



Published in final edited form as:

*Perspect Lang Lit.* 2009 ; 35(4): 13–19.

## Identifying and Intervening with Beginning Readers Who Are At-Risk for Dyslexia:

### Advances in Individualized Classroom Instruction

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Researchers have demonstrated that students with dyslexia share a phonological linguistic deficit (Catts, Fey, Zhang, & Tomblin, 1999; Shaywitz, Fletcher, & Holahan, 1999). This deficit may be “unexpected,” but it manifests very early when children have difficulties in learning about letters, sounds, rhymes, and language relative to their peers with similar home literacy experiences. When these early difficulties persist, they strongly predict which students are likely to develop difficulties with reading accuracy, fluency, and comprehension. Researchers have shown us that we could greatly reduce reading disabilities if we identified (accurately and early) children who are at-risk for reading difficulties, and if we provided those children with evidence-based instruction immediately. Converging findings from over four decades of psychological and educational research show which instructional methods help most children learn to read (National Reading Panel, 2000).

It is encouraging, therefore, that general *and* special education policy (namely the Reading First Initiative of the No Child Left Behind Act and the reauthorization of the Individuals with Disabilities Act) allow school districts to “use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures” for learning disabilities. The goal of using such a process, known as Response to Instruction or Intervention (RTI) is to eliminate ineffective reading instruction as a cause of reading difficulties. Further, this RTI process could alleviate the need for children at-risk for reading difficulties to wait to receive reading intervention services until they have demonstrated a relatively severe and unexpected discrepancy relative to their intelligence (IQ-achievement discrepancy). Thus, with RTI, early intervening services are provided for struggling beginning readers *before* they fall farther and farther behind their peers and show severe discrepancies between their reading and cognitive abilities.

Prevention is far more powerful than remediation, so we are optimistic about RTI; at the same time we share concerns expressed by parents, practitioners, and fellow researchers that there are not yet a set of RTI “standard operating procedures.” Our purpose in addressing *Perspectives on Language and Literacy* readers is not to provide a comprehensive guide to RTI, but to share our considerable research experience helping schools who are beginning to implement RTI, particularly emphasizing the early grades where the research is most strong.

The research on early intervention is particularly compelling, so we are sharing the vision of what can happen at the early grades when all students receive the benefit of early intervention.

It is also important to provide intervention to older students, who desperately need, but too often do not receive, the intensive remedial multicomponent instruction necessary to help them read grade-level texts. In this article, we do not directly address RTI for older students with more severe reading or writing disabilities, but other authors in this issue do.

First, we describe an overview of the RTI implementation process. Next, we illustrate from our own research ways to maximize resources within beginning reading instruction. Then, we discuss implementation issues related to identifying children who need additional intervention. We conclude with some additional considerations and solutions.

## **An Overview: What Is the RTI Process?**

Keeping in mind that there are many different models and that no specific model (or even RTI) is mandated, we describe RTI as a multitier system or problem-solving process that begins with Tier 1, or primary classroom instruction. The idea of RTI is not new, and the problem solving process has been used in states such as Iowa since the 1980s. The goal of Tier 1 is for all students to receive evidence-based and well-implemented reading instruction for about 90 minutes per day. Generally speaking, Tier 1 should help the majority of children read on grade level and is more effective when children's individual differences in language and literacy skills are considered (i.e., instruction is differentiated).

Tier 2 interventions are provided to children who did not make adequate gains when they received high quality Tier 1. Tier 2, or secondary interventions, are typically provided 3–5 days a week in a small group format as a supplement to Tier 1. Depending on resources, these Tier 2 interventions might be delivered by classroom teachers, well-trained and supervised paraprofessionals, or Title 1 tutors; or children might be pulled from more than one classroom for small group interventions led by reading specialists, speech and language pathologists, or other interventionists. Then, students still not catching up to their peers receive Tier 3 tertiary interventions. Ideally, Tier 3 is carefully individualized based upon student assessment data, is provided in even smaller groups of 1 to 3 students, with greater intensity or “dosage” by the most highly skilled interventionist. A goal of the process is for children to move across tiers as they need to; ideally a majority would catch up to peers and be able to return to the classroom. Then, only students with the most chronic and persistent reading difficulties would receive special education services.

Clearly, the roles of specialized reading interventionists are expanded within the RTI process. They help implement early screening for identification of students at-risk for reading difficulties, and then collaborate with and train general education teachers to provide the strongest beginning reading instruction to those children. In addition, when primary instruction does not help children catch up to their peers, reading interventionists help match children's assessed needs to resources (interventions and interventionists). Thus, interventionists, in conjunction with school leaders, examine what intervention programs are available and what additional interventions or professional development is needed, which

children are likely to benefit from which program, and what levels of expertise and professional development are needed to faithfully implement an intervention.

### **How is responsiveness or unresponsiveness typically defined?**

Currently, there is no clear consensus about defining responsiveness within RTI. However, research can guide schools in designing the process, selecting specific screening measures, and creating decision rules about moving children to another tier (more or less intensive) and also for accurately and efficiently determining eligibility for special education. Fuchs and Deshler (2007) discuss several methods that schools could utilize: benchmarks, slope discrepancy (slower growth rate relative to peers), dual discrepancy (low performance and slow growth relative to peers), or normalization. We are currently conducting research on the efficacy of a dynamic RTI model, where children are moved to Tier 2 or even Tier 3 immediately based on achievement scores, rather than waiting to see what happens. Then, their growth rates are monitored to ensure they receive enough of the optimal intervention to achieve grade-level reading targets.

When screening children to determine who should receive intervention, schools may compare initial performance on a curriculum-based measure, such as oral reading fluency, relative to a benchmark or cut-point. An alternative, particularly in kindergarten, is to wait for 6–8 weeks to compare growth on such a measure relative to a peer group, or to evaluate both initial risk status and growth. It is vital to establish the *treatment validity*, or implementation effectiveness within each Tier. As Fuchs and Deshler (2007) remind us, RTI can only be tested in the context of generally effective instruction and interventions. “Without validated instruction (implemented with fidelity by practitioners), RTI cannot be a valid method of disability identification or early intervention” (p. 134).

Keeping in mind that most RTI research has been conducted within the kindergarten–second-grade window, most researchers suggest a guideline that if Tier 1 is effectively implemented, then 80% or more students would be on grade level. Effective Tier 2 would help at least 10–15% more students to reach grade level. Effective Tier 3 would then help most remaining students to significantly improve their rate of growth. However, these guidelines may be overly ambitious for older students with persistent reading disabilities such as dyslexia. A “valid treatment” for these students would likely be individualized and may also involve accommodations. Hence, within special education, there is a need for ongoing progress-monitoring data to be used as a tool for problem solving to tailor intervention to strengths and weaknesses. In addition, normalization methods could be used to judge adequate end-of-year outcomes. For example, scoring below the 30<sup>th</sup> percentile on a normed test of reading achievement would be considered inadequate RTI. This would be helpful to gauge the degree to which a multitier process is helping children catch up to national or local norms.

## Maximizing Resources: What Rates of Success Could Be Achieved through Effective Primary Beginning Literacy Instruction in Tier 1?

Research has shown that effective primary classroom teachers can reduce the percentage of children who do not perform on grade level to about 5–7%, or about one child in a 20-child classroom (Al Otaiba & Fuchs, 2006; Foorman, Brier, & Fletcher, 2003; Mathes, et al., 2005). This success rate is for the beginning stages of reading instruction, which reflects that prevention of reading difficulties is far easier than the remediation of reading disability. Notably, in these and other studies conducted mostly in kindergarten through second-grade classrooms, this rate of success or responsiveness has been achieved when teachers: (1) implemented an evidence-based literacy curriculum, (2) used universal screening and ongoing monitoring of student progress toward a targeted goal, and (3) delivered a dynamic mix of whole class and differentiated small group instruction, as well as adequate time to practice skills independently. Ensuring that Tier 1 is generally effective is important; otherwise, if too many children need secondary or tertiary intervention due to weak primary instruction, any RTI system will be too strained to provide intensive resources.

### A strong foundation: An evidence-based core literacy curriculum

Tier 1 instruction begins with an evidence-based core literacy curriculum that scaffolds explicit code-focused instruction in phonological awareness, phonics, and decoding strategies (NRP, 2000). The curriculum should also support meaning-focused instruction to improve students' fluency, vocabulary, and reading comprehension skills. No one expects a single core curriculum to fit the needs of all children, so we have found that teachers appreciate guidance in selecting additional materials that are consistent with classroom instruction and are also evidence-based (e.g., Florida Center for Reading Research (FCRR) activities, <http://www.fcrr.org/Curriculum/studentCenterActivities.htm>).

We have also learned through our descriptive and correlational research that the amount of instructional time varies greatly across classrooms and schools. School leaders play an important role in scheduling and protecting instructional time. Specifically, a daily uninterrupted block of primary instruction lasting between 45 to 120 minutes, with much of that time dedicated to differentiated instruction using small groups, is associated with stronger student reading achievement (Connor, Morrison, Fishman, & Schatschneider, 2008; Connor, Morrison, Fishman, Schatschneider, & Underwood, 2007; Connor et al., 2009; Pressley et al., 2001; Taylor & Pearson, 2004; Wharton-McDonald, Pressley, & Hampston, 1998).

### Problem-solving within Tier 1: Individualizing based upon progress-monitoring data

We have conducted several observational and experimental studies (pre-K through third grade) related to kindergarten primary Tier 1 instruction. Within these studies, we have found that the least effective teachers appear almost compelled to follow a core curriculum in lockstep format, and to deliver mainly whole group instruction, with some individual seatwork (worksheets, mostly) in their classrooms. If they do instruct in small groups, all children receive the same materials, rather than instruction that is matched to their proficiency level. Thus, many of these teachers may teach to a particular skill set (i.e., most

often teaching to the middle) and so are not likely to help children who begin school with lower skills to catch up to the middle. Further, when the level of instruction is beyond these vulnerable children, their engagement or on-task behavior is greatly reduced.

By contrast, we also observed very effective Tier 1 instruction that succeeds in helping the vast majority of children read on grade level. Such instruction is systematic, but it is also tailored to student needs. So what does that look like? Collectively, over the past 4 years, we have trained over a hundred kindergarten and first grade teachers, through thoughtful reflective professional development, to use data to create dynamic, differentiated, flexible, small group instruction. An exciting new technological tool, Assessment to Instruction, or A2i, developed by Carol Connor uses child data to specify how many minutes a day of what type of instruction children need to reach the end-of-year, grade-level target (Connor et al., 2007; <http://isi.fcrr.org>).

Because small group instruction is more effective minute for minute than whole class instruction (Connor, Morrison, & Slominski, 2006), our professional development focuses on helping teachers plan and manage small group instruction and incorporate child-managed centers. In particular, the data-based A2i tool helps teachers target how many minutes a day they need to work with their lowest ability group who needs the most scaffolding. The tool also suggests different groupings for meaning versus code-focused instruction and allows teachers to create flexible groups. For example, if Johnny needs 30 minutes of small group instruction, he may come to the teacher table during 2–15 minute segments of explicit, code-focused instruction that is highly interactive with the teacher actively working with him, while the other children in his group are working in centers, with a peer or a paraprofessional. This approach is a more precise, but still dynamic, way of thinking about instruction than just saying the child needs more phonics instruction and assigning phonics worksheets or seatwork for extra practice.

A2i is dynamic in that it allows each child's data to be updated so that teachers can reformulate their groups based on assessment results, or based on changes in available resources (e.g., parent volunteer, student teacher, more time from the special education teacher). The ability to adapt instructional strategies is important because what is successful depends on students' language and literacy skills (child-by-instruction interactions) and on the desired outcome (e.g., word reading, reading comprehension, or vocabulary).

### **Using classwide peer tutoring to supplement individualization of Tier 1**

One particularly well-researched classwide peer tutoring program is Peer-Assisted Learning Strategies or PALS. Peer tutoring can double or triple students' reading practice time, their opportunities to respond, and their engagement in literate language. Converging findings across a number of randomized controlled studies demonstrate that children who participate in PALS show significantly more improved reading achievement across kindergarten to sixth grade (Fuchs, Fuchs, Mathes, & Simmons, 1997). PALS also led to improved reading skills within first grade Hispanic children, regardless of their English proficiency (Calhoon, Al Otaiba, Greenberg, Kin, & Avalos, 2006).

PALS is a Tier 1 supplement to primary reading instruction in that classroom lessons are presented by the teacher, and children then practice the taught skills with peers. Sessions typically last for 20–30 minutes 3 to 4 times per week usually across the school year. Teachers are directed to use data to assign children to dyads and to change partnerships about every 6 to 8 weeks depending on data. Teachers may use letter naming or oral reading fluency scores to rank order their students. At kindergarten, they might initially pair the very weakest performing child with the strongest child, or they may prefer to divide the class in half and pair the top performer in the top half with the bottom performer in the top half. Although the skills emphasized within PALS sessions vary by grade level, they incorporate code and some meaning-focused activities. For example, in kindergarten, lessons include sound play or phonological awareness activities and beginning letter-sound relationships; then in first and second grade, as children learn to decode, fluency and comprehension play a larger role.

Fuchs and colleagues also examined the impact of one versus two years of PALS to a no-PALS condition (Al Otaiba & Fuchs, 2006). Of the 227 students who participated in intervention for one or two years (in kindergarten only, first grade only, or kindergarten and first grade), only about 7% were unable to reach the mean literacy scores of peers in the treatment group. A much higher proportion (25.35%) of the 71 control students did not reach this criterion. Unfortunately, nearly all of these unresponsive kindergartners were also unresponsive to first-grade PALS. Thus, it is likely that if PALS did not meet their needs, these children should have been provided a more intensive Tier 2 intervention. Indeed, in a third grade follow-up study, we found that all but one of the children who had been nonresponsive to kindergarten intervention had been identified as reading disabled and had received IEP goals in reading. These nonresponsive students had much lower scores than their responsive peers on several measures that are associated with reading disability including vocabulary, rapid naming, problem behavior, and verbal memory.

### **Using paraprofessional, adult tutors, and adult volunteers to supplement individualization of Tier 1**

Growing evidence supports the efficacy of supplementary programs provided by paraprofessionals, Title 1 and other tutors, and adult volunteers (e.g., community members and college students) (Al Otaiba & Foorman, 2008; Foorman & Al Otaiba, 2009). Some schools may consider this intensity to represent Tier 2 rather than Tier 1. Features associated with effective programs include:

1. a reading specialist or expert-provided training and supervision to tutors,
2. the tutoring program was consistent with the classroom instruction,
3. the program included high quality materials and engaging books,
4. students' progress was monitored, and 5) the program was delivered with sufficient intensity.

Increasing intensity and dedicating time for tutoring are vital. We learned that significantly stronger effects are found when tutoring occurs 4 days a week versus 2 days a week. This issue of intensity or *dosage*, was directly addressed in a randomized control trial by Al



Otaiba, Schatschneider, and Silverman (2005), which tested the effects of a scripted tutoring program Tutor-Assisted Intensive Learning Strategies (TAILS). TAILS provides scripted instructional routines for code-focused instruction (i.e., roughly 20 minutes of phonological awareness and phonics intervention) and also included meaning focused instruction (i.e., 10–15 minutes of dialogic book reading strategies to build language and listening comprehension) (Beck, McKeown, & Kucan, 2005; Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999). The TAILS direct instruction format was consistent with the primary core reading program used in each classroom. Tutors in all three conditions were well trained and supervised (i.e., they had weekly visits and modeling or coaching by research staff) to support implementation fidelity, that is, the accuracy with which tutors implemented *TAILS* components.

This study was conducted in four high poverty schools. We screened all the kindergartners to select children who began school with very low letter naming (less than 2 letters correct per minute) or letter-sound naming scores (less than 3 letter sounds). Nearly all the children (over 80%) were African American and received free and reduced lunch. To control for the classroom reading instruction children received, we randomly assigned children within classrooms to three conditions. In the first condition, students were read storybooks in a group of three; in the second condition, students were individually tutored using *TAILS* for 2 days per week; and in the third condition, students were also individually tutored, but for 4 days a week. Tutors were observed regularly using checklists that assessed whether they implemented *TAILS* with fidelity; on average they did so the majority of the time.

We found that dosage was very important; students in the 4-day *TAILS* condition showed greater growth on word reading, word attack, and passage comprehension than students in either the 2-day or control condition on three reading measures. (Effect sizes favoring students in the 4-day versus control condition were large and educationally important: .79, .90, and .83, on word identification, passage comprehension, and basic reading skills, respectively.) This means that kindergartners in the 4-day condition outperformed the other students by almost a standard deviation. Helping children at risk by intervening early, and with adequate intensity, was highly successful and most students in the 4-day condition read on grade level at the end of the year. This study is an example of a low cost and high reward supplement to Tier 1 instruction.

## What Are Success Rates When Students Receive Additional Tiers of More Intensive Early Interventions?

While there is strong empirical evidence demonstrating the effectiveness of intervention, there is less research on the efficacy of a multitier system. In fact, the stronger multitier studies have been implemented by research staff rather than classroom teachers and paraprofessionals (for a review see Al Otaiba & Torgesen, 2007). Two studies inform us about possible success rates, judged in terms of “normalization” (defined as grade-level reading scores by the end of the study).

The first study is salient because it demonstrates that more than one type of Tier 2 intervention, combined with effective Tier 1 classroom instruction, resulted in remarkably

few first graders reading below grade level. Mathes and colleagues (2005) designed a study to compare Tier 1 classroom reading instruction with Tier 1 instruction *plus* one of two types of supplemental interventions delivered to small groups of three children. Researchers had screened children at the end of kindergarten to select those who performed in the bottom 30<sup>th</sup> percentile and then randomly assigned children within classrooms to the three conditions. To ensure that Tier 1 was generally effective, researchers trained teachers to use data to support reading instruction. Both of the Tier 2 interventions were intensive, lasting for 40 minutes daily over a period of 30 weeks; these were conducted by certified teachers who were hired and trained by the researchers (i.e., not by the children's classroom teachers). Implementation fidelity was strong.

The first intervention, *Early Interventions in Reading* (Mathes, Torgesen, Menchetti, Wahl, & Grek, 2004), provided code-focused instruction that followed a prescriptive scope and sequence of lessons that were standard for all children. The second intervention, *Responsive Reading Instruction* (Denton & Hocker, 2005), followed a problem-solving approach to tailoring intervention to individual student's strengths and weaknesses. The programs also differed slightly in that *Early Interventions* emphasized phonics relative to other skills and, in contrast, *Responsive* allocated more time to text reading and writing. Students who received either intervention (effects were similarly strong for both groups) outperformed the Tier 1-only group. By the end of first grade, if we extrapolated findings to the general population, the proportion of students who could not read on grade level would be reduced to about 0.2% in the *Early Interventions* condition and to 1.5% in the *Responsive* condition.

The second study, conducted by Torgesen and colleagues (1999), is noteworthy because it showed that well-trained para-professionals can successfully supplement intervention without adversely impacting intervention fidelity or child outcomes. In January of their kindergarten year, children were randomly assigned to a no-treatment control condition (i.e., one of three one-to-one tutoring groups). Tutoring was conducted 20 minutes daily for 4 days a week and lasted through second grade with approximately 47 total hours provided by teachers and 41 by paraprofessionals. The tutoring groups differed primarily in the explicitness with which phonics was taught. The most explicit program provided phonological awareness training plus synthetic phonics (*PASP*), which consisted of explicit instruction in phonological awareness using voiced cues plus extensive decoding practice. The second, *embedded phonics*, also consisted of instruction in explicit phonics but also trained sight words and emphasized reading and writing connected text. The third, *regular classroom support*, consisted of tutorial assistance for the reading instruction provided in the regular classroom.

By the end of the study, students in the *PASP* group outperformed the other three groups on tests of decoding and also outperformed the control group and the regular class support group on a word reading measure. However, all four groups performed similarly on a measure of reading comprehension. Once again, if we extrapolate findings to a similar school population, if all students could participate in this sustained multitier process, 98% of children could be expected to attain grade-level word-level reading by the end of second grade.



## Other Considerations and Solutions

Researchers are discovering that one reason some children may have more difficulty learning to read is that they have difficulty with self-regulation. In fact, the comorbidity between reading disability and attention deficit disorder has been well-documented. Self-regulation is the ability to stay on a task, follow directions, understand how others feel, to control feelings of anger and frustration, and to switch from one task to another when required. Difficulties with self-regulation may occur because these students have trouble making the most of learning activities, are easily distracted, don't get along with classmates, and have difficulty following directions. Teachers report that children with poor self-regulation tend to have more behavior problems and weaker social skills than children with strong self-regulation (Connor, Cameron et al., in review). Having a greater number of children with poor self-regulation in the class can make it increasingly difficult for teachers to provide effective instruction and have an impact on student outcomes.

Running a highly organized classroom, providing very clear directions for projects and activities children are to complete, and providing structured opportunities to work with peers appear to improve children's self-regulation (Bodrova & Leong, 2006; Connor, Cameron, et al., in review). Classroom routines that are daily and ongoing are also very important. For example, use the same order of activities and signal to indicate that children are to change activities each day. Again, prominently display the task or organizational chart so that children can operate independently, find out what group they are supposed to be in, and what activity that group is supposed to be completing. The more children know what is expected of them, what they are supposed to be doing, and where they are supposed to be, the better they attend to the learning opportunities at hand. Avoiding disruptions, such as loudspeaker announcements and other people entering the classroom, also helps children with weaker self-regulation stay on task. Also, it is important to teach in a highly interactive and engaging manner (Guthrie et al., 2004).

Because much of the research on reading is so new, many teachers do not have knowledge about key concepts such as phonological awareness, phonics rules, comprehension strategies, and administering and using assessment. In one study on teacher knowledge (Piasta, Connor, Fishman, & Morrison, 2009), many teachers could correctly answer only about half of the multiple choice items (e.g., how many phonemes are in the word *box*). However, the better teachers did on this assessment, the more effective was their explicit decoding instruction. In other words, their students made greater reading skill gains, on average, than did the students of teachers who scored lower on the survey. For teachers who answered about half of the items correctly, their decoding instruction had no effect on students' reading gains. Unfortunately, when teachers answered less than half of the items correctly, the more they taught explicit decoding, the worse were their students' reading skill gains. This is because they were teaching the concepts incorrectly. For example, one teacher said the word *above* had the short *a* sound although the *a* in "above" represents the schwa sound, not the short *a* sound as in *cat*.

Teacher knowledge about how to administer assessments and translate results into intervention is foundational for RTI success. The key to improving teacher knowledge is

rigorous preservice training and targeted practice-based professional development. Accomplishing this goal would require hiring new teachers from programs where they receive excellent preparation and providing high quality, ongoing professional development. All teachers need relatively expert knowledge of the structure of language, and many benefit from coaching to learn more about how to apply this knowledge to explicitly teach it to students who enter their classrooms with a range of reading abilities.

In summary, RTI models have tremendous promise to insure high quality and effective literacy instruction for all children. Although not without challenges, districts are finding that RTI provides an avenue for systemic reform and opportunities for classroom teachers, special educators, reading specialists, and other professionals to leave their silos behind and work together to meet the needs of children who are struggling to become proficient readers.

## Acknowledgements

This work was supported by (a) a Multidisciplinary Learning Disabilities Center Grant P50HD052120 from the National Institute of Child Health and Human Development, (b) a Predoctoral Interdisciplinary Research Training Grant R305B04074 from the Institute for Education Science, (c) grants R305H04013 and R305B070074, "Child by Instruction Interactions: Effects of Individualizing Instruction" from the U.S. Department of Education, Institute for Education Sciences, and (d) by grant R01HD48539 from the National Institute for Child Health and Human Development. We acknowledge our project staff and the teachers and students participating in our projects.

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### Summary of Common Elements of Successful Interventions

Several common ingredients within successful interventions that are vital to RTI efforts:

1. They include multiple instructional components, but always focus on explicit and systematic instruction in phonology and the alphabetic code.
2. They are engaging and interactive, often incorporating manipulatives.
3. They allow students many opportunities to respond.
4. Students are provided ample opportunities to practice through cumulative reviews of reading skills designed to support mastery learning.
5. Data are used to monitor progress and ensure intervention validity.