Handbook of
Response to Intervention
Handbook of Response to Intervention
The Science and Practice of Assessment and Intervention

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Springer
This handbook is dedicated to the professionals who work diligently to educate and enhance the success of students and to the scholars who inform our understanding of how to promote the social and cognitive competence of students. Through bringing the best of science to professional practice, and highlighting lessons learned from implementation efforts across the country, it is hoped that the information presented in this handbook serves as a catalyst that advances the science and practice of assessment and intervention at school, and ultimately promotes enhanced student outcomes for all students.
Acknowledgments

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Finally, it is important that we acknowledge the tremendous support, inspiration, and perspective that our families provided throughout the development of this handbook. The collective adventures, celebrations, and challenges we have shared has enriched each of us; our sincere appreciation to Kathryn O’Brien, Gavin O’Brien Jimerson, Mary Beth Burns, Kathleen Burns, Matthew Burns, Jr., Chad VanDerHeyden, and Benjamin VanDerHeyden.
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Foreword

Response to Intervention (RTI) offers the best opportunity of the past three decades to ensure that every child, no matter how gifted or challenged, will be equally valued in an education system where the progress of every child is monitored, and individualized interventions with appropriate levels of intensity are provided to students as needed. Far too much attention has been focused on the different approaches to RTI by education leaders, researchers and implementers. It’s time to look to what is common in our work and unite together so this opportunity is not wasted. The best science will prove itself over time, but while the field is waiting for the evidence base to grow, RTI must advance in a responsible manner. This handbook includes 31 chapters with essential reading for all stakeholders seeking to increase their knowledge base about RTI. It is an excellent and timely resource. I challenge everyone to read it, and then follow-up with actions to ensure that every child benefits from RTI.

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Foundations of Problem-Solving and Response-to-Intervention Strategies
1 Response to Intervention at School: The Science and Practice of Assessment and Intervention

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Promoting the success of students is the primary focus of educational professionals. Systematically identifying individual needs and subsequently providing appropriate interventions is central to the task of enhancing student outcomes. With the reauthorization of the federal Individuals with Disabilities Education Act (IDEA), referred to as the Individuals with Disabilities Education Improvement Act (IDEIA; signed into law in December 2004), the process of identifying students with learning disabilities (LDs) is at the forefront of education issues in the United States. Regulations accompanying the reauthorized IDEIA permit the use of data (response) obtained when scientifically based intervention is implemented with a student (to intervention) to make eligibility decisions under LDs. The regulatory provision reflects a fundamental paradigm shift that closes the gap between instruction and assessment.

Although response to intervention (RTI) was only recently defined in federal regulations, the concept is well established in other fields, such as medicine, which focus on response to treatment. Therefore, this chapter and handbook addresses research and application of RTI in K-12 schools by identifying the importance of RTI as related to IDEIA, discussing the functions of RTI, examining the historical basis for RTI, providing contemporary definitions of RTI, and, finally, emphasizing the essential role of research in advancing the science and practice of assessment and intervention (critical components of RTI).

1.1 Importance of Response to Intervention at School

The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) allows local education agencies to use a student’s response to intervention (RTI) as part of the evaluation procedure for identifying students with specific learning disabilities [PL 108-446, Part B, Sec 614(b)(6)(b)]. The following excerpts from IDEIA highlight key changes regarding the assessment and identification of children with specific learning disabilities (portions in italic for emphasis).

SPECIFIC LEARNING DISABILITIES—(IDEIA; 614, b, 6, A, B)

(A) IN GENERAL—Notwithstanding section 607(b), when determining whether a child has a specific learning disability as defined in section 602, a local educational agency shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability in oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematical calculation, or mathematical reasoning.
(B) ADDITIONAL AUTHORITY—In determining whether a child has a specific learning disability, a local educational agency may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures described in paragraphs (2) and (3).

To further examine the role of RTI within special education, it is important to consider what exactly is special education? Federal special education mandates since P.L. 94-142 have all defined special education as “Individualized instruction, at no cost to the parents or guardians, to meet the unique needs of a child with a disability.” Thus, assessing student needs and designing instructional modifications to meet those needs is at the very core of special education. Moreover, the definition of specific learning disability within special education law has always included the provision that prior to consideration for special education it must be demonstrated that “the child was provided appropriate instruction in regular education settings” (§§ 300.309, Individuals with Disabilities Education Act (IDEA), 2004). This latter mandate has often been overlooked in practice, until RTI entered the national vernacular that is.

1.2 Functions of Response to Intervention at School

Although RTI was included in the federal definition of specific learning disabilities, to view it as only a diagnostic tool is too limiting. We suggest that RTI be considered the systematic use of assessment data to most efficiently allocate resources in order to enhance student learning for all students and to effectively identify those who are eligible for special education services.

1.2.1 Brief Background

Gresham (2007) provides a brief summary of the historical antecedents of RTI, including: the National Research Council (NRC) report (see Heller, Holtzman, and Messick, 1982) in which the validity of the special education classification system was evaluated; the LD Initiative that was sponsored by the Office of Special Education Programs (U.S. Department of Education), which resulted in a national conference held in Washington, DC, in 2001 (entitled the LD Summit); and the President’s Commission on Excellence in Special Education (2002) that recognized RTI as an alternative to IQ-achievement discrepancy in the identification of SLD.

RTI is most often conceptualized as falling into two basic approaches to delivering interventions: (a) problem-solving approaches and (b) standard protocol approaches (Fuchs, Mock, Morgan, and Young, 2003). The problem-solving approach is conceptualized as a systematic analysis of instructional variables designed to isolate target skill/sub-skill deficits and shape targeted interventions (Barnett, Daly, Jones and Lentz, 2004). In the standard protocol approach, a standard set of empirically supported instructional approaches is implemented to remediate academic problems.

Although this dichotomous view of RTI is somewhat common, most RTI models described in literature combine the two approaches (Burns and Coolong-Chaffin, 2006; Reschly, 2003), which appears to indicate that this dichotomy is somewhat artificial (Christ, Burns, and Ysseldyke, 2005). Problem solving is a term with a more general meaning than that presented by Fuchs et al. (2003). Deno’s (2002) seminal paper described problem solving as any set of activities that are designed to “eliminate the difference between ‘what is’ and ‘what should be’ with respect to student development” (p. 38). There is a fundamental difference between problem-solving and standard protocol approaches to RTI regarding the depth of problem analysis that occurs prior to the designing and implementing an intervention (Christ et al., 2005). However, both approaches are consistent with problem solving as described by Deno (2002), because both seek to reduce or eliminate the difference between what is and what should be. Thus, both approaches to RTI are actually problem solving and probably function optimally when integrated into one three-tiered service delivery system (O’Shaughnessy, Lane, Gresham, and Beebe-Frankenberger 2003).

What are commonly referred to as standard protocol interventions are actually standardized small-group interventions that can be implemented with 15% to 20% of the student population. This grouping and standardization allows for more intensive interventions that are provided in typical classroom instruction through a relatively cost efficient manner. Only when children fail to succeed in
these standardized approaches is it necessary to isolate and manipulate individual environmental variables through a problem analysis approach, or what is commonly referred to as problem solving. An effective general education core curriculum and quality instructional methodology, and an effective small-group standardized intervention should result in only approximately 5% of the student population requiring such an intensive data collection and analysis procedure (VanDerHeyden, Witt, and Gilbertson, 2007; VanDerHeyden, Witt, and Naquin, 2003).

1.3 Essential Role of Research in Advancing Science and Practice

Rather than attempting to identify how RTI models differ, it is time to examine what they have in common, because language regarding RTI within federal special education regulations is quite limited and vague. Some of the core concepts of RTI as identified by the National Research Center on Learning Disabilities (2002) include (a) students receive high-quality instruction in their general education setting, (b) general education instruction is research based, (c) school staff conduct universal screenings and continuously monitor progress, (d) school staff implement specific, research-based interventions to address student difficulties and monitor progress to determine if they are effective, and (e) the fidelity or integrity with which instruction and interventions are implemented is systematically assessed.

Whereas information provided by National Research Center on Learning Disabilities is helpful, clearly the operationalization and implementation of RTI requires further research and clarification. The U.S. Department of Education, Institute of Education Sciences (Institute of Educational Sciences, 2006) emphasizes the importance of systematic and experimental application of RTI: (a) across the full range of school curricula and content areas at the preschool, primary, elementary and secondary schooling levels; (b) in which empirically established interventions are implemented with high fidelity in various combinations under a range of task and performance conditions within a three-tiered framework across the full range of grade levels or age groups; (c) across all levels of instructional intensity, frequency, and duration (e.g., high, moderate, or low levels of intensity, frequency, and duration in the presentation of stimuli and opportunities to respond within fixed or varied amounts of instructional time); and (d) across a range of measures designed for initial screening and progress monitoring (p. 29).

Additionally, further research is needed regarding the implementation of RTI at the district and/or school levels. Burns and Ysseldyke (2005) identified several questions regarding RTI implementation including: (a) are there validated intervention models; (b) are there adequately trained personnel; (c) what leadership is needed for success; (d) when should due process protection begin; (e) is RTI a defensible endpoint in the identification process; (f) what implementation procedures are needed at the secondary level; (g) what role should parents have in the process; and (h) how should implementation integrity be viewed and assessed? Previous studies have addressed some of the questions, but others remain unanswered.

Many equate implementation integrity with treatment fidelity, but the former term is more accurate to use in RTI because data are needed to assess the integrity with which interventions are developed and implemented (Noell and Gansle, 2006). For example, previous research has examined the predictive validity of RTI data and early reading measures in predicting future reading difficulties and disabilities (Jenkins, 2003; McMaster, Fuchs, Fuchs, and Compton, 2005; Ritchey and Foley, 2006). However, Institute of Educational Sciences (2006) recommends further studies examining how the accuracy of risk prediction is affected by: (a) the assessment approaches (i.e., static, dynamic, progress monitoring) or combination of assessment approaches implemented within a classroom or school; (b) the measures administered and skills assessed within a specified domain at particular grade levels and times of the school year; and (c) decision rules for defining cut-scores and statistical techniques for analyzing student performance data that determine inadequate response, predict future difficulties, and result in acceptable levels of sensitivity (e.g., indicates percentage of children who will be identified as having a specific learning disability out of all the children who actually have one), specificity (e.g., indicates percentage of children who will be identified as not having a specific learning
disability out of all of the children who do not have one), false positive rates (e.g., indicates percentage of students who will be identified as having a specific learning disability out of all the children who actually do not have one), and false negative rates (e.g., indicates the percentage of children who will be identified as not having a specific learning disability out of all of the children who actually do have a specific learning disability) (p. 29).

Based on the extant empirical evidence, a number of key questions and principles are evident.

**Key questions regarding the implementation of RTI models.** There are many questions that remain to be addressed regarding wide-scale implementation, including:

1. What will be the effects be on student and systemic outcomes? Although research has been conducted on the effects of RTI approaches on both student (e.g., increasing student reading, decreasing student difficulties) and systemic (e.g., reducing the number of referrals to and placements in special education) outcomes with positive effects (Burns, Appleton, and Stehouwer, 2005), these studies focused primarily on existing models with little experimental control. Thus, additional research is needed that examines the effects of RTI on systemic outcomes in tightly controlled studies. Moreover, very few studies used randomization or control groups.

2. What will be the effects be on educational professionals? Reschly (2003) presented data regarding the effect that practicing in an RTI model had on the functions of school psychologists and Burns and Coolong-Chaffin (2006) discussed specific activities that school psychologists should engage in when using an RTI model. However, few data have been published regarding the roles and outcomes for other personnel. Moreover, how will RTI affect training programs? Do training programs graduate professionals with the skill set necessary to competently participate in RTI; and if not, how should the training change? Previous studies demonstrated that training preservice special education teachers in reading tutoring and curriculum-based measurement led to improved knowledge about reading instruction (Al Otaiba and Lake, 2006), but little is known about the frequency with which these skills are taught in training programs.

**Principles regarding the implementation of RTI models.** Successful wide-scale implementation will take considerable, time, resources, leadership, planning, preparation of professionals, and empirical evidence.

**Time.** Efforts to implement various RTI models (including Florida, Idaho, Iowa, Michigan, Ohio, Pennsylvania, and Minnesota) reveal that the process typically takes years, or even decades, and is better characterized as a dynamic ongoing process, rather than an event that is completed on a given date. Moreover, the more comprehensive the RTI model, the greater the duration to prepare, implement, and evaluate. School districts may benefit from implementing RTI procedures on a small scale with high quality while building local capacity for implementation on a wider scale.

**Resources.** States that appear to have made the most progress in implementing RTI models have also invested considerable resources. For example, Florida implemented a series of initiatives and invested millions of dollars during the past decade that have set the foundation for current efforts to implement RTI models state-wide, and the current funds invested in the implementation efforts involve millions of dollars each year. Other states have implemented smaller grant initiatives.

**Leadership.** Each of the states that have made significant efforts to implement RTI models (e.g., Florida, Michigan, and Ohio) includes strong leadership at the state level. This leadership is typically reflected at multiple levels of education in the state (e.g., State Department of Education, university faculty, and school administrators). Representation, buy-in, and contributions of multiple stakeholders are each important facets that may be facilitated by leaders. Moreover, successful state initiatives have been supported with considerable technical support from the State Department of Education, often in collaboration with a university.

**Planning.** Strategic plans for the preparation of professionals involved and implementation procedures are important for implementing RTI models. Research and focus are needed on pre-service professionals. In-service training was critical to previously successful RTI implementation, and this will continue to be critical to successful RTI implementation as professionals working in the field acquire the skills necessary to successfully implement RTI.
Preparation of professionals. Implementation requires training to provide essential knowledge and skills to educational professionals who will be responsible for implementing RTI models. Curricula of general education teachers, special education teachers, and school psychologists should address effective instruction in general and across multiple topical areas, data-based instructional decision making, involvement in effective problem-solving teams, individual differences for learners, school–home collaboration, and making instructional modifications to accommodate diversity within general education. Some of the specific skills associated with RTI (e.g., curriculum-based assessment and measurement, reading interventions) are perhaps best learned through case-based and service-learning activities (Al Otaiba, 2005). Thus, internships in teaching and school psychology training programs should include an RTI focus.

Empirical evidence. Quantifying the empirical base for RTI presents considerable challenges, as it is essential to identify the standards or criteria that will be used in determining evidence-based practices. One source of information is the extant literature base, but future RTI efforts must incorporate emerging empirical evidence regarding assessment and intervention strategies. There is a strong research base for many practices within the areas of reading instruction, reading assessment, and interventions for exceptional learners. However, more is needed regarding: small-group interventions for children at risk for reading failure; effective problem-solving practices; effective school-based screening and interventions for youth with social, emotional, and behavioral problems; and effective interventions for youth in secondary schools.

Evaluation. Systematic formative and summative evaluation of RTI implementation is essential to further understanding critical features of models. Establishing evaluation measures and processes to be shared throughout and across states would be especially valuable in advancing knowledge of processes and student outcomes associated with various RTI models.

The findings of the President’s Commission on Excellence in Special Education (2001) emphasized that special education needs to focus on outcomes rather than processes. In addition, we believe process data are important when it comes to RTI. There is a growing consensus that implementation integrity will be the most significant obstacle to overcome when implementing RTI on a national level (Burns, Vanderwood, and Ruby, 2005; Burns and Ysseldyke, 2005; Noell and Gansle, 2006; Ysseldyke, 2005). Thus, assessing the fidelity with which RTI models are implemented will be critical to its success.

1.4 Conclusions

Educational practices are already being modified; however, there is a paucity of resources that synthesize essential knowledge regarding the conceptual and empirical underpinnings of RTI and actual implementation. In many ways, it appears that recent legislation and many RTI initiatives during the past decade serve as a catalyst for further efforts and future scholarship to advance understanding of the science and practice of assessment and intervention at school. The Handbook of Response to Intervention (Jimerson, Burns, and VanDerHeyden, 2007) provides a collection of chapters that address essential aspects of RTI.

RTI models have considerable promise for screening, intervention service delivery, and catalysts for system change. Research is needed to articulate purposes, operationalize procedures and judgments, and evaluate the decision-making utility of the models in practice. It is important to articulate how RTI can be judged (which behaviors to measure, how frequently, for how long, under what stimulus conditions, and compared with what reference group using what units of measurement) and demonstrate that this judgment is functionally meaningful (VanDerHeyden and Jimerson, 2005). Whereas the roots of RTI are discernible in a research base that stretches back over the last 30 years in the areas of behavior analysis, precision teaching, direct instruction, curriculum-based assessment, measurement, and evaluation, and effective teaching, RTI remains today an evolving science of decision-making. Over time, consensus may emerge about the purposes of RTI, the best ways to operationalize the independent variable or variables under RTI, and how technical adequacy of RTI implemented in schools can best be evaluated (VanDerHeyden, Witt, and Barnett,
2005). Today’s schools operate within a challenging context that is best addressed by adherence to scientific principles and consistent implementation of the scientific method to examine system and individual variables (Ysseldyke et al., 2006). In other words, science should inform practice and practice should inform science. It is our intent that this handbook will do just that for RTI in order to advance both science and practice, and enhance the lives of the children we serve.

References


2 Evolution of the Response-to-Intervention Concept: Empirical Foundations and Recent Developments

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Traditionally, schools address students’ academic and behavioral difficulties in terms of a predictable three-stage process that can be described as a “refer-test-place” approach. That is, students presenting academic and/or behavior problems are referred to a child study team that offers recommendations for an intervention to resolve the problem. Very often, however, these interventions are not evidence based and are often ineffective in solving the referral concern. These ineffective interventions then are followed by an official referral to a school psychologist or an assessment team to determine whether the student meets eligibility requirements for special education under a designated disability category (typically specific learning disabilities, emotional disturbance (ED), or mild mental retardation). Finally, if a team believes that the student is eligible for special education and related services, he or she is placed into special education and an individualized educational plan (IEP) is written (see Bocian, Beebe, MacMillan, and Gresham, 1999).

The aforementioned process has been the most common process in determining special education eligibility and placement since 1975, when the Education of All Handicapped Children Act was passed (Public Law 94-142). Despite over 30 years of experience with this approach, there are some major drawbacks and disadvantages inherent in this process. This approach often penalizes students by using arbitrary eligibility criteria that many times result in delaying services and often providing these students with ineffective and scientifically baseless interventions to remediate their academic and behavioral difficulties (Denton, Vaughn and Fletcher, 2003; Gresham, 2002; Vaughn and Fuchs, 2003).

The purpose of this chapter is to present the evolution of the response to intervention (RTI) concept and discuss how that concept can be and is being used to provide more effective services to children and youth with both academic and social/behavioral difficulties. A definition of RTI is provided, along with a brief discussion of the historical antecedents of RTI in the literature. RTI is described as being presented in either a problem-solving or standard protocol approach; however, some applications of this process use a combination of both approaches. Recent empirical support for using RTI principles is described, along with measurement challenges that present themselves when applying RTI to make intervention and eligibility determinations for both academic and behavioral difficulties.

2.1 Conceptual and Definitional Aspects of Response to Intervention

RTI is based on the notion of determining whether an adequate or inadequate change in academic or behavioral performance has been achieved because of an intervention (Gresham, 1991, 2002). In an RTI approach, decisions regarding changing or intensifying an intervention are made based on how well or how poorly a student responds to an evidence-based intervention that is implemented with integrity. RTI is used to select, change, or titrate interventions based on how the child responds to that intervention.
RTI assumes that if a child shows an inadequate response to the best interventions available and feasible in a given setting, then that child can and should be eligible for additional assistance, including more intense interventions, special assistance, and special education and related services. RTI is not exclusively used to make special education entitlement decisions, although it may be used for this purpose.

RTI is not a new concept in other fields. The field of medicine provides a particularly salient example of how physicians utilize RTI principles in their everyday practice to treat physical diseases. Physicians assess weight, blood pressure, and heart rate every time they see a patient because these three factors are important indicators of general physical health and have scientifically well-established benchmarks for typical and atypical functioning. If weight and blood pressure exceed established benchmarks, then physicians may recommend that the patient diet, exercise, and quit smoking. The next time the patient sees the physician, these same indicators are measured; if the indicators show no change, then the physician may place the patient on a specific diet and exercise regimen and tell the patient to stop smoking. The next time the physician sees the patient these same indicators are measured; if they still show no change, then the physician may put the patient on medication, refer to a dietician, and send the patient to a smoking cessation clinic. Finally, the next time the physician sees the patient these same indicators are taken; if they are still in the atypical range, then, upon further assessments, the patient may require surgery to prevent mortality. Several important points should be noted in considering the above example. First, intervention intensity is increased only after data suggest that the patient shows an inadequate response to intervention. Second, treatment decisions are based on objective data that are collected continuously over a period of time (data-based decision-making). Third, the data that are collected are well-established indicators of general physical health. Finally, decisions about treatment intensity are based on the collection of more and more data as the patient moves through each stage of treatment intensification. RTI can and should be used in a parallel manner in schools to make important educational decisions for children and youth.

2.2 Historical Antecedents of Response to Intervention

The basis of the RTI approach, at least in special education, can be traced back to the National Research Council (NRC) report (see Heller, Holtzman, and Messick, 1982), in which the validity of the special education classification system was evaluated on the basis of three criteria: (a) the quality of the general education program, (b) the value of the special education program in producing important outcomes for students, and (c) the accuracy and meaningfulness of the assessment process in the identification of disability. Vaughn and Fuchs (2003) suggested that the first two criteria emphasized the quality of instruction (both general education and special education), whereas the third criterion involved judgments of the quality of instructional environments and the student’s response to instruction delivered in those environments. The third criterion described in the NRC report is consistent with Messick’s (1995) evidential and consequential bases for test use and interpretation. That is, there must be evidential and consequential bases for using and interpreting tests in a certain way. If these bases exist to a sufficient degree, then we may conclude that there is sufficient evidence for the validity of a given assessment procedure.

Speece (2002) described problems with IQ-achievement discrepancy in terms of unintended social consequences, such as the difficulty of young children qualifying under this criterion and the overrepresentation of males and minority children using this approach. Additionally, there are concerns that the discrepancy approach does not inform instructional decisions that might be used to improve student outcomes (Gresham, 2002). Heller et al. (1982) argued that a special education classification might be considered valid only when all three criteria are met.

2.2.1 Concept of Treatment Validity

Fuchs and Fuchs (1998) argued for a reconceptualization of the learning disabled (LD) identification process based on a treatment validity criterion. This approach does not classify as LD unless and until it has been demonstrated empirically that they are not
benefiting from the general education curriculum. Treatment validity (sometimes called instructional utility) can be defined as the extent to which any assessment procedure contributes to beneficial outcomes for individuals (Cone, 1989; Hayes, Nelson, and Jarrett, 1987). A central feature of treatment validity is that there must be a clear and unambiguous relationship between the assessment data collected and the recommended intervention. Although the notion of treatment validity evolved from the behavioral assessment literature, it shares several common features and concepts with the traditional psychometric literature.

First, treatment validity is based, in part, upon the idea of incremental validity, in that it requires that an assessment procedure improve prediction beyond existing assessment procedures (Sechrest, 1963). As will be discussed later, a major advantage of an RTI approach is the collection of additional information over time that adds incremental validity to the assessment process. Second, treatment validity involves the concepts of utility and cost–benefit analysis that are common concepts in the personnel selection literature (Mischel, 1968; Wiggins, 1973). Third, treatment validity involves Messick’s (1995) notion of the evidential and consequential bases of test use and interpretation as it relates to construct validity, relevance/utility, and social consequences of testing. It should be noted that an assessment procedure might have adequate evidence for construct validity, but have little, if any, relevance or utility for treatment planning (i.e., absence of treatment validity). As will be described later, all cognitive ability tests suffer from this fatal flaw of treatment invalidity (see Cronbach, 1975; Gresham and Witt, 1997; Reschly and Ysseldyke, 2002).

For any assessment procedure to have treatment validity, it must lead to identification-relevant areas of concern (academic or behavioral), inform treatment planning, and be useful in evaluating treatment outcomes. Traditionally, many assessment procedures in applied psychology have failed to demonstrate treatment validity because they do not inform instructional and behavioral intervention practices (Cronbach, 1975; Gresham, 2002). The concept of RTI depends largely upon the treatment validity of measures used to determine adequate or inadequate treatment response.

2.2.2 Operationalizing of the National Research Council Criteria

Fuchs and Fuchs (1997, 1998) operationalized the NRC criteria by using a curriculum-based measurement (CBM) approach that measures a student’s responsiveness or unresponsiveness to intervention delivered in the general education classroom. In earlier work, Fuchs (1995) compared the RTI approach with the practice used in medicine, whereby a child’s growth over time is compared with that of a same-age group. A child showing a large discrepancy between his or her height and that of a normative sample might be considered a candidate for certain types of medical intervention (e.g., growth hormone therapy). In education, a child showing a discrepancy between the current level of academic performance and that of same-age peers in the same classroom might be considered a candidate for special education. It should be noted that a low-performing child who shows a growth rate similar to that of peers in a low-performing classroom would not be considered a candidate for special education because the child is deriving similar educational benefits from that classroom (Fuchs, 1995). Thus, employing an IQ-achievement discrepancy criterion using national norms may identify this child as LD, whereas using an RTI approach using local norms would not.

Unlike traditional LD assessment, which measures students at one point in time using ability, achievement, and processing measures, the treatment validity approach repeatedly measures the student’s progress in the general education curriculum using CBM. Special education is considered only if the child’s performance shows a dual discrepancy (DD), in which performance is below the level of classroom peers and the student’s learning rate (growth) is substantially below that of classroom peers.

The CBM-DD model for determining LD eligibility consists of three phases. Phase I involves the documentation of adequate classroom instruction and dual discrepancies. This phase meets the first criterion of the NRC report involving the adequacy of the general education curriculum (Heller et al., 1982). During this phase, overall classroom performance is compared with the performance relative to other classrooms or district norms. If classroom
performance is adequate, then individual student data are evaluated to determine the presence of a DD based on: (a) a difference of one standard deviation between a student’s CBM median score and that of classmates (level) and (b) a difference of one standard deviation between a student’s CBM growth (slope) and that of classmates. Students meeting these criteria and who do not have accompanying exclusionary conditions (e.g., mental retardation, sensory disabilities, autism) move on to Phase II of the process.

Phase II of this process involves implementation of a prereferral intervention focusing on remediating the student’s DD. CBM data are collected to judge the effectiveness of the intervention with the provision that the teacher implements a minimum of two interventions over a 6-week period. If a student does not show an adequate response to intervention in terms of level of slope, then the student enters Phase III of the process.

Phase III involves the design and implementation of an extended intervention plan. This phase represents a special education diagnostic trial period in which the student’s responsiveness to a more intense intervention is measured. This phase often lasts 8 weeks, after which a team reconvenes and makes decisions about the student’s most appropriate placement. The team could decide that the intervention was successful and an IEP would be developed and the plan continued. Alternatively, the team could decide that the intervention was unsuccessful in eliminating the DD and consider alternative decisions, such as changing the nature and intensity of the intervention, collecting additional assessment information, considering a more restrictive placement, or changing to a school having additional resources that better addresses the student’s needs. In this CBM-DD model, a student qualifies for LD if he or she passes a three-pronged test: (a) a DD between the student’s performance level and growth (one standard deviation for each), (b) the student’s rate of learning with adaptations made in the general education classroom is inadequate, and (c) the provision of special education must result in improved growth. Speece and Case (2001) provided further validity evidence for the CBM-DD model in identifying students as LD. Children were identified as being at risk for reading failure if their mean performance on CBM reading probes placed them in the lower quartile of their classes. A contrast group was identified that included five students from each classroom based on scores at the median (two students) and the 30th, 75th, and 90th percentiles (one student at each level). At-risk students were placed into one of three groups: CBM DD (CBM-DD), regression-based IQ-reading achievement discrepancy (IQ-DS), and low achievement (LA). Students in the CBM-DD group were given 10 CBM oral reading probes administered across the school year. Slopes based on ordinary least-squares regression for each child and classroom were computed and each student’s performance level was based on the mean of the last two data points. Children were placed in the CBM-DD group \( (n = 47) \) if their slope across the year and level of performance at the end of the year was greater than one standard deviation below that of classmates. Students were placed in the IQ-DS group \( (n = 17) \) if their IQ-DS was 1.5 or more standard errors of prediction (approximately a 20-point discrepancy). Children were placed in the LA group \( (n = 28) \) if their total reading score was less than a standard score of 90.

Speece and Case (2001) showed that students in the CBM-DD group were more deficient on measures of phonological processing and were rated by teachers as having lower academic competence and social skills and more problem behaviors than students in the IQ-DS and LA groups. The CBM-DD and IQ-DS groups were not different on a standardized measure of reading achievement demonstrating the sensitivity of the CBM-DD model. These data offer further support for the CBM-DD model to identify students as LD, specifically those with phonological deficits. In later commenting on this study, Speece, Case, and Molloy (2003, p. 150) stated:

...by focusing on both level and growth in reading achievement as indexed by CBM, a valid group of children who experience reading problems was identified. Although much simpler identification methods would be preferred, other analyses indicated that single indicators of reading difficulty (letter sound fluency, oral reading fluency, phonological awareness) were not sensitive indicators of either DD or status as problem readers... The dual discrepancy method would require major challenges in the way children are identified; however, our initial evidence suggests that benefits may outweigh the costs of change.
2.2.3 The Learning Disabilities Summit

The RTI concept received further attention as a viable alternative to the IQ-achievement discrepancy approach from the LD Initiative that was sponsored by the Office of Special Education Programs (US Department of Education). The LD Initiative was a working group meeting held in Washington, DC, in May, 1999, and was attended by numerous researchers and leaders in the field over a 2-day period. Based on the LD Initiative, a national conference was held in Washington, DC, in August, 2001, entitled the LD Summit. Nine white papers were written and presented over a 2-day period to a group of LD professionals and stakeholders from all over the US. One paper (Gresham, 2002) specifically addressed the literature on responsiveness to intervention that was responded to by four professionals within the field of LD (Fuchs, 2002; Grimes, 2002; Vaughn, 2002; Vellutino, 2002). This paper argued that a student’s inadequate response to an empirically validated intervention implemented with integrity can and should be used as evidence of the presence of LD and should be used to classify students as such. Gresham (2002) maintained that RTI was a viable alternative to defining LD, particularly in light of the myriad of difficulties with discrepancy-based models that were and are currently being used to identify this disability.

Subsequent to the LD Summit, the President’s Commission on Excellence in Special Education (2002) emphasized RTI as a viable alternative to IQ-achievement discrepancy in the identification of LD. In December, 2004, President Bush signed into law the reauthorization of the Individuals With Disabilities Education Improvement Act (IDEIA, 2004). The law now reads with respect to specific learning disabilities:

Specific learning disabilities: (A) General: Notwithstanding section 607 of this Act, or any other provision of law, when determining whether a child has a specific learning disability as defined under this Act, the LEA shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability in oral expression, listening comprehension, reading recognition, . . . (B) Additional Authority: In determining whether a child has a specific learning disability, a LEA may use a process which determines if a child responds to a scientific, research based intervention. (Emphases added)

Clearly, the reauthorized version of IDEIA does not require nor does it eliminate IQ-achievement discrepancy as a basis of identifying children with LD. Moreover, it allows, but does not require, school districts (LEAs) to use an RTI approach to identifying LD.

2.3 Response-to-Intervention Models

There are two basic approaches to delivering interventions within an RTI model: (a) problem-solving approaches and (b) standard-protocol approaches (Fuchs, Mock, Morgan, and Young, 2003). These two approaches are described in the following section. Some RTI models combine the two approaches, particularly within a multi-tier model of service delivery, and may be particularly useful in school settings (Barnett, Daly, Jones, and Lentz, 2004; Duhon et al. 2004; Noell et al., 1998; Van DerHeyden, Witt, and Naquin, 2003). These models are best described as multi-tier RIT approaches to intervention.

2.3.1 Problem-Solving Approaches

Problem solving can be traced back to the behavioral consultation model first described by Bergan (1977) and later revised and updated by Bergan and Kratochwill (1990). Behavioral consultation takes place in a sequence of four phases: (a) problem identification, (b) problem analysis, (c) plan implementation, and (d) plan evaluation. The goal in behavioral consultation is to define the problem in clear, unambiguous, and operational terms, to identify environmental conditions related to the referral problem, to design and implement an intervention plan with integrity, and to evaluate the effectiveness of the intervention (Bergan and Kratochwill, 1990). More recently, the behavioral consultation model was described by Tilly (2002) in the form of four fundamental questions governing the identification and intervention of school-based academic and behavioral problems: (a) What is the problem? (b) Why is the problem happening? (c) What should be done about it? (d) Did it work? Each of these problem-solving steps is described briefly in the following section.