

A Model for Implementing Responsiveness to Intervention

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For decades, the major procedure for identifying children with learning disabilities (LD) has involved documenting a discrepancy between a student's IQ and achievement. With this approach, however, identification typically occurs at fifth grade, so children must "wait-to-fail" before intervention can occur. For this reason, along with technical difficulties associated with the IQ-achievement discrepancy (see Vaughn & Fuchs, 2003 for a summary), the 2004 reauthorization of the Individuals With Disabilities Education Improvement Act (P.L. 108-446) permits states to discontinue use of IQ-achievement discrepancy in favor of Response to Intervention (RTI) for LD identification. Advantages of RTI include earlier identification, a stronger focus on prevention, and assessment with clearer implications for academic programming (Vaughn & Fuchs). The premise behind RTI is that students are identified as LD when their response to validated intervention is dramatically inferior to that of peers.

The inference is that these children who respond poorly to generally effective interventions have a disability that requires specialized treatment to produce successful learning outcomes. In this way, a central assumption is that RTI can differentiate between two explanations for low achievement: inadequate instruction versus disability. If the child responds poorly to instruction that benefits most students, then the assessment eliminates instructional quality as a viable explanation for poor academic growth and instead provides evidence of disability. Also, because most children respond nicely to validated intervention, RTI serves an important prevention function.

Most RTI models of LD identification are embedded within a multi-tier prevention system (see Figure 1). General education constitutes primary prevention. Students who fail to respond to this "universal" core program enter the RTI LD identification process with second-

ary prevention. In most research studies, this involves one or more rounds of research-based small-group tutoring. Students who respond poorly to this more intensive form of prevention are considered to have demonstrated

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"unexpected failure" and become candidates for tertiary intervention. They then undergo an instructionally focused multidisciplinary evaluation, designed to answer questions that arose during primary and secondary prevention and to eliminate other forms of disability as

a cause for failure (if another disability is suspected). Tertiary prevention is the most intensive form of instruction, involving individualized programming in conjunction with progress monitoring. When adequate performance is achieved, the child exits to secondary or primary prevention. In this way, RTI has two goals: (a) to identify risk early so that students participate in prevention prior to the onset of severe deficits, which can be difficult to remediate, and (b) to identify students with LD who prove unresponsive to validated, standardized forms of instruction and instead require an individualized form of instruction.

As schools consider implementing RTI, they must make decisions about how to operationalize six components constituting the RTI process. In this article, we describe options for each component. Then, we offer our best thinking, in light of the research evidence to date, about how schools might proceed. Finally, we describe what an RTI system might look like at first grade in reading and in math when our recommendations are adopted.

Six RTI Components

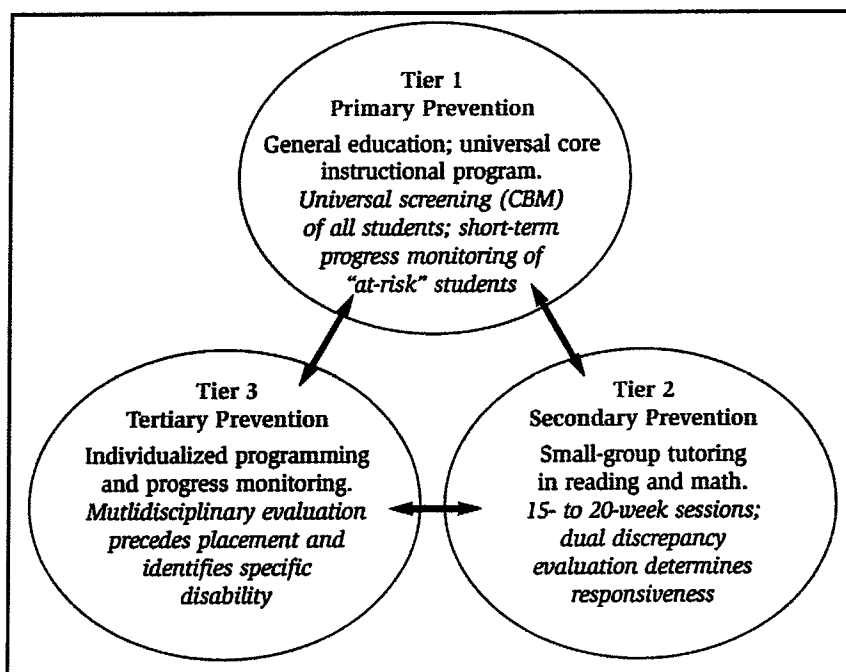
To implement RTI for prevention and identification, schools must make decisions about six components that constitute the process: how many tiers of intervention to use, how to target students for preventative intervention, the nature of that preventative intervention, how to classify response, the nature of the multidisciplinary evaluation prior to special education, and the function and design of special education.

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Number of Prevention Tiers

The first decision that schools face is determining the number of prevention

Figure 1. Sample RTI Model



tiers that constitute their RTI system. General education is always considered the first tier, and students who are targeted for preventative intervention must first show evidence of failing to respond to this universal core program. Beyond general education, however, RTI systems may include any number of tiers prior to special education. Some RTI systems incorporate general education along with a second tier of prevention. This second tier is more intensive than general education but less intensive than special education, and students must also show poor response to this second tier of prevention before special education is initiated at a third tier. Other RTI systems incorporate additional tiers of prevention to separate general and special education, with special education used as the fourth, fifth, or sixth tier.

Our recommendation is that schools employ three tiers, with only one tier separating general and special education. We make this recommendation because of the difficulty of designing more than one tier of preventative intervention that can be reliably distinguished in format, nature, style, and intensity both from general and from special education. Given this difficulty, extra tiers separating general and spe-

cial education begin to resemble the intensity of special education. So, adequate response to these extra tiers represents a shaky basis for assuming that a child does not in fact require special education. When considering respon-

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siveness for the purpose of deciding that the child requires special education, prevention should represent a research-validated form of instruction with a format, nature, style, and intensity that can be implemented by practitioners who are more readily available than special educators, including well-trained and supervised paraprofessionals.

Identifying Students for Prevention

Regardless of the number of tiers employed, a second component of RTI with which schools struggle is how students are targeted to receive prevention

beyond the universal core program. Some RTI systems employ 1-time universal screening, whereby all children in a school are assessed on a brief measure at the beginning of the school year. Students who score below a norm-referenced cut-point (e.g., <25th percentile on the Woodcock Reading Mastery Tests – Word Identification) or below a performance benchmark associated with poor long-term outcome (e.g., <15 on curriculum-based measurement word identification fluency at the beginning of first grade) enter preventative intervention. In systems that rely on 1-time universal screening to identify students who enter preventative intervention, the assumption is that low performance relative to the cut-point or the performance benchmark at the beginning of a school year constitutes evidence that the child has failed to respond to the Tier 1 universal core program during previous school years and therefore requires preventative intervention.

In other versions of RTI, universal screening is conducted to identify a subset of students who are “potentially” at risk for poor outcomes and then the performance of these students is monitored for a relatively short time to (dis)confirm the risk status suggested via universal screening. Only the subset of students who (a) first meet the universal screening cut-point and (b) then show poor rates of improvement over 5 to 8 weeks of Tier 1 general education are deemed in need of a preventative intervention.

We recommend that schools use universal screening in combination with at least 5 weeks of weekly progress monitoring in response to general education to identify students who require preventative intervention. Our rationale is that 1-time universal screening at the beginning of the year may over-identify students who require preventative intervention. In our research conducted in reading at first grade, for example, 50% of students identified on the basis of 1-time universal screening in fact made good progress over the course of first grade without any preventative intervention. Identifying students for preventative intervention based on 1-time universal screening means that schools are

pressed to deliver costly prevention to large numbers of students who do not need those services. This means that schools must water down the nature of prevention. By contrast, our research (Compton, Fuchs, Fuchs, & Bryant, 2006) shows that with 5 weeks of weekly progress monitoring in reading, the number of students who are identified for Tier 2, who do not actually need Tier 2, is reduced substantially or even eliminated. Hence, we recommend that schools incorporate short-term progress monitoring in response to general education for identifying which students require preventative intervention.

What Preventative Intervention Looks Like

Two models of preventative intervention are prominent within RTI. The first, called “problem solving,” relies on preventative interventions that are individually tailored to meet the student’s learning needs. As reflected in the literature, these preventative interventions often conceptualize academic deficiencies as motivation problems. These interventions therefore attempt to increase student performance on skills that are already acquired, rather than designing instruction to develop new skills. Typically, the school psychologist assumes major responsibility, in collaboration with other professionals, for designing the individually-tailored preventative interventions that vary in form and function across students.

A second approach to preventative intervention is to rely on “standard protocols” that have been shown via randomized controlled studies to improve most students’ academic achievement. In contrast to the problem-solving approach, the standard treatment protocol typically is designed to promote the acquisition of new skills, while incorporating standard methods for addressing behavioral and attention deficits so that instruction may proceed smoothly. The typical standard treatment protocol is more intensive than Tier 1 general education because it relies on small-group tutoring by a professional teacher or a trained and supervised paraprofessional, 3 to 4 times per week for anywhere from 10 to 20 weeks; because it

attempts to ensure mastery for the majority of students; because it minimizes transitions and maintains good pace, while attempting to ensure high levels of on task behavior; and because it incorporates self-regulation strategies to increase goal-oriented behavior. In addition, the tutoring protocols are sometimes scripted; in all cases, highly prescriptive. Therefore, the tutoring sessions can be roughly standardized across tutors and provide the opportunity to estimate the accuracy with which the tutoring protocol is implemented. Reliance on research-validated preventative interventions that have been shown to be highly effective for the majority of students speaks to a fundamental assumption within RTI: If the child responds inadequately to instruction that benefits most students, then the assessment eliminates instructional quality as a viable explanation for poor academic growth and, instead, provides evidence of a disability. This differs from a problem-solving approach where the preventative intervention does not represent “instruction that benefits most students,” but instead is an individually tailored program.

We recommend that schools rely on a combination of approaches with a standard treatment protocol used for academic difficulties and a problem-solving approach used for obvious behavioral problems. Our rationale is that standard treatment protocols have been shown to be highly effective for academic deficits; therefore, the quality of preventative intervention does not depend on local professionals who may have uneven training and background in instructional design. In a related way, with a standard treatment protocol, the nature of the preventative intervention to which students do and do not respond is public, clear, and represents “instruction that benefits most students.” By contrast, when a problem-solving approach is applied to remedy reading or math difficulties, there is greater responsibility on the RTI system to maintain records about the nature of a student’s preventative intervention; there is more parental responsibility to judge whether an individually-tailored preventative intervention is viable; and

there is a weaker basis for presuming that inadequate response eliminates poor instruction as the cause for insufficient learning. For these reasons, the problem-solving approach may morph RTI into something that resembles pre-referral intervention, whereby schools in the past have relied on idiosyncratic and watered-down interventions, such as moving seats or adding homework, to address serious academic difficulties. Nevertheless, when dramatic behavior difficulties occur in combination with academic deficits, a problem-solving approach should be used to resolve the behavior problem. An academic difficulty that persists despite a well-designed and functional behavioral program then requires a standard treatment protocol to build new academic skills.

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Classifying Response

To classify response, research provides four options. Two rely on the student's status when the preventative intervention ends. Torgesen et al. (2001) suggested that at the end of intervention, any student whose performance is above the 24th percentile be deemed responsive. The idea is that the intervention has "normalized" the student's performance. A second option, which also relies on final status, employs a criterion-referenced benchmark for determining whether the intervention has made a sufficient impact to ensure long-term success. Good, Simmons, and Kame'enui (2001), for example, suggest administering curriculum-based measurement at the end of intervention, and designating all students who achieve the benchmark as responsive. A third option relies on slope of improvement

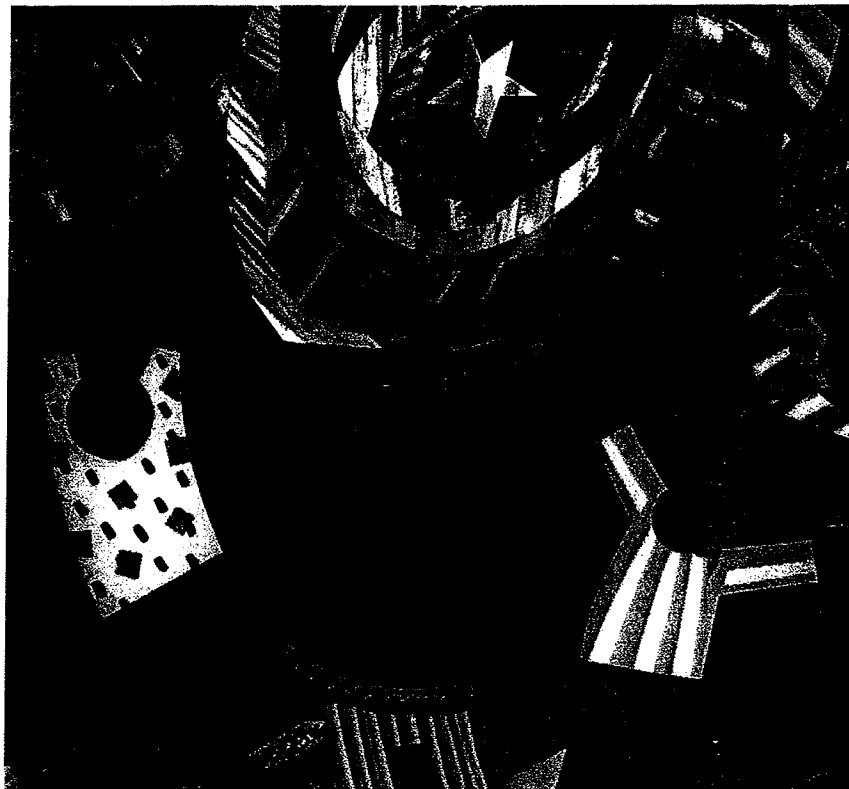
during preventative intervention, rather than the student's final status at the end of intervention. In this way, Vellutino et al. (1996) suggested rank ordering the slopes of improvement for students who receive preventative intervention. The cut-point for distinguishing response from nonresponse is the median of those rank-ordered slopes. Finally, L. S. Fuchs and Fuchs (1998) combine the use of slope of improvement with final status for classifying response in the following way. To be deemed unresponsive, a student must demonstrate a "dual discrepancy," whereby slope of improvement and final level are both at least 1 standard deviation below that of peers.

We recommend that a dual discrepancy be used to designate unresponsiveness. Final status alone is problematic because it permits some students to be classified as unresponsive despite strong improvement. That is, they begin intervention far below the normalized or benchmark final criterion, and despite strong growth, they remain below the criterion at the end of intervention. Slope of improvement alone is problematic because it permits some

students to be classified as unresponsive even though they complete intervention meeting the normalized or benchmark performance criterion. By contrast, a dual discrepancy, which simultaneously considers slope of improvement and final status, permits the unresponsive designation only when a student (a) fails to make adequate growth and (b) completes intervention below the normalized or benchmark criterion. In a recent working meeting on RTI-LD classification (D. Fuchs, Compton, Fuchs, & Davis, in press), dual discrepancy emerged as a tenable approach for designating unresponsiveness. It was adequately sensitive and specific with respect to future low reading performance, even as it identified students with a severe form of reading disability with realistic prevalence rates. Additional work is required to examine how alternative methods for classifying LD within an RTI system perform, but in the meantime, dual discrepancy appears promising.

Multidisciplinary Evaluation

Another issue that schools face in building their RTI model is how to design the multidisciplinary evaluation that federal



law requires for special education placement. In some RTI systems, multidisciplinary evaluations are comprehensive, with a standard battery of assessments administered to all students. In other RTI systems, multidisciplinary evaluations are specific to the questions that arise as a function of the student's participation in Tiers 1 and 2. Another dimension along which multidisciplinary evaluations differ is whether the assessment is designed to distinguish among LD, mild mental retardation, speech/language impairment, and emotional behavior disorders as the disability underlying the lack of responsiveness. For this purpose, the following types of assessments are typically included: (a) adaptive behavior and intelligence to distinguish between LD and mild mental retardation, (b) expressive and pragmatic language to help inform distinctions between LD and language impairment, and (c) teacher rating scales, classroom observations, and parent interviews. These distinctions are warranted, of course, only if they provide utility for designing instruction and grouping students productively for instruction. Few, if any, strong studies have been conducted to assess the utility of these designations.

Pending such research findings, we recommend that the instructionally focused multidisciplinary evaluation be designed to answer specific questions that arise during general education instruction and previous rounds of prevention and that the special education multidisciplinary evaluation include a process for distinguishing among the high-incidence disabilities. Our recommendation is based on two assumptions. First, a specifically tailored, instructionally focused multidisciplinary evaluation is more efficient than a full-blown evaluation, even as it is more likely to provide useful information for designing special education programs. The second assumption is that distinctions among the high-incidence disability categories may prove helpful to special educators in formulating sensible grouping structures.

Special Education

Most discussions about RTI focus on reforming general education, which is conceptualized as a research-based, multi-tiered system of preventative intervention to prevent LD for students who are otherwise instructional casualties and to identify LD for students for whom poor instruction is eliminated as an explanation for failure. In these discussions, special education is rarely mentioned, except as the final outcome to be avoided. We believe that this is unfortunate because special education is as much in need of reform as is general education. Moreover, students who prove unresponsive to RTI's preventative intervention deserve a revitalized special education tier to address their serious disability. A reformed special education should rely on lower student-teacher ratios, more instructional time, and use of ongoing progress monitoring, such as curriculum-based measurement, for deductively building programs that are shown empirically to address individual student needs, which have proved unresponsive to a research-validated standard treatment protocol. Without such reform, special education's large student caseloads and unfortunate emphasis on paperwork and procedural compliance preclude effectiveness, and the responsibility for producing strong outcomes, in effect, resides entirely on the general education system. If attention on reforming general education were similarly allocated to reforming special education, then special education would represent a valued tier within RTI's multi-tiered intervention system, not a dreaded outcome of a failed general education system.

We recommend that RTI incorporate special education as an important tier that delivers the most intensive instructional programs designed formatively to address individual needs. This reformed special education should be a flexible service, systematically permitting students to move in and out of this tier as the student's needs change in relation to the demands of the general education curriculum. This recommendation is based on a hope that special education can provide a valuable resource for addressing the needs of students with

LD—if special education is reformed and deliberately considered and incorporated within RTI's multi-tiered service delivery system.

. . . students who prove unresponsive to RTI's preventative intervention deserve a revitalized special education tier to address their serious disability.

An RTI System Incorporating These Recommended Practices

In this section, we describe what an RTI system, which incorporates our recommendations, might look like at first grade in reading and math. The RTI system we describe is based on research conducted by the National Research Center on Learning Disabilities, sponsored by the Office of Special Education Programs in the U.S. Department of Education. For studies, see Compton, D. Fuchs et al. (2006), D. Fuchs (in press), L. S. Fuchs, et al. (2005), L. S. Fuchs et al. (2007), and Compton, Fuchs, and Fuchs, (submitted).

"Our School" uses a 3-tier system. Tier 2 separates general education (Tier 1) from special education (Tier 3). Tier 1 general education is deemed "generally effective" for two reasons. First, each quarter, the lead reading teacher and the lead math teacher observe each first-grade teacher implementing the universal core instructional program and has documented strong implementation. The second form of evidence for the effectiveness of first-grade Tier 1 reading and math general education programming is based on the school's track records. That is, the previous year's first-grade cohort, on average, demonstrated a strong slope of improvement: in reading, an average increase of 1.8 words per week on curriculum-based measurement word identification fluency (WIF); in math, an average increase of 0.50 digits per week on curriculum-based measurement computation (COMP; see box, "First-Grade Curriculum-Based Measures for RTI").

These figures are commensurate with the weekly rate of improvement for typically-developing students in first grade (1.75 words per week increase in reading; 0.50 digits per week increase in math). Moreover, during the previous year, only 3 of 60 (i.e., 5%) first graders failed to achieve the end-of-year WIF benchmark of 60 words read correctly in 1 min. Only 2 (i.e., 3.3%) failed to achieve the end-of-year COMP benchmark of 18 digits correct in 2 min.

To *target students for prevention*, "Our School" combines universal screening with 5 weeks of short-term progress monitoring. That is, children move on to preventative tutoring only when their universal screening scores are low and when they also demonstrate poor growth in response to the Tier 1 universal program. For universal screening, "Our School" assesses all students in September of first grade in the same test session on two alternate forms of WIF (see box "First-Grade Curriculum-Based Measures for RTI"), averaging performance across the two forms, and assesses all students in September of first grade on two alternate forms of COMP on two consecutive weeks, averaging performance across the two forms. In reading, students whose average WIF screening score is below 15 move on to weekly progress monitoring for 5 weeks. Students whose rate of weekly WIF increase (computed as slope on a line of best fit) is below 1.8 then move on to Tier 2 small-group tutoring. In math, students whose average COMP screening score is below 5 move on to weekly progress monitoring for 5 weeks. Students whose rate of weekly COMP increase (computed as slope on a line of best fit) is below 0.50 then move on to Tier 2 small-group tutoring.

For students who move on to *preventative tutoring* (i.e., Tier 2), "Our School" relies on standard treatment protocols, which are modeled after validated tutoring programs at first grade. In reading, students receive 45 min of instruction four times each week in groups of 3 students for 15 weeks. In math, students receive 30 min of tutoring plus 10 of computerized drill and practice on math facts, three times each

First-Grade Curriculum-Based Measures for RTI

Reading: Curriculum-Based Measurement First-Grade Word Identification Fluency

Testing is conducted individually in a quiet location, and the examiner scores the test at the completion of the session. Each alternate form presents the student with a single-page list of 50 words, randomly sampled from a pool of 100 high-frequency pre-primer, primer, and first-grade words. The student reads words aloud for 1 min; if the student hesitates for 3 sec on a word, the tester directs the student to move on. The score is number of words read correctly. For universal screening, each student reads from two alternate forms in the same session; the screening score is the average of the two scores. For indexing response, the student reads from one alternate form each week (with weekly scores graphed), and at the time when responsiveness is indexed, the student reads again from two alternate forms in the same testing session, with the two scores averaged.

Math: Curriculum-Based Measurement First-Grade Computation

Testing is conducted in whole-class or small-group arrangements and scored later by the tester. Each alternate form is a single page displaying 25 items that systematically represent the problems incorporated in the annual first-grade curriculum. Each alternate form includes different problems in random order, but incorporates the same type of problems in the same proportion. Students have 2 min to complete as many problems as they can. The score is number of digits written correctly (within the answer, not the work). For universal screening, each student completes two alternate forms on two consecutive weeks; the screening score is the average of the two scores. For indexing response, the student completes one alternate form each week (weekly scores are graphed), and at the time when responsiveness is indexed, the student again completes two alternate forms on two consecutive weeks, with the two scores averaged.

week, also in groups of 3 students but for 20 weeks. Across reading and math, tutors are trained paraprofessionals who are observed once each week by the lead reading teacher and receive corrective feedback. Also, once each week, the lead reading teacher meets with all tutors for 1 hr to examine students' progress monitoring graphs (WIF in reading; COMP in math) and to problem solve about difficulties the tutors are experiencing in effecting growth, in managing student behavior, and in keeping groups moving forward when a single student is not keeping pace. In reading, the tutoring sessions focus on phonological awareness, letter-sound recognition, decoding, sight word recognition, and short-story reading, with highly explicit instruction. In math, the tutoring sessions focus on number concepts, numeration, operations, basic fact strategies, story problems, and missing addends. In reading and math, self-regulated learning strategies are

incorporated to increase motivation and goal-directed learning.

To *determine whether students have responded to small-group tutoring*, WIF and COMP are again used, in reading and math, respectively. In reading, students whose WIF slope of improvement is less than 1.8 and whose projected year-end WIF score is less than 30 are deemed unresponsive. In math, students whose COMP slope of improvement is less than 0.50 and whose projected year-end WIF score is less than 20 are deemed unresponsive. Students who meet these responsiveness criteria return to the Tier 1 universal program, but weekly progress monitoring continues. That way, if the student fails to maintain adequate growth rates (i.e., a 1.8-word weekly increase on WIF; a 0.50-digit weekly increase on COMP), a Tier 2 program can be re-initiated.

For students who fail to meet the criteria in reading or math, however, an *instructionally focused evaluation* is conducted in consonance with the special

Additional Resources

To obtain tutoring manuals based on studies conducted by the National Research Center on Learning Disabilities, contact flora.murray@vanderbilt.edu

education multidisciplinary evaluation. Written parental consent for the multidisciplinary evaluation is obtained. The evaluation is tailored to answer questions that arose during Tier 1 general education and Tier 2 tutoring and to formulate distinctions among LD, mild mental retardation, language impairment, and emotional behavior disorders. For making these distinctions, relatively brief measures are used: the 2-subtest Wechsler Abbreviated Scale of Intelligence and the Vineland Adaptive Rating Scale to identify mental retardation; language tests to identify language impairment; and brief rating scales, classroom observations, and parent interviews to identify emotional behavioral disorders.

At "Our School," *special education* represents a valuable and vital tier in the 3-tier prevention system. Special educators incorporate formative decision making based on ongoing progress monitoring (at first grade, WIF in reading; COMP in math) to design individually-tailored special education programs. The goal is to use the progress monitoring to deductively formulate a program that is effective for the student whose response to the standard treatment protocol (at Tier 2) was poor. The key distinctions between Tiers 2 and 3 are: the special educators rely on lower student-teacher ratios (typically 1:1 or 1:2), provide more instructional time (up to 1.5 hr per day), and systematically use ongoing progress monitoring to deductively formulate individually tailored programs. We also note that "Our School's" Tier 3 special education is a flexible service, permitting exit and reentry as the student's needs change in relation to the demands of the general education curriculum. At first grade, students exit special education when their WIF slope of improvement exceeds 1.8 words increase per week and when their *projected* year-end performance exceeds 50 and/or when their COMP slope of improvement exceeds 0.50 dig-

its increase per week and when their projected year-end performance exceeds 20. When a student exits special education, they return to Tier 2 or Tier 1, as deemed most appropriate by the school staff, and weekly progress monitoring continues. That way, the school knows if the student fails to maintain adequate growth rates and formulates a data-based decision about whether the student needs to move to a more intensive tier within the multi-tier prevention system.

Before closing, we note that although research on the RTI process provides the basis for many strong guidelines for implementation, those guidelines are tentative, because additional promising investigations are underway. As new findings emerge, many of the guidelines and recommendations we have offered in this article will undoubtedly change, with corresponding improvements in the prevention and identification of learning disabilities.

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RESPONSE TO INTERVENTION

WHERE TO FIND EVIDENCE-BASED INTERVENTIONS

The following web sites can be useful in finding evidence-based educational interventions. These sites use varying criteria for determining which interventions are supported by evidence, but all distinguish between randomized controlled trials and other types of supporting evidence. We recommend that, in navigating these web sites, you use this Guide to help you make independent judgments about whether the listed interventions are supported by "strong" evidence, "possible" evidence, or neither.

The What Works Clearinghouse (<http://www.w-w-c.org/>) established by the U.S. Department of Education's Institute of Education Sciences to provide educators, policymakers, and the public with a central, independent, and trusted source of scientific evidence of what works in education.

The Promising Practices Network (<http://www.promisingpractices.net/>) web site highlights programs and practices that credible research indicates are effective in improving outcomes for children, youth, and families.

Blueprints for Violence Prevention (<http://www.colorado.edu/cspv/blueprints/index.html>) is a national violence prevention initiative to identify programs that are effective in reducing adolescent violent crime, aggression, delinquency, and substance abuse.

The International Campbell Collaboration (<http://www.campbellcollaboration.org/Fralibrary.html>) offers a registry of systematic reviews of evidence on the effects of interventions in the social, behavioral, and educational arenas.

Social Programs That Work (<http://www.excelgov.org/displayContent.asp?Keyword=prppcSocial>) offers a series of papers developed by the Coalition for Evidence-Based Policy on social programs that are backed by rigorous evidence of effectiveness.

