



INFORMATION CAPSULE

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RESPONSE TO INTERVENTION

At a Glance

Response to Intervention (Rtl) is a process that addresses both the identification of learning disabilities and the design of early intervention and instruction. Rtl provides a framework upon which to structure high quality instruction for all students and a means by which to identify those in need of more intensive intervention. The process is characterized by the provision of increasingly intensive instruction matched to student needs and monitoring of student progress to determine if further intervention or referral for special education services is needed. This Information Capsule reviews key steps in the Rtl process, components of quality Rtl programs, and costs associated with Rtl implementation. Research conducted on the impact of Rtl on student outcomes and special education referrals is also summarized. Finally, a brief description of Miami-Dade County Public Schools' Rtl efforts is provided.

Response to Intervention (Rtl) is a process used to make educational decisions based on students' success or failure during specialized interventions. Rtl reflects the understanding that a curriculum that is effective for one student may not be effective for another student and that for many students, achievement is alterable through progressively more intensive instruction (RTI Action Network, 2009; Kavale & Spaulding, 2008; Simmons et al., 2008; Council for Exceptional Children, 2007; Fuchs et al., 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006; Strangman et al., 2006).

Rtl is not a new idea. References to Rtl practices have appeared in the literature for over 30 years, although the term "response to intervention" is a new phrase (VanDerHeyden, 2006). Batsche (2007) stated: "Rtl in many ways is simply another term for 'data-based decision making' applied to education."

Rtl typically includes the following components (Fairbanks et al., 2007):

- a continuum of evidence-based services available to all students, from universal interventions to highly intensive and individualized interventions;
- monitoring of student progress at each intervention level;
- employment of increasingly intensive or different interventions when students don't demonstrate academic and/or behavioral improvement; and
- evaluation for special education services if students don't respond to the most intensive interventions.

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Rtl addresses both identification of learning disabilities and the design of instruction and intervention. Diagnostically, Rtl is used to determine if students respond to interventions or should be referred for special education services. As an instructional tool, Rtl provides struggling learners with high quality instruction and intervention matched to their academic needs (Little, 2009; Florida Department of Education, 2008; Batsche et al., 2005). In addition, Rtl targets students with emotional/behavioral disorders to encourage and reinforce appropriate behaviors (Council for Exceptional Children, 2009; Carney & Stiefel, 2008; Elliott & Morrison, 2008; Batsche, 2007; Fairbanks et al., 2007).

Currently, most states and districts use one of two primary Rtl approaches: the standard protocol model or the problem-solving model. The standard protocol model uses the same empirically validated treatment for all students with similar problems and provides interventions individually or in small groups outside of the classroom. In contrast, the problem-solving model provides interventions that are individual to each student and occur within the classroom. The problem-solving model is based on the assumptions that the success of an intervention can't be predicted based on student characteristics and that no single intervention will be successful for all students. The standard and problem-solving models vary in the number of tiers of intervention they offer, with the standard model using a two-tiered approach and the problem-solving model most frequently using a three-tiered approach (Carney & Stiefel, 2008; Kavale & Spaulding, 2008; Strangman, 2006). The Florida Department of Education has mandated that all Florida school districts implement the problem-solving Rtl model (Castillo & Hines, 2009; Little, 2009; Florida Department of Education, 2008). More information on Florida's adoption of Rtl is provided later in this report.

How Many States and Districts are Using Rtl?

Hoover and colleagues (2008) surveyed state-level special education department directors in all 50 states and the District of Columbia on their use of Rtl. Responses were received from 44 states. The majority of states (64 percent) responded that they were implementing Rtl and 36 percent of states indicated that they were in the planning stages of Rtl implementation. The majority of responding states (93 percent) reported that they were considering Rtl for the purposes of making instructional decisions and identifying learning disabled students/determining student eligibility for special education services. The remaining 7 percent of responding states indicated that they were using Rtl only for the purpose of making instructional decisions.

At the school district level, a 2009 survey of 424 K-12 school administrators nationwide found that the majority of respondents (71 percent) reported that their districts were either piloting Rtl, in the process of implementing Rtl districtwide, or already using Rtl. Survey results indicate that Rtl adoption and implementation levels have risen steadily over the last few years. The percent of districts reporting that they were piloting, beginning implementation, or using Rtl increased from 44 percent in 2007 to 60 percent in 2008 to 71 percent in 2009 (Dorman, 2009; Council for Exceptional Children, 2008a).

Steps in the Rtl Process

Regardless of the specific Rtl model adopted by states and districts, a series of activities takes place that comprises the Rtl process. These activities include:

- **Early screening of all students to identify those at risk for academic and/or behavioral difficulties.** Experts recommend that districts create school-level teams to facilitate the implementation of universal screening (Gersten et al., 2009a; RTI Action Network, 2009; U.S. Department of Education, 2009). A variety of methods can be used to identify at-risk students. For example, teachers can review the previous year's state assessment scores to identify students scoring below the 25th percentile in reading or math; a new achievement test can be administered, with at-risk students designated as those scoring below the 25th percentile; or benchmark assessments can be used to predict end-of-year performance on high-stakes tests (Gersten et al., 2009a; Strangman et al., 2006; Fuchs & Fuchs, 2001). When screening for behavioral difficulties, schools can identify students based on administrations of the

Systematic Screening for Behavior Disorders, teacher checklists, or number of discipline referrals (Council for Exceptional Children, 2009). Developers of screening systems recommend that screenings occur at least twice a year. It is also recommended that all schools within a district use the same screening measure and process to ensure objective comparisons across schools and within a district (Gersten et al., 2009b).

Costs in both time and personnel should be considered when selecting screening instruments. Administering additional measures requires extra staff and reduces instructional time. Interpreting test scores is also a complex and time-consuming process (Gersten et al., 2009a).

Researchers note that since no screening process is 100 percent accurate, the goal is to minimize the number of misclassified students. Over-identification of at-risk students results in higher costs to schools and student-teacher intervention ratios exceeding recommended numbers. Under-identification of students results in struggling students not receiving the help they need (Johnson et al., 2009). Gersten and colleagues (2009a) recommended that when students' scores fall slightly below or above a cutoff score, they should be evaluated more closely before being assigned to more intensive interventions. Teachers can administer an additional assessment to clarify students' status or they can continue to monitor academic or behavioral progress for another six weeks to determine if more intensive intervention is required.

- **Multi-tiered interventions.** Tiered interventions ensure that students receive increasingly intensive instruction matched to their individual needs and based on the nature and severity of their academic and behavioral difficulties (Reschly, 2009; RTI Action Network, 2009).

Most Rtl programs establish three tiers of sequentially-ordered interventions, but some states and school districts have implemented systems with more than three tiers (Council for Exceptional Children, 2008b; Vellutino et al., 2007; Fuchs & Fuchs, 2001). Tiers also vary in their frequency and duration and in their size and homogeneity of student groupings (Gersten et al., 2009a; Kavale & Spaulding, 2008; Torgesen, 2007; Strangman et al., 2006).

Deciding when students should move to a different tier is not an exact science. The length of time an intervention is implemented depends on the student's response to the intervention and the time needed for the targeted skills or behaviors to develop (Florida Department of Education, 2008; Council for Exceptional Children, 2007).

It should be noted that in the state of Florida, special education is not considered one of the three tiers, nor is Rtl a series of events conducted for the purpose of identifying a disability. Instead, it is a process used to determine what instruction works best for students, regardless of placement.

A description of each tier in a typical three-tier system of intervention is provided below.

- **Tier 1.** All students receive high-quality, scientifically-based instruction, differentiated to meet their needs. Teachers administer universal screening assessments three to four times per year and examine the data to determine the impact of Tier 1 instruction. The core curriculum (both academic and behavioral) should be effective for approximately 80 to 85 percent of the students. If a significant number of students are unsuccessful in the core curriculum, Rtl suggests that the instructional program is inadequate and that instructional variables, curricular variables, and structural variables (for example, building schedules) be modified. If, however, most students are progressing satisfactorily and only a small number of students are not progressing, then the assumption is made that the instructional program is effective but not working for this subset of students. These students are then referred to Tier 2 for more intensive intervention. The success of Rtl is based on an accurate determination of which students require Tier 2 intervention (Castillo & Hines, 2009; Johnson et al., 2009; Little, 2009;

RTI Action Network, 2009; Fuchs et al., 2007; Stecker, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006).

- **Tier 2.** Tier 2 consists of supplemental instruction and interventions that are provided in addition to and in alignment with core instruction and behavioral supports to groups of targeted students who need additional intervention. Tier 2 interventions generally serve approximately 15 percent of students. They are delivered to smaller groups of students (usually four to six students) who are performing at a similar level and focus on particular skill areas that need strengthening. Tier 2 interventions are usually provided for 20 to 40 minutes, three to five days a week. Students' progress is monitored at regular intervals and data are used to determine if students will return to Tier 1 instruction, continue with another Tier 2 intervention, or be referred for more intensive (Tier 3) services (Gersten et al., 2009a; Little, 2009; RTI Action Network, 2009; Florida Department of Education, 2008; Fuchs et al., 2007; Stecker, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006).
- **Tier 3.** Tier 3 interventions are delivered to very small groups of students or to students individually. They are integrated with Tier 1 and 2 interventions, highly focused on targeted skill areas, and provided with increased duration and frequency. Approximately 5 percent of students require these more intensive, targeted academic or behavioral interventions. Students receiving Tier 3 interventions may or may not be eligible for special education services (Castillo & Hines, 2009; Little, 2009; RTI Action Network, 2009; Florida Department of Education, 2008; Stecker, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006).
- **Progress monitoring.** Students' responsiveness to interventions should be monitored over time to determine if the academic or behavioral interventions are producing the desired effects. RTI experts recommend progress monitoring over final status measurement, based on the belief that growth during an intervention is more important than absolute performance at the end of an intervention. Progress of Tier 2, Tier 3, and borderline Tier 1 students should be monitored every two to four weeks using grade-appropriate measures and interventions should be modified for students who are not making adequate progress (Gersten et al., 2009a; RTI Action Network, 2009; Batsche, 2007; Torgesen, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006; Strangman et al., 2006).

Components of Quality Rtl Programs

No standard protocol has been mandated for directing the Rtl process. Presently, there is no universally accepted Rtl model, although each model generally involves implementation of research-based multi-tiered interventions, monitoring of student responsiveness to interventions, and consideration for special education services only after students fail to respond adequately (Kavale & Spaulding, 2008; Fuchs & Fuchs, 2001). In addition, quality Rtl programs are said to share the following characteristics.

Evaluation of local needs. Rtl is not a one-size-fits-all process and implementation varies within schools and districts. Local resources and strengths should be evaluated to determine the approach that will work best within each unique context (VanDerHeyden, 2009; Burns et al., 2005; Fuchs & Fuchs, 2001).

Collaboration between general and special education teachers. Rtl requires extensive collaboration between general and special education teachers. The Council for Exceptional Children (2007) recommended that general education teachers be responsible for Tier 1 interventions. At Tier 2, general education teachers should collaborate with special education teachers and other specialized personnel to design appropriate interventions. At Tier 3, special education teachers should play an integral role in providing appropriate educational services.

Burns and Ysseldyke's (2005) review of four large-scale RtI models (the Heartland Agency Model in Iowa, Ohio's Intervention-Based Assessment, Pennsylvania's Instruction Support Teams, and Minneapolis Public Schools' Problem-Solving Model) found that they all consistently emphasized the establishment of multidisciplinary collaborative teams. However, there was no consensus as to which professionals should make up the teams. In the four models, the general education teacher was the only consistently mandated member of the team. Depending on the RtI model implemented, other team members included special education teachers, school psychologists, school counselors, instructional support teachers, and principals.

Professional development. Teachers require high levels of professional expertise in order to implement RtI programs. Ongoing professional development should ensure that teachers have adequate content knowledge, ample opportunities to practice delivering instruction and interventions to students, and the skills needed to administer assessments and interpret their results. Teachers should also be provided with follow-up modeling and coaching, as well as regular times to collaborate with other teachers on RtI efforts (Gersten et al., 2009a; Reynolds et al., 2009; Carney & Stiefel, 2008; Florida Department of Education, 2008; Council for Exceptional Children, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006; Strangman et al., 2006).

States and districts are still grappling with the issue of how to provide large-scale teacher training and support. A survey of 424 districts nationwide conducted by the Council for Exceptional Children and Spectrum 12 found that lack of teacher training was reported as the biggest obstacle to RtI implementation. Most districts indicated that they were providing professional development as part of the RtI programs, but a majority of districts had trained fewer than 25 percent of their staff (Council for Exceptional Children, 2008a). Burns and Ysseldyke's (2005) review of four large-scale RtI models (in Iowa, Ohio, Pennsylvania, and Minneapolis, Minnesota) found that teachers and school personnel received extensive training on RtI implementation over a prolonged period (ranging from 4 to 10 years).

Leadership. Experts agree that RtI requires strong collaborative leadership to help staff develop an effective program, ensure that educators have the resources needed to implement RtI successfully, and build support and sustainability for the process (Florida Department of Education, 2008; Council for Exceptional Children, 2007; Torgesen, 2007).

Burns and Ysseldyke (2005) stated that implementation of RtI models "will require fundamental system change that, in turn, will require significant leadership. The need for leadership is not restricted to initial implementation of RtI, but is perhaps more important for sustaining RtI practices." They noted, however, that several questions still need to be answered. For example, should district leadership come from special education or from general education? What role should principals play and should they be given autonomy in administering RtI within their schools?

Parent Involvement. Proponents of RtI point out that the approach provides an opportunity to strengthen family-school relationships. As part of the RtI process, school staff work with families at the first sign of student difficulties, sharing their expertise and knowledge of students to support their learning. By the time students need Tier 3 interventions or a comprehensive evaluation, families and educators have long-established, positive relationships (Reschly, 2009; RTI Action Network, 2009). The Florida Department of Education (2008) has directed districts to communicate information obtained from progress monitoring to parents at regular intervals. The Department also requires that schools actively engage parents in all decisions regarding adjustments to interventions. According to the National Center for Learning Disabilities (as cited in the Council for Exceptional Children, 2007), parents should be provided with a written intervention plan when their child is first identified as academically or behaviorally at-risk. The written intervention plan should contain the following information:

- a description of the specific intervention;
- the anticipated number of weeks or months students will participate in each intervention;

- the number of minutes per day the intervention will be implemented;
- who will provide the intervention;
- where the intervention will be provided;
- the measures that will be used to determine student progress and a progress monitoring schedule; and
- how frequently parents will receive feedback on their children's progress at each tier.

Monitoring of program implementation and impact. Data should be gathered to determine the rigor with which programs are implemented, as well as their impact on special education referrals and students' academic and behavioral progress. Collected data should include (RTI Action Network, 2009; VanDerHeyden, 2009; Florida Department of Education, 2006):

- the accuracy with which students who need intervention are identified;
- documentation that interventions are implemented according to program specifications;
- the number of students responding positively to interventions;
- the effect of the Rtl program on the number of students referred for special education services;
- the number of teachers participating in Rtl-related professional development; and
- resources allocated to the program.

Cost Considerations

States and districts should plan and make provisions for the increased costs needed to support Rtl implementation. The Council for Exceptional Children (2008b) stated that sufficient resources must be available to cover a substantial percentage of the costs states and districts will incur when they implement Rtl, without reducing expenditures for other education programs. Fiscal needs in the following areas should be anticipated (Gersten et al., 2009a; Florida Department of Education, 2008):

- costs associated with professional development;
- substitute pay so staff can attend Rtl training;
- release time for staff for ongoing collaboration and planning;
- information and training provided to parents; and
- purchase and administration of screening and progress monitoring measures.

Critics contend that the resources needed to implement Rtl make the approach too costly to be implemented on any meaningful scale. However, the Florida Department of Education (2008) identified a list of potential funding sources districts should consider to help with the additional Rtl costs, including:

- Title I, Title II, and Title III funds to help support district Rtl activities;
- Reading First Grants;
- Individuals with Disabilities Education Act (IDEA) funds;
- Research-Based Reading Instruction Allocation (provided through the Florida Education Finance Program to ensure that reading is funded annually as part of the public school funding formula); and
- Annual School Improvement Allocations to School Advisory Councils (state funds that can be used to provide professional development and to pay for substitutes so faculty can attend Rtl training).

At the state level, the National Association of State Directors of Special Education and the Council of Administrators of Special Education (2006) suggested that state departments of education set aside IDEA discretionary funds or Title I, State Grants for Innovation, funds.

On the other hand, a cost analysis conducted by VanDerHeyden and associates (2007) indicated that implementation of Rtl programs would save districts a significant amount of money. The researchers compared the cost of full psychoeducational evaluations to the cost of Rtl assessments (schoolwide screening three times a year; performance/skill deficit assessments for students identified as at-risk; and individual assessment

for a subset of the most at-risk students) and concluded that implementation of an RtI model reduced assessment costs in Arizona's Vail Unified School District by approximately 50 percent. The researchers also estimated that the reduction in the number of students placed in special education following RtI implementation reduced the district's new student placement costs by 52 percent.

Research on the Effect of RtI on Student Outcomes

Many researchers maintain that RtI remains an experimental process and that more studies are needed to guide the adoption of RtI practices (Kavale & Spaulding, 2008; Fuchs & Deshler, 2007; Hollenbeck, 2007; Stecker, 2007; Scruggs & Mastropieri, 2006). The Council for Exceptional Children (2008b) stated: "Educators should consider the intended and unintended consequences of moving toward more wide-scale implementation without more research that demonstrates RTI's effectiveness over time."

Critics contend that much of the research conducted on RtI was based on highly structured treatment protocols that did not take into account real-world variability in the quality of instruction and resources. There appears to be a direct relationship between the extent to which schools adhere to RtI guidelines and the program's effect on student outcomes. In other words, the effects obtained depend on the degree to which RtI procedures are rigorously implemented (Gersten et al., 2009a; VanDerHeyden, 2009; Carney & Stiefel, 2008; Vellutino et al., 2007). Jimerson, Burns, and VanDerHeyden (2007) stated: "Implementation integrity will be the most significant obstacle to overcome when implementing RTI on a national level."

Burns and Ysseldyke's (2005) review of four large-scale RtI models found that adequate implementation appeared to be a key obstacle. None of the models included published procedures to ensure consistent implementation. The researchers concluded that "as of yet, how fidelity of RtI implementation would be assessed in practice remains an unanswered question."

Similarly, Coleman, Buysse, and Neitzel's (2006) synthesis of the research concluded that there was considerable variability across studies in how RtI was defined and implemented. Although there was general agreement about the basic principles and key components of RtI, there was little consensus regarding specific assessment or data monitoring procedures, the nature and focus of specialized intervention strategies, the duration and intensity of the interventions, and the benchmarks used for determining students' placement.

The state of North Carolina implemented the Positive Behavior Support (PBS) initiative in 691 schools and programs during the 2007-08 school year. Researchers from the North Carolina Department of Public Instruction found that levels of program implementation affected outcomes. Averaged across three years, office discipline referrals and levels of problem behavior were significantly higher in schools that did not meet PBS implementation standards compared to those that met the program's implementation standards (Reynolds et al., 2009).

Clonan and colleagues (2004) studied two anonymous urban, high-poverty elementary schools in their second year of PBS implementation. The PBS program was found to lead to decreases in office discipline referrals and problem behavior in one of the two schools, but no behavioral changes at the second school. The researchers hypothesized that differences in student outcomes at the two schools were the result of PBS program elements not being implemented to the same extent at the two locations.

Florida schools that were determined to have implemented the PBS Program "with fidelity" reported 40 percent fewer discipline referrals, in-school suspensions, and out-of-school suspensions, compared to schools that were determined not to have implemented the PBS project "with fidelity" (Florida Department of Education, 2008).

A brief review of research conducted on the impact of RtI on students' academic and behavioral outcomes is provided below.

Academic Outcomes

Coleman and colleagues' (2006) synthesis of the research conducted on Rtl concluded that there is an emerging body of empirical evidence to support claims that Rtl is an effective method for identifying children at risk for learning difficulties. Similarly, Burns and associates' (2005) meta-analysis found strong positive effects for Rtl programs.

Ample research exists to document the positive impact of one component of the Rtl process: academic interventions conducted in kindergarten and the early elementary grades. Researchers have demonstrated that children at-risk for long-term learning difficulties can be identified at an early age and that these difficulties can often be prevented when children are provided with supplementary remedial services (Simmons et al., 2008; Vellutino et al., 2007; Vadasy et al., 2006; O'Connor et al., 2005; Torgesen et al., 1999).

Wanzek and Vaughn's (2008) study on supplementary reading interventions is of special interest. The researchers randomly assigned students who were classified as "non-responders" to previous intensive reading interventions to either treatment or control groups. Treatment students received interventions designed to increase their reading proficiency. Students in the control group did not receive any additional reading interventions beyond their classroom instruction. As expected, students who received the interventions demonstrated significantly higher levels of accelerated reading than control group students. However, the researchers also compared students who received a single dose of the intervention (one 30-minute session daily) to students who received a double dose of the intervention (two 30-minute sessions daily) and found no significant post-intervention reading test score differences between the two groups of students. The authors concluded that increasing the intensity of interventions did not lead to increases in students' reading proficiency.

More specifically related to the Rtl process, researchers from the U.S. Department of Education's Institute of Education Sciences issued practice guides entitled *Assisting Students Struggling with Reading: Response to Intervention and Multi-Tier Intervention in the Primary Grades* (Gersten et al., 2009a) and *Assisting Students Struggling with Mathematics: Response to Intervention (Rtl) for Elementary and Middle Schools* (Gersten et al., 2009b). The guides offer specific recommendations to help educators implement Rtl models that promote reading and mathematics achievement. In addition, the strength of the research related to each recommendation is evaluated. Several of the Institute's key recommendations and research ratings are summarized below.

- **Screen all students for potential reading and mathematics difficulties and provide interventions to students identified as at-risk.**

The researchers judged the level of evidence for this recommendation to be moderate, based on correlational studies demonstrating that certain measures of reading and mathematics proficiency accurately predicted students' future performance. The researchers found, however, that reading measures tended to consistently over-identify students as needing assistance. Effective approaches to screening varied in efficiency, with some taking as little as five minutes to administer and others as long as 20 minutes.

- **Provide differentiated instruction for all students based on assessment of students' current achievement levels (Tier 1 intervention).**

The researchers judged the level of evidence for this recommendation as low. The panel found only one correlational study that examined how student reading growth varied by the degree to which teachers employed a specific differentiation program. The study found that the more teachers used assessment information, the greater their students' reading skill growth. Students' reading growth was found to be higher when teachers implemented programs according to rigorous standards.

- **Provide intensive, systematic instruction in small groups to students who score below the benchmark score on universal screening (Tier 2).**

The researchers judged the evidence supporting this recommendation as strong, based on 11 studies that found supplemental reading instruction supported Tier 2 intervention as a way to improve reading performance. Seven of the 11 studies found significant effects on at least one reading outcome (phonemic awareness, decoding, reading comprehension, reading fluency, or vocabulary). Six studies involved one-on-one instruction and five studies used small groups ranging from two to five students. Effect sizes were not found to be significantly higher for the one-on-one approach. Therefore, the researchers concluded that implementation of instruction in small groups is a more practical intervention approach.

- **Provide intensive instruction on a daily basis to students who show minimal progress after reasonable time in Tier 2 instruction (Tier 3).**

The researchers judged the evidence supporting this recommendation as low, based on five studies that found that intensive Tier 3 instruction had no significant impact on students' reading outcomes. The researchers concluded that studies reveal little about how to teach reading to the three to five percent of students with the most severe reading difficulties.

- **During interventions, provide students with explicit and systematic instruction.**

The researchers judged the level of evidence supporting this recommendation as strong, based on six studies that examined the effectiveness of explicit and systematic instruction in mathematics interventions, including teacher demonstration, student verbalization, guided practice, and corrective feedback. The studies showed that explicit and systematic instruction significantly improved proficiency in word problem solving.

- **Monitor the progress of Tier 2, Tier 3, and borderline Tier 1 students at least once a month, using grade-appropriate outcome measures.**

The researchers judged the evidence supporting this recommendation as low. In reading, 11 studies evaluated the effects of Tier 2 interventions, but only three reported using progress monitoring or mastery checks in instructional decision making. None of the studies demonstrated that progress monitoring was essential for students' success in Tier 2 reading interventions. However, studies showed that progress monitoring increased teachers' awareness of students' proficiency levels and had a positive effect on their instructional decisions. In mathematics, no studies were found to support this recommendation. The researchers concluded that, despite the lack of strong evidence, Tier 2, Tier 3, and borderline Tier 1 progress monitoring is essential for understanding whether interventions are effective or if modifications are needed.

Behavioral Outcomes

Positive Behavior Support (PBS) is a program that addresses students' disruptive behaviors and builds their social and emotional competence. PBS establishes a continuum of proactive, positive discipline procedures for all students. Benedict, Horner, and Squires (2007) studied 15 preschool classrooms in the Pacific Northwest (six Head Start classrooms, six community preschool classrooms, and three special ed classrooms). Implementation of PBS was not found to have an impact on the incidence of students' problem behaviors.

The state of North Carolina implemented the PBS initiative in 691 schools and programs during the 2007-08 school year. Researchers from the North Carolina Department of Public Instruction found that office discipline referrals, as well as in-school and out-of-school suspensions, decreased in schools implementing the PBS program. In addition, students in schools with low rates of office discipline referrals had significantly higher

end-of-grade reading scores than students in schools with high rates of office discipline referrals (Reynolds et al., 2009).

Clonan and colleagues (2004) studied two anonymous urban, high-poverty elementary schools in their second year of PBS implementation. The PBS program was found to lead to decreases in office discipline referrals and problem behavior at one of the two schools. At the second school, discipline referrals remained the same or increased. Based on observations and staff surveys, the researchers hypothesized that reasons for the lack of program success at the second school included less favorable teacher perceptions of contextual factors, such as school culture and leadership, and lower implementation levels.

Carney and Stiefel (2008) examined the long-term outcomes of 32 students who participated in an Instructional Support Teams (IST) program in a Midwestern elementary school. The IST program uses an academic and behavioral Rtl problem-solving model. The researchers found that only 20 percent of students referred to ISTs for behavioral reasons were functioning totally independent of additional levels of support after 3 ½ years, while 39 percent of students referred to ISTs for academic reasons were functioning independently after 3 ½ years. The researchers questioned the efficacy of using the IST model as the sole intervention for academically, and especially behaviorally, at-risk students.

Fairbanks and colleagues (2007) found that second grade students who displayed high rates of problem behaviors benefitted from more intensive behavioral interventions. Students whose problem behaviors were initially unresponsive to general classroom management practices were found to have longer intervals between problem behaviors after participating in an intensive, individually based intervention. The researchers concluded that their study corroborated the usefulness of an Rtl approach to social behavior screening and intervention. However, these results should be interpreted with extreme caution, as only 10 students were included in the study.

Research on the Effect of Rtl on Special Education Referrals

Since passage of the Education for All Handicapped Children Act of 1975 (renamed the Individuals with Disabilities Education Act [IDEA] in 1990), states were required to use the IQ achievement discrepancy model to identify students with learning disabilities. This model referred students with large discrepancies between their IQ scores and achievement levels for special education evaluations. Under the reauthorization of IDEA in 2004, however, the law was changed, allowing states and districts to use data from research-based interventions, such as Rtl, to identify learning disabilities (Hoover et al., 2008; Fuchs et al., 2007; Burns & Ysseldyke, 2005).

Proponents of Rtl claim it has many advantages over the discrepancy approach. First, students with learning disabilities are identified earlier because staff don't have to wait until an IQ achievement discrepancy is demonstrated to provide appropriate intervention. Under the discrepancy model, students often experienced years of failure in general education before they were identified as learning disabled and obtained more appropriate instruction in special education. Second, advocates of Rtl maintain that it offers a more accurate student classification system. They contend that the discrepancy model resulted in a large number of false positives, where low achievement reflected poor instructional practices rather than a disability. The discrepancy model also overlooked students with low achievement but no discrepancy. Finally, proponents claim that Rtl's focus on assessment helps to more effectively guide academic programming (Hoover et al., 2008; Batsche, 2007; Fairbanks et al., 2007; Fuchs et al., 2007; Stecker, 2007; National Association of State Directors of Special Education & Council of Administrators of Special Education, 2006; Strangman et al., 2006).

Researchers have not yet determined how Rtl impacts the percentage of students who qualify for special education services (Callender, 2007; Council for Exceptional Children, 2007). The Council for Exceptional Children (2007) reported that schools implementing Rtl have seen no change in the overall number of students receiving special education services. However, these schools have noted a substantial increase in

the number of students referred for special education in the first and second grades and a corresponding decrease in the number of students referred in the upper elementary grades.

Other studies have found that the number of referrals to special education decreased after RtI programs were implemented. For example, a study conducted by VanDerHeyden, Witt, and Gilbertson (2007) evaluated the use of a research-based RtI model, System to Enhance Educational Performance (STEEP), in an Arizona district's elementary schools. They found that fewer special education evaluations were conducted and that evaluated students were less likely to qualify for special education services when STEEP data were included in the decision-making process. The number of children identified as learning disabled decreased from 6 percent to 3.5 percent after one year of RtI implementation and this reduction was maintained over the following two years. Similarly, Tilly (2003, as cited in VanDerHeyden, 2006) reported a decline in the number of kindergarten through grade three Iowa students receiving special education services following implementation of a literacy-focused RtI model.

The Florida Department of Education (2008) reported that the implementation of key components of RtI through the Reading First Grant has led to a 40 percent decrease in special education placement rates in Florida schools. Torgesen (2007) studied 318 Florida elementary schools that implemented an RtI instructional model (Reading First). The percent of students identified as learning disabled decreased by what he considered to be a substantial amount after two years of RtI implementation at kindergarten and grades 1-3.

Kovaleski and colleagues (1996) analyzed Pennsylvania's Instructional Support Teams (IST) program, an academic and behavioral RtI problem-solving model. They found that referral rates for special education evaluations at IST schools throughout the state were reduced to between one-third and one-half of those of other schools. The vast majority (85 percent) of students referred to ISTs over a one-year period were not referred for special education evaluation. Fuchs and associates (2003) noted, however, that "this information is difficult to interpret because referral and placement numbers can be influenced by many administrative and political factors that have little to do with student performance."

Rock and Zigmond (2001) conducted a two-year follow-up of a sub-sample of 140 students who participated in Pennsylvania's IST program. They reported that overall, approximately one-third of the students referred to the program were placed in special education. However, IST interventions resulted in different rates of special education placement, depending on the reason for referral into the program: 42 percent of the students referred for academic reasons were placed in special education programs, while only 18 percent of students referred for problem behavior were placed in special education programs.

It is interesting to note that a survey of over 400 districts nationwide conducted by the Council for Exceptional Children and Spectrum 12 (2008a) found that 62 percent of responding districts reported they had insufficient data to determine the extent to which RtI reduced or increased special education referrals.

Directions for Future Research

Research on the effectiveness of RtI has left several important questions unanswered. For example, studies have not yet determined how RtI will be applied at the middle and senior high school levels (Council for Exceptional Children, 2007; National Research Center on Learning Disabilities, 2007; Stecker, 2007; Strangman et al., 2006; Burns & Ysseldyke, 2005). In addition, the primary focus in the majority of studies has been language and literacy, so much less is known about the applicability of RtI for students who experience difficulties in other domains, such as mathematics, social-emotional development, behavior, and other precursors of learning disabilities, including language delays, attention deficits, and self-regulation difficulties (Council for Exceptional Children, 2007; National Research Center on Learning Disabilities, 2007; Vellutino et al., 2007; Coleman et al., 2006; Strangman et al., 2006).

Studies have not clarified the procedures that should be followed when students succeed in a more intensive tier but perform poorly when moved back to a less intensive tier (Kavale & Spaulding, 2008; Council for Exceptional Children, 2007; Stecker, 2007). For example, Carney and Stiefel (2008) examined the long-term outcomes of a cohort of elementary students who participated in an RtI problem-solving model at a Midwestern elementary school. They found that over one-half of the students continued to receive either Tier 2 and Tier 3 interventions during each of the three subsequent years after their initial referral. The researchers concluded that their study highlighted one of the dilemmas faced by schools when implementing RtI initiatives - how to deal with students who respond to Tier 2 services, but don't qualify for special education services and can't successfully participate in mainstream classrooms.

On a Local Note

The Florida Department of Education (FLDOE) requires all districts to implement RtI. The state has adopted a three-tier, problem-solving RtI model that is expected to drive decisions regarding how students are served in Florida schools (Castillo & Hines, 2009).

Examples of state-level alignment with implementation of RtI include (Castillo & Hines, 2009):

- Florida's K-12 Reading Plan that provides guidance to school districts regarding how reading assessment and instructional practices should be integrated into a three-tiered service delivery model.
- Reading First grants awarded to Florida school districts that include requirements for schools to use evidence-based assessment and instructional practices to prevent reading difficulties in kindergarten through grade 3.
- Florida's Differentiated Accountability Plan that incorporates use of RtI into the strategies used to support low-performing schools.
- Florida's Positive Behavior Support (PBS) Project which uses a three-tiered, problem-solving approach to improve students' behavioral outcomes.
- Early Learning Success Initiative that focuses on building a strong foundation in reading and math by targeting standards, assessment, and instructional practices from pre-kindergarten to grade 3.

During the 2009-10 school year, Miami-Dade County Public Schools began the first year of a three-year rollout toward full RtI implementation. The Office of Professional Development and Educational Services is facilitating the District's implementation of the initiative, which began with collaboration in the development of School Improvement Plans in spring 2009 and four professional development sessions for principals during summer 2009. Based on feedback from the summer training sessions, supplemental support materials were provided to all principals that included sample case studies and a reference problem solving template for use with school site Leadership Teams. Additional district-wide training sessions will be forthcoming, targeting principals that did not attend one of the four summer sessions, as well as assistant principals.

Summary

RtI provides a framework upon which to structure high quality instruction and intervention for all students and a means by which to identify those in need of more intensive intervention. The process is characterized by the provision of increasingly intensive instruction matched to student needs and monitoring of student progress to determine if further intervention or referral for special education services is needed. RtI is mandated by the Florida Department of Education for all districts within the state of Florida and is currently being piloted or implemented in over 70 percent of school districts nationwide.

The RtI process is composed of a series of activities, including early screening of all students to identify those at risk for academic and/or behavioral difficulties; multi-tiered academic and/or behavioral interventions; and frequent monitoring of student progress. Although there is currently no universally accepted RtI model, quality RtI programs share several key components, including collaboration between general education and special education teachers; provision of professional development so teachers acquire the level of expertise needed to implement the framework; and the establishment of strong family-school relationships.

Researchers have cautioned that implementation of RtI models will increase state and district costs in areas such as professional development, parent training, and purchase and administration of screening and assessment tools. However, one study found that the reduction in the number of students evaluated for and placed into special education programs after implementation of an RtI program actually reduced district costs for these services by approximately 50 percent.

Research conducted on RtI suggests there is an emerging body of evidence to support claims that it is an effective method for identifying students at risk for learning difficulties. To date, there is less empirical support for RtI in the behavioral domain, since studies have produced conflicting results. Studies have, however, found a direct relationship between how rigorously schools adhere to RtI protocols and the program's impact on student outcomes. In fact, two of the biggest challenges associated with RtI implementation reported thus far have been implementation integrity and large-scale teacher training and support. Although researchers have not yet determined conclusively how RtI impacts the percentage of students who qualify for special education services, an increasing number of studies suggest that implementation of RtI programs leads to decreased referrals for special education services.

All reports distributed by Research Services can be accessed at <http://drs.dadeschools.net>.

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