2006). Both approaches advocate schools implement practices that have established research demonstrating their efficacy, which requires that schools ensure that adequate professional development is provided to all staff to deliver these practices as intended to maximize student outcomes. To ensure that these coordinated efforts continue to meet the needs of all students, both approaches also heavily emphasize evaluating outcomes using data-based decision making procedures within a given school year, as well as to annually review to plan and prioritize efforts to ensure continuous improvement. Both approaches also require significant commitment from leaders, teachers, and specialists to implement the schoolwide approach, coordinate efforts, and maximize resources. However, within this feature, there has historically been a difference in terms of how the school-based teams are constructed and implemented. Most likely because of the differences in specialist skill sets and availability, specifically behavioral and reading specialists, schools have frequently set up separate teams to support implementation of PBIS and RTI (Chard, Harn, Horner & Sugai, 2008; McIntosh, Goodman, & Bohanan, 2010).

The purpose of this paper is to discuss the impact of a longitudinal project implementing MTSS for reading in two Districts that had established PBIS efforts. The academic intervention efforts across grades 1-3 will be discussed and the impact it had on a group of students identified as at-risk for reading difficulties in first grade will be shared. An emphasis will be placed on students who continued to need intensive intervention efforts in third grade with implications of how potentially integrating PBIS technology (i.e., functional behavior assessments, behavior support plans)

within the planning and implementation of the academic interventions may have better met the needs of students. First, we provide a brief review of variables with which students who have reading difficulties typically struggle to set the stage for implementing the MTSS for reading development and the longitudinal research project.

Figure 1. **System Elements of Implementing Response to Intervention and Positive Behavior and Intervention Supports**

Note. Adapted from Walker, H. M., Horner, R. H., Sugai, G., Bullis, M., Sprague, J. R., Bricker, D., & Kaufman, M. J. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders, 4,* 194 - 209.

Traditional Student-Level Variables Predicting Limited Reading Outcomes

Research over the past three decades has come to consensus that the skill area most struggling readers have difficulties in is what has been called the phonological core. While some students experience reading difficulties related to more general language deficits (e.g., semantic, syntactic), the vast majority of these difficulties can be traced to phonological skill problems (Stanovich, 1986; Torgesen, 2000; Vellutino, Fletcher, Snowling, & Scanlon, 2004). Students with this phonological core deficit are characterized by difficulties in phonological awareness and verbal short-term memory as well as below-average speed of access to phonological information in long-term memory, which negatively impacts accurate word-level decoding (Adams, 1990; Lipka, Lesaux, & Siegel, 2006). Difficulties with decoding have far-reaching implications as they limit students' opportunities to read in increasingly complex texts, decrease students' exposure to words, limit vocabulary development, and negatively impact reading comprehension. Because of the robust nature of the phonological

core deficit in struggling readers and the pervasive effect it can have on long term reading achievement, most early reading interventions have focused almost exclusively on improving students' phonological awareness, early decoding skills/word analysis, sight word identification, and fluency development. A good deal of research has demonstrated the benefits of this content focus to prevent the development of long term reading difficulties (McMaster, Fuchs, Fuchs, & Compton, 2005; Simmons et al., 2007; Simmons et al., 2008; Vellutino et al., 1996).

Beyond these traditional early reading skills often implicated in reading failure, there are other variables also predictive of risk. Research reviews of intervention studies revealed the following to also be predictors of later reading difficulty: (a) student demographics (e.g., race, socioeconomic status, home language), (b) vocabulary or verbal ability, (c) attention or behavior problems, (d) rapid automatized naming (RAN)/executive functioning, and (e) orthographic awareness (Al-Otaiba & Fuchs, 2002; Nelson, Benner, & Gonzales, 2003). Some of these predictors and their contribution to reading difficulties are more thoroughly understood than others. One of the more closely studied areas is the link between students who have comorbid academics and attention/behavior difficulties (Dally, 2006; McKinney, 1989). One possible connection between reading and behavioral difficulties may be attentional problems (Fleming, Harachi, Cortes, Abbott, & Catalano, 2004; Posner & Petersen, 1990; Smith, Borkowski, & Whitman, 2008). These attentional problems may simultaneously interfere with learning and lead to problem behavior (Blair & Diamond, 2008; Fleming et al., 2004; McIntosh, Horner, Chard, Boland, & Good, 2006; Morrison, Anthony, Storino, & Dillon, 2001). However, the mechanism for other predictors, like rapid automatized naming/executive functions, are less well understood in their role on reading development (Fuchs et al., 2012; Savage & Frederickson, 2006). It should be noted that very few predictors have been examined within the same study or in the same intervention context making it difficult to determine the directionality of effect (i.e., reading difficulties cause later deficits or initial deficits cause later reading difficulties; Al-Otaiba & Fuchs, 2006; Torgesen & Davis, 1996; Torgesen et al., 1999; Vellutino et al., 1996). While there is much research showing the predictiveness of these student characteristics, the utilization of MTSS is designed to ruin these predictions by creating a school and instructional context that intensifies efforts in response to the magnitude of student needs (Harn, Chard, Biancarosa, & Kameenui, 2011).

Features of Schools Implementing MTSS

While there are a number of variations within the MTSS approach, this paper will discuss the Schoolwide Reading Model (SWRM) (Baker et al., 2011; Coyne, Kame'enui, Simmons, & Harn, 2004). Schools implementing the SWRM have demonstrated that this systems-level prevention approach is significantly and positively related to reading outcomes (Baker et al., 2011; Chard et al., 2008; Sanford, Park, & Baker, 2013). Broadly speaking, the SWRM has three foundational features: (a) establishing *systems of supports* to meet the needs of groups and individual students, (b) implementing a *prevention-oriented* approach designed to implement responsive and intentional intervention efforts to accelerate learning, and (c) enacting the practice of data-based decision making (Coyne, Kame'enui, Simmons, & Harn, 2004; Fien,

Kame'enui, & Good, 2009). More specifically, the SWRM includes the following seven essential components (Baker et al., 2011):

1. Adoption of schoolwide priorities and implementation of practice that focus on the essential reading skills;
2. Systematic collection of reliable and valid assessment data to inform instructional practices;
3. Establishment of a schoolwide schedule that allocates and protects sufficient time for reading instruction;
4. Emphasis for all staff on high-quality implementation of evidence-based instructional programs;
5. Provision of differentiated, multi-tiered instruction designed to meet the needs of all students;
6. Use of data-based decision making at the student *and* school level to evaluate the quality of implementation; and
7. Provision of high quality professional development to support schools' focus on continuous improvement.

This approach was used in implementing Project CIRCUITS: Center for Improving Reading Competence Using Intensive Treatments Schoolwide, a longitudinal study funded by the Office of Special Education Programs (Chard & Harn, 2008). We partnered with two school Districts (see description below) that had already fully implemented PBIS for more than three years to implement the SWRM. With the behavioral systems established, the focus of this project's efforts was to (a) describe features of instruction in classrooms implementing evidenced-based programs, and (b) develop and evaluate procedures and practices to implement a systemic, preventive approach to reading instruction that would address the reading development of all k-3 students. A cohort of students (N=84) was identified as at-risk for reading difficulties in first grade and their progress was followed until the end of third grade to evaluate how students responded to the implemented interventions (described later) and examine the effectiveness of the SWRM in decreasing the number of students needing intensive academic supports. Here we provide a synopsis of these efforts including research findings, lessons learned, and a reflection on the missed opportunity of overtly integrating the established PBIS efforts with initial implementation of an academic MTSS. Additional detail and results are discussed in other papers (Chard & Harn, 2008; Chard, Stoolmiller, et al., 2008; Harn, Chard, Biancarosa, & Kameenui, 2011).

Context of this Synopsis

Both districts participating in the project were in the Pacific Northwest and considered fast-growing suburban districts. District A was a smaller school district and is in a suburb of a medium-sized city. The students in the two elementary schools participating in District A were predominantly Caucasian (57%) or Hispanic (43%), and English language learners (ELL) (28%) Participating schools served students grades K–5 and averaged about 440 students per school. District B was in a suburb of a larger city, served grades K–5, and averaged about 475 students per school. The students in the three elementary schools participating in District B were predominantly Caucasian (73%), Hispanic (17%), African American (5%), Native Hawaiian (5%), and 12% were ELL. As part of district procedures, all students were screened using the

Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2003; see descriptions below), and any students identified as at-risk based on the measures' established criteria were invited to participate in the study. With these procedures, 84 (District A=24; District B=60), or 20% of the school's total population, was identified for the intervention cohort (interventions are discussed in the next section), followed until they completed grade 3, and are the focus of this paper.

Measures

DIBELS. Both districts gathered screening data on students as part of their typical practice using the DIBELS. These measures are standardized, individually administered, 1-minute measures designed to efficiently measure critical early literacy skills, including phonological awareness (PSF), letter knowledge (LNF), alphabetic principle (NWF), and fluency with connected text (ORF; Good & Kaminski, 2003). Specific information about the reliability and validity of each measure is provided as reported from the technical manual (Good & Kaminski, 2003).

The Phoneme Segmentation Fluency (PSF) measure is designed to assess a student's ability to segment words into their individual sounds. The examiner orally presents one word at a time, and the student segments the word into its individual sounds. The total score is the number of correct segments produced in one minute. The Letter Naming Fluency (LNF) measure is designed to assess a student's ability to readily name letters. The student is presented with a sheet of mixed upper- and lowercase letters, and the score is the number of correct letter names produced in one minute. The Nonsense Word Fluency (NWF) measure is designed to assess a student's ability to produce correct letter-sound correspondences or phonologically recode nonwords. The measure is comprised of consonant-vowel-consonant (CVC) and vowel-consonant (VC) nonwords words (e.g., rav, ep) arranged in rows. The total score is the number of correct letter-sound correspondences produced in one minute. The Oral Reading Fluency (ORF) measure is designed to assess a student's ability to accurately and fluently read connected text. The student is presented with a grade-level passage and asked to read the passage aloud; the final score is the number of correctly-read words in 1 minute.

Woodcock Reading Mastery Test–Revised. The Woodcock Reading Mastery Test–Revised (WRMT-R) (Woodcock, 1987) is a standardized, un-timed, individually administered test. The Word Identification, Word Attack, and Passage Comprehension subtests were administered to all students in the fall and spring of each year. Test-retest reliabilities and validity coefficients are within acceptable ranges across subtests for grade one students (Woodcock, 1987). The Word Identification (WID) subtest requires the student to read words from a list that increases with difficulty. The Word Attack (WAT) subtest has students read a list of nonwords to assess phonetic analysis skills. The Passage Comprehension (PComp) subtest provides the student with a sentence or brief passage with one word missing and requires the student to provide the best word for the passage.

General Findings

Year 1: Documenting Nature of Instructional Supports

The Districts had many features in common (commitment to prevention, use of evidenced-based reading programs, etc.), so our focus in year one of the Project (none-intervention year) documented the nature of the established reading approach (i.e., what they were independently doing prior to the Project intervention). Both Districts had adopted the same core reading program, Open Court Reading (Adams et al., 2000), for Tier 1 and each had a Tier 2 system of support that varied between schools. In year one, we observed the at-risk students in both Tiers 1 and 2 using a standardized coding system. While the districts mandated 90 minutes of daily reading instruction, schools averaged just over 70 minutes with up to 30% of this time directed toward content other than reading (more information on the specific content is detailed in Chard & Harn, 2008). General education teachers reported creating and delivering their own materials and there was very little differentiation provided to any of the students. All students identified as at risk did receive supplemental instruction; however, it was not differentiated by need and there was no Tier 3 support during this initial year.

The degree of variation in reading instruction within a given school as well as across tiers of instructional support was surprising. Some students received as many as five different programs on a regular basis (e.g., some programs used five times a week, some two times, others one). Additionally, observers noted that the programs used within and across instructional support settings (Tiers 1 and 2) varied significantly their instructional approach (explicit/systematic as well as whole word). Additionally, students identified as at-risk did not receive the full "core" reading program in addition to their reading intervention. These findings led us to work with the Districts to examine the effect of creating greater consistency in literacy instruction as well as coordinating instructional support across tiers of the MTSS.

Year 2: First Grade-Coordinating Instructional Supports to Accelerate Learning

Rather than drastically altering Tier 1 instruction, we collaborated with district leadership to determine ways to enhance the MTSS by coordinating instruction across tiers and ensuring at-risk students received systematic reading instruction. To improve Tier 1 support, principals recommitted to ensuring that 90 minutes of instruction would be allocated and delivered daily, and that teachers would use the core reading program. Both districts provided additional training to teachers on using the core program.

Tier 2 intervention. Students needing Tier 2 supports (N=50) received 30 minutes of intervention in addition to the 90 minutes of language arts instruction provided in Tier 1 in groups of 4–5 students by trained, school-based personnel. Project personnel developed the "Booster" program to closely align with Tier 1 instruction by focusing on re-teaching the same content from the core program but provided students additional practice in sight word reading, word analysis, connected text reading, and comprehension skills in a more systematic manner. The intervention was intensified by increasing instructional time, prioritizing essential content, decreasing group size, and using explicit and systematic delivery practices (Archer &

Hughes, 2011; Denton & Vaughn, 2010; Harn et al., 2008). The following instructional delivery aspects were emphasized: (a) explicit and consistent teacher wording, (b) a focus on critical skills from the core reading program, (c) immediate feedback on student performance, (d) systematic review of target skills, and (e) activities that actively engaged the student in reading (i.e., many opportunities to respond as a group and individually with feedback). These features were embedded within each lesson of the intervention using content from the core program.

  Tier 3 intervention. Students identified as needing Tier 3 supports (i.e., student with deficient skills on both PSF and NWF; N=34) received 60 minutes of intervention, in addition to most of the typical language arts instruction provided in Tier 1, in groups of 3–4 students by trained, school-based personnel. The scheduling challenges for delivering the 60-minute intervention caused variation in the total reading time students received, but, in general, students received 50 minutes of instruction in Tier 1 and the additional 60 minutes of Tier 3 intervention for a total of at least 110 minutes of daily reading instruction. The Proactive Beginning Reading program (PBR Mathes, Torgesen, Menchetti, Wahl, & Grek, 1999) was selected because the authors had designed the program to align with the schools' core program. This intervention targeted the early literacy skills of phonological awareness, letter-sound correspondence, word analysis, fluency, and comprehension strategies. PBR typically takes 45 minutes to deliver, but we allocated 60 minutes so that additional opportunities to practice and review were provided daily.

  Results from aligning interventions across tiers in terms of features of effective intervention (i.e., time, content, instructional delivery, and group size) and coordination and collaboration of personnel for at-risk students was statistically and practically significant across a range of literacy measures. After aligning supports across tiers, at-risk students performed significantly better than similar students in the prior year (i.e., historical control) on measures of word reading, fluency and passage comprehension, with effect sizes in the small to medium range. In addition, on PSF and PCOMP the lowest-performing students that received the aligned interventions benefitted significantly more than similar students in the prior year. These interaction effects imply that coordinated instruction differentially benefitted the most at-risk students (e.g., students receiving Tier 3; see Harn, Chard, Biancarosa, & Kameenui, 2011 for more detail).

Year 3: Second Grade-Aligning and Intensifying Supports

  Tier 2 Intervention. Students who continued in the longitudinal study identified as needing Tier 2 supports on the DIBELS (i.e., strategic), received 90 minutes of Tier 1 literacy instruction, plus a 45 minute intervention in groups of 5-8. In examining their reading skills, students were identified as having weaknesses in both word reading and fluency in connected text skills. These skills were addressed using an alternating schedule of *Read Naturally* and *Phonics for Reading* during a 45-minute intervention period. As part of the research project, schools implemented this instructional support plan for 14 weeks to determine the efficacy of this combination of programs. Average words per week growth was 2.75 for District A and 1.76 for District B, which is higher than the typical rate of 1.4 words per week reported by Fuchs, Fuchs, Hamlet, Walz, and German (1993). After the 14 week research pe-

riod, schools evaluated each student's progress to determine the level of instructional support necessary. Some students demonstrated they no longer needed instructional support beyond Tier 1, some displayed continued need for Tier 2 support, and a few demonstrated a need for increased instructional support.

Tier 3 Intervention. Students identified as needing Tier 3 supports on the DIBELS (i.e., intensive) or displayed limited growth in response to additional instructional supports in tier two, instructional support was further intensified. For many of these students, the gap between the instructional objectives of the Tier 1 reading program in some areas (e.g., advanced phonic elements) and student skill level was so large that the school-level reading team and parents determined that other instructional material would be more appropriate. *Careful* decisions were made on what skills (e.g., vocabulary, listening comprehension) to teach during the time students were in the general education classroom so that this time would be beneficial to all students. Critical skills that needed to be taught with urgency (i.e., alphabetic principle, word reading, reading connected text) were thought to be best addressed by acceleration programs specifically designed using explicit instructional approaches (i.e., *Reading Mastery*). To accelerate learning, students were provided with more than 90 minutes of reading instruction each day, with the majority of it provided in small groups by Title 1 and/or Special Education personnel.

Initially, only *Reading Mastery* was used in small groups (i.e., four or less) across two-45 minute sessions each day. Instructors were trained to accelerate pace through the program to fill students' skill gaps as quickly as possible. Student progress and fidelity of implementation were monitored regularly, but student growth was disappointingly low. In considering the instructional objectives taught within the program, limited student progress, and general instructional needs of the students, we decided to increase the amount of time spent in fluency building, so we supplemented with the *Read Naturally* program. The 90 minutes of small group instruction was divided so that students received 60 minutes of instruction within *Reading Mastery* and 30 minutes of *Read Naturally* each day. This change in instructional focus had a dramatic effect on student performance. Prior to this alteration, the 17 students had an average ORF slope of 1.59 words a week (range 0-2.3); however, with the instructional modification students averaged 2.4 words a week (range 1.2-4.7). Six students improved so much the team moved them out of Tier 3 supports by the end of the year. While five other students (all of which were receiving special education services as learning disabled, autistic, or speech and language) continued to display significantly low reading skills (i.e., reading below 40 on Oral Reading Fluency).

Year 4: Third Grade-Characteristics of Students Needing Individualized Supports

For the 11 students in third grade continuing to need tier 3 intervention supports, they were provided individualized (i.e., 1-on-1) reading intervention using the *Reading Mastery* and *Read Naturally* programs similar to how it was delivered during their second grade year. Students received two, 45-minute doses of reading instruction daily that was tailored to their specific instructional needs based on procedures of the Reading Mastery program. Interventionists were monitored at least monthly to document fidelity of implementation and student progress was monitored twice a month. In general, students made progress; however, it was not sufficient to warrant decreasing intervention intensity across the year.

We did a retrospective analysis on the background of these "nonresponders" to determine similarities or differences across this small, but important group of students. Using a qualitative, multiple method, case study approach (Miles & Huberman, 1994) we categorized the data as: (a) school, (b) family, (c) intervention, or (d) student-level. School-level data consisted of teacher demographics and name of reading curriculum. Family data consisted of home language and free/reduced lunch status. Intervention data included program type, observational information, and intensity of support. Student-level data consisted of reading performance on a number of measures, language status, attendance, and ethnicity. We then organized this information across the duration of the project into (a) antecedents, (b) instructional supports, and (c) outcomes. Antecedents were variables that happened prior to providing instructional supports in first grade (i.e., initial student skills, student/family demographics). Instructional supports were related to the nature of intervention provided (i.e., strategic, intensive). Outcomes were the student's achievement scores at the end of the Project (Jamgochian, Harn, & Parisi, 2008). A sample of the data examined across all students is presented in the case display of one of these students in Table 1.

Similarities Across Students. Through this examination we found two early characteristics in first grade (antecedents) that were similar across these students: (a) weaknesses on fluency-based measures and (b) teacher report of low academic competence. We do not have data for two students at the end of first grade, so these findings were based on the nine students with complete data. In the fall of first grade, eight of nine non-responders had a score below 25 on the Letter Naming Fluency (Good & Kaminski, 2003). Similarly, six of nine students had a standard score below 90 on the Sight Word Efficiency subtest of the Test of Word Reading Efficiency (Torgesen, Wagner, & Rashotte, 1999). Additionally, teachers completed a Social Skills Rating System (Gresham & Elliott, 1990) for each year of the project. At the end of first grade, seven of nine non-responders were rated low on the Academic Competence subscale. This subscale measures a teacher's perception of a student's overall classroom behavior, academic performance, intellectual ability, and parental support in comparison to classmates.

Differences Across Students. Through this analysis, we discovered a number of variables that *were not* similar across this small, yet important group of students. Variables related to the family (i.e., home language, free and reduced lunch) varied across the group, and only one student was ELL. Additionally, attendance wasn't a predictor as none of the students missed more than 10% in any given school year. Finally, untimed measures of reading performance (i.e., WRMT-R) were not effective predictors as most scores were within the average range.

For the students who did not respond to these intensive efforts, the typical issues of attendance, free and reduced lunch, and English language learner status *were not* variables this group had in common. In the current study, low performance on fluency-based measures as well as a teacher report of low academic competence were common across most students. Within this responsive, coordinated, and systematic reading context, the vast majority of at-risk readers no longer needed intensive support by third grade. In fact, only 7% of students across these districts still needed such support.

Table 1. *Sample Qualitative Analysis of a Typical Non-Responder Across Time*

Variables		Antecedent Kindergarten	Instructional Support 1st Grade	2nd Grade	3rd Grade	Outcomes 4th Grade
Home	Lunch Status	Regular	Regular	Regular	Regular	Regular
	Days Absent	11	7	6	6	7
School	School	HV Elem	HV Elem	HV Elem	HV Elem	HV Elem
	Special Education Status	Not Identified	Not Identified	Identified LD	Identified LD	Identified LD
	Type Support Provided	Ω supports	Intensive	Intensive	Intensive	Intensive
	Teacher Report of Social Skills (SSRS)	Average	Average	Fewer	Fewer	.
Student	WRMT Percentile	68%ile	54%ile	52%ile	48%ile	45%ile
	DIBELS Performance	LNF=3 PSF=20 NWF=3	PSF=46 NWF=48 ORF=9	NWF=85 ORF=38	ORF=49	ORF=59
	TOWRE Performance		SWE= 87 PDE=99			SWE= 84 PDE=80

Notes. DIBELS-Dynamic Indicators of Basic Early Literacy Skills; LNF-Letter Naming Fluency; PSF-Phoneme Segmentation Fluency; NWF-Nonsense Word Fluency; ORF-Oral Reading Fluency; SSRS-Social Skills Rating System; TOWRE-Test of Word Reading Efficiency; SWE-Sight Word Efficiency; Phonemic Decoding Efficiency; WRMT-Woodcock Reading Mastery Test

CONCLUSION

The effectiveness of using MTSS for academics has repeatedly documented the impact of these practices in preventing some students from developing LD. For example, in a larger study combining these students with a similar group of students in Texas, Chard et al. (2008) found that the impact of implementing the SWRM ruined typical predictions for demographic and subgroups of students for later academic failure. In that study, when examining variables accounting for end of third grade reading performance, they found that variables such as race/ethnicity, EL status, and special education eligibility were not predictive. Within the context of schools implementing the SWRM, students' initial early literacy skill status and rate of reading growth across first grade accounted for the most variance in 3rd grade reading comprehension performance. Authors credit having the instructional elements of

the SWRM in place that created a more responsive and effective *instructional context* that mitigated the effects of traditional, non-alterable, predictors on student literacy performance (Chard et al., 2008). Similar positive effects for the SWRM were found for ELLs (Baker et al., 2012) and students receiving special education services (Sanford et al., 2013). According to Denton, Foorman, and Mathes (2003), this success "points to the importance of looking beyond instructional methodology to other factors that influence the effectiveness of reading programs for high-risk students" (p. 258), including the other elements of MTSS (e.g., data-based decision making, professional development, high quality implementation, etc.; Averill & Rinaldi, 2014; Harn et al., 2011) as well as determining which components are essential.

Analyses of multi-faceted interventions like the SWRM are needed to identify the essential core components necessary to improve outcomes and see how these may vary by school site (Harn et al., 2011; Odom, 2009). Further exploration of these variables may allow us to identify the relevant features of the context (e.g., school and children) *and* the intervention (e.g., SWRM, PBIS) that may produce the most optimal outcomes for students. As discussed by Koveleski and Black (2010), MTSS, or RTI, is so multifaceted that it is difficult to determine what aspects have causal implications on student performance. Unpacking the active ingredients both individually (e.g., explicitness of instruction, time, program, group size, etc.) as well as potential interaction or collective synergistic effects (i.e., the SWRM with PBIS) is a challenge for future research. These ingredients can also play out differently depending on the specific context/school characteristics (e.g., personnel, student demographics, size, etc.) already in place.

Research to Practice Implications

The intervention efforts implemented across the years in this study align with the recommendations of the recently released report on the features of effective intensive interventions for students with LD (Vaughn, Zumeta, Wanzek, Cook, & Klingner, 2014). We implemented the best of what the research has shown to be effective, along with truly individualizing services as expected in special education (Zigmond & Kloo, 2011). While these efforts did decrease the percent students needing to receive special education services to approximately 7% in these schools, with the national average as 13% (National Center for Education Statistics, 2013), we reflect on things that we could have done differently to further enhance these outcomes, which relate to a) truly integrating the academic and behavioral systems of support and b) broadening the focus of intervention efforts.

We did not capitalize on the Districts' established PBIS efforts in implementing the SWRM. In hindsight this was a mistake because of the similarities in implementing schoolwide MTSS approaches like the SWRM and PBIS (e.g., data-based decision making, coordinating time/efforts across tiers, use of evidenced-based practices; McIntosh, Goodman, & Bohanan, 2010). But potentially the biggest mistake was not integrating the expertise of the PBIS coaches/behavior specialists in supporting the delivery of intervention efforts, especially for students receiving Tier 3 interventions. While we don't have specific data on how many students across the years of intervention were on behavior support plans (BSP), we do know that of the 11 students needing intensive intervention in third grade, all of them had been on

a BSP at one point in time and five students were on one during third grade. These BSPs were developed independently using the established school-based approach within PBIS. This was a missed opportunity as the interventionists delivering the reading intervention were not consulted in the development of the BSP and then had to try to implement the BSP while simultaneously delivering the intensive reading intervention, a very challenging task. Potentially, had we worked with the behavior specialists, we could have designed the intervention differently to better meet these students' academic and behavioral needs. Needless to say, these 11 students had many behavioral and attention issues that may have led to limited reading success or been a consequence of limited progress in reading. Had we capitalized on the behavioral expertise from their initial identification the implemented behavioral or academic interventions may have been more effective. Rodriguez and Anderson (2014) demonstrated that implementing an EBP behavior management intervention within the context of delivering an intensive reading intervention did not negatively impact fidelity of the reading intervention, increased time on task, and decreased displays of problem behavior. As Denton (2012) discussed in her reflection on the effectiveness of early reading interventions in the RTI era, having this persistent small group of students not responding to our efforts means we still haven't figured out how to meet each student's needs. Broadening the scope of intervention supports to actively include the expertise of behavior support specialist along the RTI process should be a part of any school implementing MTSS.

Related to broadening our focus on intervention supports to include the support from behavior specialists is broadening the content of our interventions. Chard (2012) emphasized the need for moving beyond interventions solely focusing on the phonological core issues in reading interventions to include content/interventions targeting cognitive processing skills such as RAN and executive function. Related to both of these dimensions is the concept of self-regulation, a multi-dimensional construct that includes a student's ability to control and direct attention, cognition, emotions and behavior (Eisenberg, Valiente, & Eggum, 2010; McClelland & Cameron, 2011; Rueda, Posner, & Rothbart, 2005). Self-regulation (SR) has been an ongoing focus in preschool and school-readiness research and is critical in a classroom setting as it supports students' sustained efforts toward the teacher's instructional goals, and keeps students engaged across the lesson and school day to support the acquisition of new skills and learning (Saez, Folson, Al Otaiba, & Schatschneider, 2012; Smith et al., 2008). Rothbart and Bates (2006) define SR as "the efficiency of executive attention—including the ability to inhibit a dominant response and/or to activate a subdominant response, to plan, and to detect errors" (p. 129). These skills are particularly important for struggling students. Potentially providing additional training to general education teachers and interventionists in behavioral practices that promote the development of SR would improve the behavioral and academic outcomes of our students. Interventions like the *Incredible Years* (Webster-Stratton & Reid, 2004) are very much aligned with PBIS and have been found effective in promoting procsocial development and academic outcomes in the most at-risk populations. The effectiveness of integrated explicit and systematic instruction with quality classroom management practices was also demonstrated in Connor's *Individualizing Student Instruction* research (Connor et al., 2009; Connor et al., 2010). In her research, she documented

that students with difficulties in SR who received quality reading intervention from teachers with good classroom management practices made greater academic gains than similar students with SR issues in classrooms with poorer classroom management skills. Ensuring that our intervention delivery includes behavioral practices to support issues with SR and executive function, areas in which many struggling learners have difficulties, could improve overall student development.

As a field we have learned much from our efforts in RTI, PBIS, and now MTSS. We need to capitalize on this momentum and create truly integrated systems to promote the development of *students*. Rather than having teams think separately about academic and behavioral needs, we need our schools, teachers, and specialists to consider the overall needs of the students, which will require better collaboration across our specialists (academic interventionists/instructional coaches and behavior specialists). Having these specialists working as part of the overall intervention planning and evaluation process (data-teams/student study teams) may enable us to better meet the full academic and social emotional needs of each student.

References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: Massachusetts Institute of Technology.

Adams, M. J., Bereiter, C., Brown, A., Campione, J., Carruthers, I., Case, R., Treadway Jr., G. H. (2000). *Open Court Reading.* Columbus, OH: SRA.

Archer, A. L. & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching.* New York, NY: Guilford.

Averill, O.H. & Rinaldi, C. (2014). Research Brief: Multi-tier system of supports (MTSS). Newton, MA: Urban Special Education Leadership Collaborative.

Baker, D. L., Park, Y., Baker, S. K., Basaraba, D. L., Kame'enui, E. J., & Thomas Beck, C. (2012). Effects of a paired bilingual reading program and an English-only program on the reading performance of English learners in Grades 1-3. *Journal of School Psychology, 50,* 737-578.

Baker, S. K., Smolkowski, K., Smith, J. M., Fien, H., Kame'enui, E. J., & Thomas Beck, C. (2011). The impact of Oregon Reading First on student reading outcomes. *The Elementary School Journal, 112,* 307-331.

Blair, C. & Diamond, A. (2008). Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology, 20,* 899-911.

Bradley, R., Danielson, L., & Doolittle, J. (2005). Response to intervention. *Journal of Learning Disabilities, 38,* 8-13.

Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes: Results from a randomized controlled effectiveness trial in elementary schools. *Journal of Positive Behavior Interventions, 12,* 133-148.

Chard, D. (2012). A Glass Half Full: A Commentary on the Special Issue. *Journal of Learning Disabilities, 45,* 270-273.

Chard, D. & Harn, B. (2008). Project CIRCUITS: Center for Improving Reading Competence Using Intensive Treatments Schoolwide. In C. Greenwood, T. Kratochwill, & M. Clements (Eds.), *Schoolwide Prevention Models: Lessons Learned in Elementary Schools* (pp. 70-83). New York, NY: Guilford.

Chard, D. J., Harn, B. A., Horner, R., & Sugai, G. (2008). Core features of multi-tier systems of reading and behavioral support. In C. Greenwood, T. Kratochwill, & M. Clements (Eds.), *Schoolwide Prevention Models: Lessons Learned in Elementary Schools* (pp. 18-26). New York, NY: Guilford.

Chard, D. J., Stoolmiller, M., Harn, B. A., Wanzek, J., Vaughn, S., Linan-Thompson, S., & Kame`enui, E. K. (2008). Predicting reading success in a multilevel schoolwide reading model: A retrospective analysis. *Journal of Learning Disabilities, 41*, 174-188.

Connor, C. M., Piasta, S. B., Fishman, B., Glasney, S., Schatschneider, C., Crowe, E. et al. (2009). Individualizing student instruction precisely: Effects of child x instruction interactions on first graders' literacy development. *Child Development, 80,* 77-100.

Connor, C. M., Ponitz, C. C., Phillips, B. M., Travis, Q., Glasney, S., & Morrison, F. J. (2010). First graders' literacy and self-regulation gains: The effect of individualizing student instruction. *Journal of School Psychology, 48,* 433-456.

Coyne, M. D., Kame'enui, E. J., Simmons, D. C., & Harn, B. A. (2004). Beginning reading intervention as inoculation or insulin: First-grade reading performance of strong responders to kindergarten intervention. *Journal of Learning Disabilities, 37,* 90-104.

Dally, K. (2006). The influence of phonological processing and inattentive behavior on reading acquisition. *Journal of Educational Psychology, 98,* 420-437.

Denton, C. A. (2012). Response to intervention for reading difficulties in the primary grades: Some answers and lingering questions. *Journal of Learning Disabilities, 45,* 232-243.

Denton, C. A., Foorman, B. R., & Mathes, P. G. (2003). Perspective: Schools that "beat the odds": Implications for reading instruction. *Remedial and Special Education, 24,* 258-261.

Denton, C. A. & Vaugh, S. (2010). Preventing and remediating reading difficulties. In M. R. Shinn, H. M. Walker, & G. Stoner (Eds.) *Interventions for achievement and behavior problems: Preventive and remedial approaches* (pp. 469-500). Bethesda, MD: National Association of School Psychologists.

Eisenberg, N., Valiente, C., & Eggum, N. D. (2010). Self-regulation and school readiness. *Early Education and Development, 21,* 681-698.

Fien, H., Kame'enui, E. J., & Good, R. (2009). Schools engaged in school-wide reading reform: An examination of the school and individual student predictors of kindergarten early reading outcomes. *School Effectiveness and School Improvement, 20,* 1-25.

Fleming, C. B., Harachi, T. W., Cortes, R. C., Abbott, R. D., & Catalano, R. F. (2004). Level and change in reading scores and attention problems during elementary school as predictors of problem behavior in middle school. *Journal of Emotional and Behavioral Disorders, 12,* 29-35.

Fuchs, D., Compton, D. L., Fuchs, L. S., Bryant, V. J., Hamlett, C. L., & Lambert, W. (2012). First-grade cognitive abilities as long-term predictors of reading comprehension and disability status. *Journal of Learning Disabilities, 45,* 217-231.

Fuchs, L.S., Fuchs, D., Hamlett, C.L., Walz, L. & German, G. (1993). Formative evaluation of academic progress: How much growth can we expect? *School Psychology Review, 22,* 27-48.

Good, R. H. & Kaminski, R. A. (Eds.) (2003). *DIBELS™: Dynamic indicators of basic early literacy skills* (6th ed.) Longmont, CO: Sopris West.

Good, R. H. & Kaminski, R. A. (Eds.) (2006). *Dynamic indicators of basic early literacy skills* (6th ed. rev.). Eugene, OR: Institute for the Development of Educational Achievement. Retrieved from http://dibels.uoregon.edu.

Gresham, F. M. & Elliott, S. N. (1990). *Social skills rating scale.* Circle Pines, MN: American Guidance Services.

Harn, B. A., Chard, D. J., Biancarosa, G., & Kame'enui, E. J. (2011). Coordinating instructional supports to accelerate at-risk first-grade readers' performance. *Elementary School Journal, 112*, 332-355.

Horner, R. H., Sugai, G., & Anderson, C. M. (2010). Examining the evidence base for school-wide positive behavior support. *Focus on Exceptional Children, 42*, 1-14.

Jamgochian, E., Harn, B. A., & Parisi, D. (2008). Characteristics of students who don't respond to research-based interventions. *CEC Today retrieved from* http://www.cec.sped.org/AM/Template.cfm?Section=CEC_Today1&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=10645.

Kame'enui, E. J., Good, R. H., & Harn, B. A. (2005). Beginning reading failure and the quantification of risk. In H. L. Heward, T. E. Heron, N. A. Neef, S. M. Peterson, D. M., Sainato, G. Cargledge, et al. (Eds.), *Focus on behavior analysis in education: Achievements, challenges, and opportunities* (pp. 69-89). Upper Saddle River, NJ: Pearson Education, Inc.

Kovaleski, J. F. & Black, L. (2010). Multi-tier service delivery. In T. A. Glover & S. Vaughn (Eds.), *The promise of response to intervention: Evaluating current science and practice* (pp. 23-56). New York, NY: Guilford.

Lipka, O., Lesaux, N. K., & Siegel, L. S. (2006). Retrospective analyses of the reading development of grade 4 students with reading disabilities: Risk status and profiles over 5 years. *Journal of Learning Disabilities, 39,* 364-378.

Mathes, P. G., Torgesen, J. K., Menchetti, J. C., Wahl, M., & Grek, M. K. (1999). Proactive beginning reading. Available from P. G. Mathes, Institute for Reading Research, Southern Methodist University, Post Office Box 750381, Dallas, TX 75275.

McClelland, M. M. & Cameron, C. E. (2011). Self-regulation and academic achievement in elementary school children. *New Directions for Child and Adolescent Development, 133,* 29-44.

McIntosh, K., Goodman, S., & Bohanan, H. (2010). Toward true integration of academic and behavior response to intervention systems, part one: Tier 1 support. *Communiqué, 39,* 1- 15.

McIntosh, K., Horner, R.H., Chard, D.J., Boland, J.B., & Good, R.H. (2006). The use of reading and behavior screening measures to predict non-response to school-wide positive behavior support: A longitudinal analysis. *School Psychology Review, 35*, 275-291.

McKinney, J. D. (1989). Longitudinal research on the behavioral characteristics of children with learning disabilities. *Journal of Learning Disabilities, 22,* 141-150.

McMaster, K. L., Fuchs, D., Fuchs, L. S., & Compton, D. L. (2005). Responding to nonresponders: An experimental field trial of identification and intervention methods. *Exceptional Children, 71*, 445-463.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* New York, NY: Sage.

Morrison, G. M., Anthony, S., Storino, M., & Dillon, C. (2001). An examination of the disciplinary histories and the individual and educational characteristics of students who participate in a school suspension program. *Education and Treatment of Children, 24,* 276-293.

National Center for Education Statistics (2013). *Fast Facts: Students with disabilities.* Retreived from http://nces.ed.gov/fastfacts/display.asp?id=64.

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

Odom, S. L. (2009). The tie that binds evidence-based practice, implementation science, and outcomes for children. *Topics in Special Education, 29,* 53-61.

Posner, M. I. & Peterson, S. E. (1990). The attention system of the human brain. *Annual Review of Neuroscience, 13,* 25-42.

Rodriguez, B. & Anderson, C. M. (2014). Integrating a social behavior intervention during small group academic instruction using a total group criterion intervention. *Journal of Positive Behavior Interventions, 16,* 234-245.

Rothbart, M. K. & Bates, J. E. (2006). Temperament. In W. Damon & R. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.) *Handbook of Child Psychology* (Vol. 3) *Social, emotional, and personality development* (6th ed.) (pp. 99-166). New York, NY: Wiley.

Rueda, M. R., Posner, M. I., & Rothbart, M. K. (2005). The development of executive attention: Contributions to the emergence of self-regulation. *Developmental Neuropsychology, 28,* 573-594.

Saéz, L., Folsom, J. S., Al Otaiba, S., & Schatschneider, C. (2012). Relations among student attention behaviors, teacher practices, and beginning word reading skill. *Journal of Learning Disabilities, 45,* 418-432.

Sanford, A. K., Park, Y., & Baker, S. K. (2013). Reading growth of students with disabilities in the context of a large-scale statewide reading reform effort. *The Journal of Special Education, 47,* 83-95.

Savage, R. S. & Frederikson, N. (2006). Beyond phonology: What else is needed to describe the problems of below-average readers and spellers? *Journal of Learning Disabilities, 39,* 399-413.

Shinn, M. R. (2008). Best practices in curriculum-based measurement and its use in a problem-solving model. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 243-262). Bethesda, MD: National Association of School Psychologists.

Simonsen, B. & Sugai, G. (2013). PBIA in alternative education settings: Positive support for youth with high-risk behavior. *Education and Treatment of Children, 36,* 3-14.

Simmons, D. C., Kame'enui, E. J., Harn, B. A., Coyne, M. D., Stoolmiller, M., Edwards Santoro, L. et al. (2007). Attributes of effective and efficient kindergarten reading intervention: An examination of instructional time and design specificity. *Journal of Learning Disabilities, 40,* 331-347.

Simmons, D. S., Coyne, M., Kwok, O., McDonagh, S., Harn, B. A., & Kame`enui, E. J. (2008). Indexing response to intervention: A longitudinal study of reading risk from kindergarten through third grade. *Journal of Learning Disabilities, 41,* 158-173.

Smith, L. E., Borkowski, J. G., & Whitman, T. L. (2008). From reading readiness to reading competence: The role of self-regulation in at-risk children. *Scientific Studies of Reading, 12,* 131-152.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360-407.

Sugai, G. & Horner, R. R. (2006). A promising approach for expanding and sustaining schoolwide positive behavior support. *School Psychology Review, 35,* 245-259.

Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research and Practice, 15,* 55-64.

Torgesen, J. K. & Davis, C. (1996). Individual difference variables that predict response to training in phonological awareness. *Journal of Experimental Child Psychology, 63,* 1-21.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (1999). *Test of word reading efficiency* (TOWRE). Austin, TX: Pro-Ed.

Torgesen, J. K., Wagner, R. K., Rashotte, C. A., Rose, E. Lindamood, P., Conway, T., & Garvin, C. (1999). Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology, 91,* 579-593.

Vaughn, S., Zumeta, R., Wanzek, J., Cook, B., & Klingner, J. (2014). Intensive interventions for students with learning disabilities in the RtI era: Position statement of the division for learning disabilities, Council for Exceptional Children. *Learning Disabilities Research & Practice, 29,* 90-92.

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry, 45,* 2-44.

Vellutino, F. R., Scanlon, D. M., Sipay, E. R., Small, S. G., Pratt, A., Chen, R. S., & Denckla, M. B. (1996). Cognitive profiles of difficult to remediate and readily remediated poor readers: Early intervention as a vehicle for distinguishing between cognitive and experiential deficits as basic causes of specific reading disability. *Journal of Educational Psychology, 88,* 601-638.

Webster-Stratton, C. & Reid, M. J. (2004). Strengthening social and emotional competence in young children – the foundation for early school readiness and success: Incredible years classroom social skills and problem solving curriculum. *Infants & Young Children, 17,* 96-113.

Woodcock, R. (1987). *Woodcock Reading Mastery Test – Revised.* Circle Pines, MN: American Guidance Services.

Zigmond, N. & Kloo, A. (2011). General and special education are (and should be) different. In J. M. Kauffman & D. P. Hallahan (Eds.), Handbook of special education (pp. 160-172). New York, NY: Routledge.

Authors' Note