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RESPONSE TO INTERVENTION

by

Sarah Iannuzzi

A Thesis

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Thesis Chair: Dr. Marjorie Madden

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Abstract

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RESPONSE TO INTERVENTION
2014-2015
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Master of Arts in Reading Education

The purpose of this conceptual study was to determine the effectiveness of Response to Intervention. The history of Response to Intervention, research studies on a variety of Response to Intervention models, areas for further research and implications for the future of Response to Intervention are analyzed in this extensive literature review.

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Chapter 1

Introduction to the Study

Response to Intervention (RTI) has intrigued researchers, educators and policy makers since the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004. There has been controversy about the type of assessments used to screen students and whether a brief screening was enough information to determine if a student needed intervention (Fuchs & Vaughn, 2012), how progress would be noted whether through progress monitoring or other assessments (Fuchs & Vaughn, 2012), and how to identify students as learning disabled within this RTI model (Fuchs & Vaughn, 2012). Due to these unanswered issues and through personal experience I wondered, "How effective is the RTI framework in identifying intervention students and meeting their needs in a K-5 elementary school setting?"

Research Method

The research method used was a conceptual study. Research was conducted through reading peer-reviewed journal articles and books on Response to Intervention. Articles and books were read, reviewed and examined to make conclusions about the effectiveness of Response to Intervention. Also, implications for the future of RTI and gaps in research of RTI were determined and analyzed. Search terms such as "Response to Intervention", "RTI", "interventions", "Response to Intervention models" were used to conduct searches for journal articles.

Background Information

History of RTI. The history of RTI begins with the Education of All Handicapped Children Act of 1975 (Public Law 94-142). This law mandated a "free and

appropriate education for students with disabilities; an education in the least restrictive environment; due process rights for parents; and access to adequate and nondiscriminatory evaluation procedures" (Kratochwill, Clements, & Kalymon, 2007, p. 27-28). The law also required an IQ-discrepancy evaluation to determine if students were learning disabled (Kratochwill, Clements, & Kalymon, 2007). This IQ-discrepancy model evaluated student ability and how he or she performed on cognitive tests. If there is a discrepancy between the two, student academic performance and outcomes of cognitive tests, it was determined that the student had a specific learning disability (O'Donnell & Miller, 2011). In the years following the establishment of the Education of All Handicapped Children Act of 1975 an influx of students were being classified for special education services. Research indicates that once LD (learning disability) was included in the Education of All Handicapped Children Act of 1975 the portion of students labeled as LD increased greatly, "…from less than 2% in 1976–1977 to more than 6% in 1999–2000" (Fuchs & Fuchs, 2006, p. 96). This increase included a disproportionate amount of ELL and disadvantaged students. This law was later renamed the Individuals with Disabilities Education Improvement Act of 1991, then reauthorized in both 1997 and 2004 (Kratochwill, Clements, & Kalymon, 2007).

The reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004 introduced an alternate method of identifying students as learning disabled. Lawmakers were looking for another way to identify SLD (specific learning disability) children other than using the IQ-discrepancy method or "wait to fail" model (Hughes and Dexter, 2011). An alternative to the IQ-discrepancy model was introduced with RTI because critics argued there was no consensus on what constituted as a

discrepancy between states and controversial issues with IQ testing were evident (O'Donnell & Miller, 2011; Fuchs and Fuchs, 2006). Furthermore, Fuchs and Fuchs (2006) criticize the IQ-discrepancy model as not theory- based, but rather a "wait-to-fail" model in which students have to continually fail in the classroom before they are evaluated, and that students may being doing poorly because of poor instruction not, in fact, having a learning disability. A growing concern about the IQ-discrepancy model had been voiced and an alternative to the using this controversial model to identify students for special education services was needed.

IDEIA 2004 does not prohibit the use of the IQ-discrepancy model, but allows for an alternative method for determining student eligibility for special education services (Kratochwill, Clements, & Kalymon, 2007). In the IDEIA 2004 law it states:

"Sec. 614. Evaluation, Eligibility Determinations, Individualized Education Programs, and Educational Placements "(b) Evaluation Procedures.— (6) Specific Learning Disabilities.— (A) In general.—Notwithstanding section 607(b), when determining whether a child has a specific learning disability as defined in section 602 (29), 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)." (Coleman, Buysse, & Neitzel, 2006, p. 11-13).

The law requires “appropriate,” “scientific, research-based” instruction, by “qualified personnel” (Federal Register 2006, p. 46786).” The IDEIA 2004 law proposes that RTI can both identify LD students and prevent over identification of students through the use of scientifically research-based instruction (Johnston, 2010). Also, the 2004 IDEA law ruled that 15% of a school district’s allotted budget can be used to general education interventions (Johnston, 2010). Additionally, the 2004 IDEIA law is flexible regarding the procedures of the RTI framework because it does not designate a specific structure or tiers and leaves it up to the school district to decide what structure fits their needs best.

Organization of the Thesis

Chapter 2 addresses theoretical foundations of RTI, the types of RTI models, an overview of RTI and its procedures, and conclusions from research. Chapter 3 describes the types of RTI models (problem-solving, standard protocol, hybrid) and presents an example of each type of RTI model. Finally, Chapter 4 explains research conclusions regarding RTI, gaps in research and future implications for the implementation of RTI models in today’s schools.

Chapter 2

Review of the Literature

Determining a learning disability has historically been a controversial topic in education. With a disproportionate amount of disadvantaged students being labeled as learning disabled and criticisms regarding the IQ-discrepancy model to identify students with learning disabilities a change in the process of determining a specific learning disability was needed. In addition, if a student was not learning disabled, but clearly struggling academically, alternative interventions were needed. Response to Intervention or RTI is a framework that allows for both of these issues to be addressed. This review of literature on Response to Intervention begins with the theoretical underpinnings of the RTI model. Following the theory behind the RTI framework is the history of its rise in the education field. Finally, an overview of the RTI framework and its components are examined.

Theoretical Foundations of RTI

Behavior modification. Kratochwill, Clements, & Kalymon (2007) state the data-based decision making model and the problem-solving model of RTI both stem from the broader behavior modification model. A behavior modification model includes identifying a problem, providing an intervention, and evaluating that intervention (Kratochwill, Clements, & Kalymon (2007). Furthermore the foundation of RTI can be traced back to Bergan's behavioral consultation model or problem-solving model (Kratochwill, Clements, & Kalymon, 2007; Coleman, Buysse, Neitzel, 2006). There are many RTI models that follow the problem-solving process. This type of evidence and

data-based decision making has its roots in psychology and education (Kratochwill, Clements, & Kalymon (2007). The problem-solving model also has roots in behavior-modification or behavior-therapy (Kratchowill & Bergan, 1990). In the behavioral consultation model, the consultant uses a problem-solving approach to treat behavior and academic issues (Kratchowill & Bergan, 1990). Kratchowill & Bergan (1990) describe the problem-solving process as, "… (1) problem identification; (2) problem analysis; (3) treatment implementation; and (4) treatment evaluation" (p. 34).

RTI Overview

RTI was chosen has an alternative way to identify students needing special education services for many reasons. RTI is a preferred method of identifying LD students over the discrepancy model because students are provided with specific interventions to give them a chance to make progress before making them "wait to fail" as is what happens in the discrepancy model (Coleman, Buysse, and Neitzel, 2006). Another goal of instituting an RTI framework was to partially prevent an overrepresentation of minorities in special education. Students are provided with scientifically based sound instruction and if they do not make progress they get additional instruction. Only then when they have spent a sufficient amount of time receiving interventions and have not made any progress will they be evaluated. By going through each Tier in RTI the goal is to limit the amount of students being identified as LD. RTI benefits all students. It provides interventions for all students and differentiates between students who are truly in need of special services and students who may only need interventions because they had received insufficient instruction and do not have a

learning disability. All students receive scientific research-based instruction (Coleman, Buysse, Neitzel, 2006).

Critical components of RTI include: 1. a variety of school staff working together through a problem-solving process; 2. assessments and progress monitoring to plan instruction throughout the tiers; 3. research-based interventions and curriculum; 4. use of fidelity when implementing instruction or interventions; and 5. involvement of parents in the process (Coleman, Buysse, Neitzel 2006).

In the 2004 IDEIA law there is no specific type of RTI model that must be followed. There are many different types of RTI models, but they all generally consist of these components: assessment through universal screenings, progress monitoring, standard protocol or problem solving interventions, and a three tier system, although some models have more than three tiers (Coleman, Buysse, Neitzel 2006). Overall there is at least one tier that occurs in the general classroom setting and one tier that encompasses a special education setting, usually the last tier (Coleman, Buysse, Neitzel 2006).

RTI has been used as the primary method of identifying students with learning disabilities (Hughes and Dexter, 2011) since it was introduced in the 2004 IDEIA reauthorization.

RTI procedures. The first step in the RTI framework is to identify students who may need intervention services. This identification process usually begins in September of a new school year. To determine if students are at risk they are assessed with a norm-referenced measure or a criterion-referenced measure (Fuchs & Fuchs, 2006). The whole

school takes part in the testing. Once at-risk students are identified they may be monitored in the general education classroom. If they are continuing to not respond to any interventions in the general education setting, then they move on to Tier 2 instruction (Fuchs & Fuchs, 2006). This is a more intensive classroom setting. Students are instructed usually in small groups, either a push-in or push-out model, and there is more deliberate teaching using a variety of interventions based on students' needs. During this time in Tier 2, students' progress are monitored to see if the interventions are effective (Fuchs & Fuchs, 2006). Teachers use progress monitoring as a form of formative evaluation. They use progress monitoring to determine adjustments to teaching styles, interventions, materials, or curriculum (Fuchs & Fuchs, 2006). Most often the interventions address reading difficulties, especially in the beginning reading areas (Fuchs & Fuchs, 2006).

A major component of an effective RTI model is quality, research-based instruction in the general classroom. This is integral because it eliminates the doubt that a student may be struggling due to poor instruction in the classroom (Fuchs & Fuchs, 2007). If the student is receiving quality, research-based instruction in the general education classroom and continues to struggle, then it demonstrates that he may need more intensive instruction through interventions. Interventions are provided at Tiers 2 and 3.

RTI: A Tiered Model. A tiered model of interventions is most often used in an RTI framework. For each tier, the duration, frequency, and intensity of interventions change when a child is determined as not progressing (Gresham, 2007). This also follows the problem-solving model.

Tier 1. Tier 1 consists of preventative measures, such as giving students research-based scientific instruction and using interventions with students determined as at-risk. All students are assessed in Tier 1 to determine if the instruction is effective or not (Coleman, Buysse, & Neitzel, 2006). Coleman, Buysse, and Neitzel (2006) describe how to determine if general education curriculum is sufficient in quality: "If 80% of the children in a particular classroom meet pre-determined academic and behavioral benchmarks, then the general education curriculum is presumed to be of sufficient quality. If the 80% criterion is not met, then classroom-level intervention to improve the quality of instruction should be implemented" (p. 11). Within Tier 1 instruction all students benefit from a variety of instructional methods and differentiating instruction.

Tier 2. Students who do not make adequate progress in Tier 1 receive Tier 2 interventions either within the classroom with the classroom teacher or out of the classroom with either a reading intervention teacher, reading specialist, or paraprofessional (Coleman, Buysse, & Neitzel, 2006). Teachers may differentiate instruction or use standard treatment protocols as modifications for Tier 2 student instruction (Coleman, Buysse, & Neitzel, 2006). About 15% of students will make sufficient progress with the additional interventions put into place in Tier 2 (Coleman, Buysse, & Neitzel, 2006). Many RTI models adhere to the rule that there should be no more than 20% of the student population needing supplemental support beyond Tier 1 instruction (Burns, 2010).

Although frequency and duration vary from model to model, usually students receive supplemental support of intervention instruction for 20- 30 minutes daily (Burns, 2010). Research suggests points to solid evidence that additional instruction through the

use of small groups is effective (Burns, 2010). Burns (2010) describes criteria for effective Tier 2 small group instruction: "…small group supplemental instruction should a) target the components of reading instruction in which the student needs additional support, b) be implemented three to five times each week for approximately 20 to 40 minutes each session, and c) build skills gradually with high student teacher interaction and frequent opportunities to practice the specific skill and receive feedback. It is also important to note, that the instruction provided within Tier 2 needs to focus on an aspect of reading (e.g., decoding) and that students need practice in that specific skill" (p. 2).

Tier 3. For a small percentage of students, the additional support in Tier 2 is not enough. These students move on to Tier 3 of the RTI framework. Tier 3 usually consists of about 5% of the student population (Burns, 2010). Some people believe Tier 3 instruction should take place in resource rooms for those classified as special education students; others believe Tier 3 instruction should take place in the classroom or small groups, with all students not necessarily classified. In some RTI models Tier 3 students receive more explicit, intensive, and individualized instruction (Coleman, Buysse, & Neitzel, 2006). There may be one-on-one instruction, but it does not have to be that way. Through meta-analytic research, interventions such as mnemonic strategies, explicit reading comprehension strategies, behavior modification, and explicit and intensive instruction have been found to be successful with Tier 3 students (Burns, 2010). Tier 3 instruction often uses the teachers with the most expertise, may be more frequent and with a longer duration, and is more individualized (Lam & McMaster, 2014). If students do not make adequate progress in Tier 3 they are evaluated to determine if they have a specific learning disability.

In other RTI models, once students qualify for Tier 3, they are automatically referred to the Child Study Team for a formal evaluation to determine if the student has a learning disability (Coleman, Buysse, & Neitzel, 2006). Students may be automatically evaluated without any further interventions because some argue if they did not make adequate progress in Tiers 1 or 2 then a specific learning disability may exist (Fuchs & Vaughn, 2012). Figure 1 below describes the tiers that make up the RTI model using a triangle to represent the percentage of students in each tier.

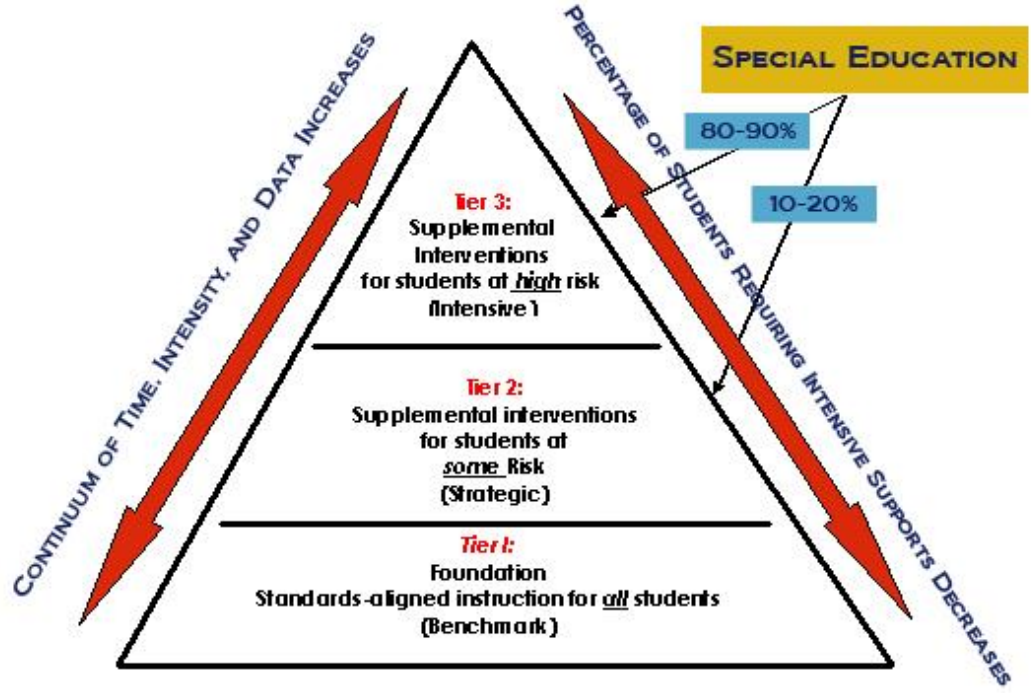

Figure 1. RTI Framework (Shapiro, 2008)

Student identification. Students in need of intervention are identified through universal screenings such as, DIBELS or AIMSweb. These are curriculum-based measurement reading and/or math tests. Students are tested for their oral reading fluency and/or comprehension. In addition, they may be tested for math using screening measures such as the AIMSweb M-CAP (Mathematics Concepts and Applications) and M-COMP (Math Computation) (AIMsweb website). Additional assessments can be given based on the curriculum-based measurement model. These curriculum-based measurement model assessments include: "calculations and concepts or application problems sampling the annual mathematics curriculum at Grades 1–6, letter sound fluency, word identification fluency, passage reading fluency at Grades 2–4, and maze fluency at Grades 5–7, as well

as less global, shorter-term screeners (e.g., magnitude comparison, phonemic segmentation fluency, nonsense word fluency, quantity discrimination fluency)" (Fuchs and Vaughn, 2012, p. 196). All students in a grade level are tested. Screening usually occurs within the first month of the school year (Fuchs & Fuchs, 2006). Schools may also look at last year's state testing as a benchmark to see who qualifies for intervention.

The students who score the lowest, bottom 15%-20%, are identified as students who are at-risk. In some RTI models students identified as at-risk in September immediately begin Tier 2 instruction. In other RTI models students who are identified as at-risk are progress monitored in their regular classroom for a designated amount of weeks; then a decision is made whether they should receive Tier 2 instruction.

In some RTI models, students who score below a certain percentile or cutoff point during the universal screening are automatically candidates for Tier 2 intervention. In other models students who score below a certain percentile or cutoff point are progress monitored because they are considered at-risk. Their progress is monitored for a certain amount of weeks and if they continue to fail to respond to instruction in Tier 1 then they are moved into Tier 2 instruction (Fuchs & Fuchs, 2007).

Progress monitoring. Progress monitoring is a kind of formative assessment. Once the universal screening has occurred and a student is determined as at-risk, progress monitoring should take place in Tier 1 or the general education classroom for that student (Hughes & Dexter, 2011). Progress monitoring should take place ideally either weekly or biweekly and for about 8-10 weeks (Hughes & Dexter, 2011). The data gathered from progress monitoring is used to decide if the curriculum or instructional materials or methods need to be adjusted in order for the student to make progress. Progress

monitoring also allows teachers to use the information diagnostically to determine placement such as moving a child from Tier 2 to Tier 3 instruction (Fuchs & Fuchs, 2006). Curriculum-based measurement assessments such AIMSweb and DIBELS can also be used to progress monitor. Hughes & Dexter (2011) describe the benefits of progress monitoring: "According to the National Center on Student Progress Monitoring, progress monitoring has the following benefits when it is implemented correctly: 1) students learn more quickly because they are receiving more appropriate instruction; 2) teachers make more informed instructional decisions; 3) documentation of student progress is available for accountability purposes; 4) communication improves between families and professionals about student progress; 5) teachers have higher expectations for their students; and, in many cases, 6) there is a decrease in special education referrals" (p. 2). Progress monitoring data is essential when deciding if a student is making sufficient progress and whether or not a change needs to be made in the instruction he or she is receiving (Fuchs, Compton, Bryant, and Davis, 2008).

Research-based instruction. The RTI law, IDEIA 2004, states students should receive scientifically-based or research-based instruction (Gartland & Strosnider, 2005). Students are taught with specific interventions and data is collected to see how they respond to the intervention (Burns, 2010). In Lam and McMaster's (2014) review on the predictiveness of responsiveness to early literacy interventions they found that "…word identification, alphabetic principle, fluency, and phonemic awareness as consistent predictors of responsiveness to intervention" (p. 143). These areas of reading are essential to learning how to read. The curriculum used for intervention needs to be evidence-based because these methods have been proven to be effective based on research with other

students (Harlacher, Walker, & Sandford, 2010). Also, the curriculum needs to be monitored to make sure it is being taught with fidelity, therefore eliminating the possibility that a student's lack of progress is due to poor instruction. Some schools may use a fidelity checklist or observe each other to make sure the curriculum is being used with fidelity (Harlacher, Walker, & Sanford, 2010).

Additionally, behavior management is a critical component in whether or not an intervention can be deemed effective. When behavior is monitored and students remain on task, there is more time for instruction. Research-based curriculum taught with fidelity and good behavior management provides the best environment for instruction (Harlacher, Walker, & Sanford, 2010).

Students who receive intervention are instructed in problem-solving methods or standard protocol methods. Standard protocol methods mean each student receiving instruction gets the same instruction based on the same skills. The problem-solving method is more tailored to individual students' needs and gives them a plan according to their specific needs (Harlacher, Walker, & Sanford, 2010). The interventions in the problem-solving approach focus on skills that the student already has obtained and are chosen to increase the student's skills in those areas. The school psychologist and other professionals assume a major role in developing a plan of instruction for the student (Fuchs & Fuchs, 2007). The standard protocol approach is based on interventions that have been proven through research studies to help students universally. Unlike the problem-solving approach, in the standard protocol approach new skills are acquired (Fuchs & Fuchs, 2007). In a standard protocol model the research-based interventions used in the general education classroom for all students can rule out poor instruction as a

reason for why a student is struggling. Therefore, if inadequate instruction is eliminated as a reason for a student's poor academic performance, then a learning disability may be evident (Fuchs & Fuchs, 2007). In a problem-solving approach the same instruction is not given to all students; it is individualized instruction for that student based on his needs (Fuchs & Fuchs, 2007).

Conclusions from Research

It is a challenge to conduct research on RTI because there is not one standard way to implement an RTI model (VanDerHeyden et. al, 2007). Therefore, it is difficult to conduct wide scale research on RTI because it varies from state to state. However, there has been research conducted on the type of assessments used, progress monitoring, and effective instruction both in general education settings and intervention or remedial classes.

Harlacher, Walker, & Sanford (2010) conducted a literature review to find instructional practices that improve academic performance. They discovered that fidelity of curriculum, the curriculum itself, and behavior management were key areas for success within the tiers.

Furthermore, Coleman, Buysse, and Neitzel (2006) conducted a research synthesis of 14 empirical articles on RTI. They concluded that RTI is a viable alternative to the IQ-discrepancy model in identifying academically at-risk students and as a way to limit the amount of students being labeled learning disabled. However, when analyzing the studies, they determined that the definition of RTI varies in how it is implemented and evaluated. Most models have similar components, but there is no consensus on

"specific assessment or data monitoring procedures, the nature and focus of specialized intervention strategies, who delivered the interventions, the duration and intensity of the interventions, and benchmarks used for determining when a new phase should be initiated for individual children" (Coleman, Buysse, and Neitzel, 2006, p. 27). Coleman, Buysse, and Neitzel (2006) also found many of the studies they analyzed only focused on a specific intervention or interventions and did not look at any RTI models comprehensively, including assessment and interventions. Furthermore, Coleman, Buysse, and Neitzel (2006) found students identified as learning disabled decreased if they received interventions beginning in kindergarten and that many of the interventions in the studies they examined addressed literacy or phonological awareness. Some gaps in their examinations of RTI studies included math, social development, and behavior interventions.

Overall Coleman, Buysse, and Neizel (2006) concluded that RTI is beneficial in that it uses research-based instruction, all students benefit from it, it reaches students at an early age, and it monitors progress or lack of progress through assessment.

Research for RTI is ongoing, but there is extensive research on individual parts (Burns, 2010). For example, research has been conducted on the RTI components of scientifically based instruction, valid and reliable measures used to monitor student progress, and evidence-based, intensive interventions (Hughes & Dexter, 2011). There are still gaps in research in finding and implementing appropriate RTI models for middle and high schools (Burns, 2010). Hughes and Dexter (2011) state that although research has focused on the individual parts of the RTI model, there still needs to be research conducted on the RTI model as a whole.

Chapter 3

Different RTI Models

There is no standard way to operate an RTI model as there are many different varieties depending on a school's needs. The IDEIA law does not promote one model over the other; it is open-ended and leaves it up to the school to decide. There are problem-solving models, standard protocol models, and hybrids of both.

Problem-Solving Model

A problem-solving model consists of a team of school personnel who analyze student work and assessments to determine student learning issues, design interventions to solve those issues, and determine if those interventions have been effective (VanDerHeyden, n.d.). Problem-solving models provide a more individualized approach to response to intervention. However, the problem-solving model has more room for error because it is more open-ended and there is not a standard way of instruction or criteria for procedures (VanDerHeyden, n.d.). In addition, because there is no standard way to implement a problem-solving model, there is more room for interpretation which may cause results to be inconsistent (VanDerHeyden, n.d.). Examples of problem-solving models include the Minneapolis Model; Iowa Problem-Solving Model; Illinois Flexible Service Delivery Model; and St. Croix River Education District Model. These problem-solving model examples will be explored further in this chapter.

Standard Protocol Model

The standard protocol model uses a standard approach to intervention and teachers must use fidelity in teaching the curriculum or intervention. With the use of

fidelity one can attribute student progress or lack thereof directly to the intervention and not whether or not the instruction given by the teacher was effective. Also, many teachers can partake in this model because they can be given training to keep the instruction standardized and with fidelity (VanDerHeyden, n.d.). Instruction in standard treatment protocol models is usually for 10-15 weeks and instruction is either one-on-one or in small groups (Fuchs & Fuchs, 2006). If students make progress during this instruction they go back into the general classroom. If they do not make progress then they move on to the next tier, Tier 2, and receive more intensive interventions. If they still do not make progress they are then referred to a special education services evaluation (Fuchs & Fuchs, 2006). An example of this type of model is shown in the research of Vellutino, Scanlon, Sipay, Small, Chen, Pratt, & Denckla (1996) on at-risk students in first grade. Teachers identified their at-risk readers during the beginning of the school year. Vellutino et al. (1996) put these students into groups for tutoring. The students took part in one-on-one interventions the entire week for a duration of 30 minutes each session for the majority of the semester. The following year in grade 2 students below the 40th percentile on basic skills testing had an additional eight to ten weeks of tutoring. Most of the students, two-thirds, made "good or very good growth" and were able to be released back into the classroom (Vellutino et al., 1996). It was deduced by Vellutino et al. (1996) that these students simply lacked quality instruction and that is why they were behind in reading.

Hybrid or Blended Model

These types of models use components of the problem-solving and standard protocol models. A hybrid or blended model will combine the standard-protocol approach of using research-based decisions for determining students eligible for interventions, the

type of intervention they need, and evaluating the intervention and the problem-solving process of using a team of school staff, working together to think of interventions for that student and evaluating the intervention (Fuchs, Mock, Morgan, and Young, 2003).

Research on Different RTI Models

Each of these models have been proven to be effective through research (VanDerHeyden, n.d.). The most important factor when introducing an RTI model is the implementation (VanDerHeyden, n.d.). The procedures that need to be followed for effective RTI implementation include: 1. Student identification for intervention services; 2. Implementation of the intervention to solve the learning issue for most of the students receiving the intervention; 3. Progress monitoring to check for positive outcomes of the intervention and that the instruction of the intervention is done with fidelity; 4. Decisions whether to increase or decrease the intensity of the intervention or discontinue the intervention; 5. Data to determine referral or special education services eligibility; and 6. Data to determine system-wide changes such as resources, professional development needs, and evaluating programs (VanDerHeyden, n.d.). When school districts are trying to implement an RTI model it is best they think about the resources they already have in place. They can then evaluate which areas they need to focus on based on the previous six procedures listed above (VanDerHeyden, n.d.).

Hughes and Dexter (2011) conducted field studies of the effectiveness of RTI models by reviewing 16 studies conducted about RTI. They found that in all of the RTI programs examined each resulted in some improvement of student learning. Furthermore, they found most of the studies showed improvement in reading skills (Hughes & Dexter, 2011). Secondly, they proposed more research is need in math interventions, reading

comprehension, writing, and content areas such as science and social studies (Hughes & Dexter, 2011). They also suggested there be more studies on RTI models in the middle and high school levels (Hughes & Dexter, 2011). Third, their examinations showed that most special education referrals stayed the same or decreased and they concluded there is a need for more research on how RTI models impact special education referrals. Finally, review of the research found the following criteria that were integral to the success of the RTI model: continued professional development of teachers and staff, support from administration, motivation from teachers to change their practices, all school staff participation, and scheduled time to plan (Hughes and Dexter, 2011).

Differences Among RTI Models

There is not one way to implement RTI in a school and research indicates that states use a variety of RTI models. Some models have three tiers, some have four (Coleman, Buysse, Neitzel 2006). Berkeley, Bender, Peaster, and Saunders (2009) describe problem-solving models that states have implemented. They found differences in steps of the model and the order in which these steps are carried out. For example, Iowa uses four-steps: 1. State the problem. 2. Make a plan. 3. Implement the plan. and 4. Evaluate the plan (Berkeley, Bender, Peaster, and Saunders, 2009). Whereas Nebraska has a five step design: 1. Identify the problem. 2. Analyze the problem. 3. Set goals. 4. Implement the plan. 5. Evaluate the plan (Berkeley, Bender, Peaster, and Saunders, 2009). North Carolina has a problem-solving model with seven steps: 1. Analyze student performance. 2. Create a plan of assessment. 3. Analyze the plan of assessment. 4. Develop a statement of goals. 5. Create a plan of interventions. 6. Implement the interventions. 7. Analyze the plan of interventions (Berkeley, Bender, Peaster, and

Saunders, 2009). As one can see, there are different variations of state problem-solving models and all are acceptable.

Depending on the state, some RTI models emphasize certain areas over others. Oregon and Pennsylvania use a similar model to determine if a student has a learning disability (Berkeley, Bender, Peaster, & Saunders, 2009). However, Oregon specifies that students receiving Tier 2 interventions need to meet in small groups for at least 30 minutes a day (Berkeley, Bender, Peaster, & Saunders, 2009). Alternatively, Pennsylvania does not designate Tier 2 students to small group instruction only, but instead lets specialists help within the classroom making use of small groups an option (Berkeley, Bender, Peaster, & Saunders, 2009). Pennsylvania suggests fidelity when implementing their RTI model, but Oregon is more structured with ensuring fidelity through checklists that rate staff on fidelity with intervention instruction (Berkeley, Bender, Peaster, & Saunders, 2009).

In certain states the choice of using a problem-solving or standard protocol model is allowed within a general framework. Berkeley, Bender, Peaster & Saunders (2009) describe the various RTI models across the states. These states include Delaware, Washington, Utah and West Virginia. Among these states there can be different RTI models within the state or school district (Berkeley, Bender, Peaster, & Saunders, 2009). Other states adopt a hybrid model approach (Berkeley, Bender, Peaster, & Saunders, 2009) that uses and combines parts of problem-solving and standard protocol models. Ohio, Georgia, and Florida use a hybrid model by using the steps of a problem-solving model and using standard protocol interventions for Tiers 2 and 3. In Georgia the standard protocol interventions are used in Tier 4. Arizona uses a hybrid model of

problem-solving components and standard protocol components. Arizona began using a standard protocol model which transformed into a hybrid model (Berkeley, Bender, Peaster, & Saunders, 2009).

The STEEP Model. VanDerHeyden, Will, and Gilbertson (2007) conducted a study to analyze the STEEP (System to Enhance Educational Performance) model of RTI. The STEEP RTI model is an example of a hybrid model. The STEEP model uses elements from the problem-solving RTI model and standard protocol RTI model (Witt and VanDerHeyden, 2007). The STEEP model uses "integrity checks" throughout the problem-solving process, which is a standard- protocol approach (Witt and VanDerHeyden, 2007). Additionally, the STEEP model uses the problem-solving approach by collecting data to select the appropriate intervention for the student, progress monitoring the student receiving the intervention, and using the progress monitoring data to make team decisions on special education referrals (Witt and VanDerHeyden, 2007). STEEP uses assessments and interventions to determine which students are candidates for special education services and an evaluation. STEEP grew from research in curriculum-based assessment, CBM, and problem-solving (VanDerHeyden, Will, and Gilbertson, 2007). The outcome of this study revealed a decrease in the amount of evaluations for special education services, a decrease in the types of students who were often over represented such as minority and male students, and money was saved because there were less evaluations to conduct (VanDerHeyden, Will, and Gilbertson, 2007). This was one type of RTI model proven to be an effective.

The Minneapolis Model. The Minneapolis Public Schools model is an example of a problem-solving RTI model. There are four steps in the Minneapolis Public Schools problem-solving framework. The first step is to analyze the student's problem by looking at their strengths and weaknesses. Second, intervention strategies are determined and implemented based on the student's needs. Next, the student's progress is monitored and interventions are evaluated. Finally, the initial three steps are repeated as deemed necessary (Marston, Muyskens, Lau and Canter, 2003). This model does not use tiers, but it does have stages. Stage 1 is the general classroom setting. Stage 2 is when a student is determined as at-risk a team consisting of a variety of staff analyze the student's difficulties and the best course of action through interventions. Stage 3 is for any students who did not make sufficient progress in Stage 2 and they are evaluated for special education services (Marston et. al 2003). When the development of the Minneapolis problem-solving model began, the Minneapolis school district made an agreement with the Office of Civil Rights to remediate the issue of the unequal amount of students of color receiving special education services (Marston et. al 2003). The Office of Civil Rights had the district screening for "…academic and behavioral difficulties, provide a range of interventions to students struggling in these areas, and monitor the progress of these students in response to the implemented interventions" (Marston et. al 2003, p. 190). Problem-solving training then became imperative in all of the schools to adhere to the Office of Civil Rights agreement.

Marston et al. (2003) summarizes the positive outcomes of the Minneapolis problem-solving model as students receiving special education services has remained stable, comprehensive assessments have been developed to drive instruction, and the

psychologist and support faculty jobs are more involved in the school due to the problem-solving model. This is evidenced through data collected on the problem-solving model through "student-outcome data" and outside evaluations. Overall the problem-solving model allows for more equality in assessments, screening and giving students special education services as well as successful interventions (Marston et. al, 2003).

Another important component to the Minneapolis problem-solving model was differentiating instruction. According to Marston et al. (2003) this model was proven effective in differentiating instruction based on data collected from kindergarten classes. The school district implemented professional development for all kindergarten staff in areas such as phonemic awareness and the alphabetic principle during the 2001 school year. They were also trained in how to analyze student data and how to implement small group reading and writing instruction to at-risk students. Kindergartens were given assessments of "…Concepts of Print, Rhyming, Letter Sounds, Onset Phonemes, Vocabulary, Oral Comprehension, and Words Read Correctly" in the fall, winter, and spring (Marston et. al, 2003, p. 196). Slightly over half, 53%, of the kindergarteners read a minimum of ten words correctly on the spring assessment. In addition, students of color also had growth in "…Concepts of Print, Rhyming, Letter Sounds, Onset Phonemes, Vocabulary, and Oral Comprehension" (Marston et. al, 2003, p. 196). The problem-solving model was effective in differentiating instruction for its kindergarten classes.

The Iowa Problem-Solving Model. Another example of an effective RTI problem-solving model is the Iowa problem-solving model. The impetus for the Iowa problem-solving model was to find an alternative way to identify students for special education services (Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme,

2007). The Iowa RTI model framework is an example of a problem-solving model with four tiers. For each tier, more resources and staff are used. The first tier is differentiating instruction in the classroom to meet each student's needs. The second tier consists of teachers and other staff on the "building assistance team" to work with each other to solve the problem. In the third tier Heartland staff and teachers work together to come up with a resolution. Finally, in the fourth tier evaluation for special education services is considered (Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007). This problem-solving model consists of four steps: determining the problem, analyzing the cause of the problem, choosing an intervention to use to solve the problem, and assessing how well the intervention worked (Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007).

In the Iowa school district they have "area education agencies", one such agency is the Heartland Area Education Agency 11 (Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007). AEAs provide resource and services to school improvement. Within Heartland Area Education Agency it consists of "54 public school districts and over 30 accredited nonpublic schools" (Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007, p. 256).

Ikeda et. al, (2007) determined the advantages of the Iowa problem-solving model as the use of data to determine problems, involvement of classroom teachers in helping struggling students, interventions that are research-based, and data analysis to monitor progress. Furthermore, Grimes and Kurns (2003) and Tilly (2003) describe the benefits of the problem-solving model and data shows "100% attainment of benchmarks of dynamic indicators of basic early literacy skills (DIBELS; Good, Gruba, and Kaminski, 2002), and

increases in oral reading fluency (from a first-grade median of 32 words per minute (wpm) in 1994 to a 2003 median of 60 wpm, second-grade median of 78 wpm in 1994 to a 2003 median of 92 wpm" (as cited by Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007, p. 265). In addition, proficiency rates of fourth-graders as a whole, on the district-wide assessment, is improving, going from 55% of fourth-graders proficient in the triennium 1999-2001 to 70% of fourth-graders proficient in the triennium 2001-2003" (as cited by Ikeda, Rahn-Blakeslee, Niebling, Gustafson, Allison and Stumme, 2007, p. 265).

The Illinois Flexible Service Delivery Model. Another kind of problem-solving model is the flexible service delivery model that originates from Deno's conceptual model and was started in 1978 in Pine County, Minnesota (Peterson, Prasse, Shinn, Swerdlik, 2007, p. 303). Deno created curriculum-based measurement to track student progress and see if interventions were effective. The problem-solving model has been effective due to curriculum-based measurements which are quick, standardized tests that test basic skills (Peterson et al., 2007).

The outcome of the implementation of the flexible service delivery model was positive. School faculty took surveys during the initial two years of the statewide evaluations and the results were that they thought their students made progress in their academics and behavior from the implemented interventions part of the FSDS framework (Peterson et al., 2007).Furthermore, student case files were analyzed over the duration of the statewide evaluation and over 75% of the goals were attained, surpassed, or the goal was not attained but there was improvement in performance. A median of 18% of the goals for identified students were not attained or there was no performance improvement

noted. Also, 68% of surveyed parents stated their child's performance improved (Peterson et al., 2007). CBM information in reading collected during the final 2 years of the evaluation revealed a slight (13) rise in words correct per minute between probes 1 to 2 and probe 2 to 3 (Peterson et al., 2007).

The St. Croix River Education District Model. Since the 1980s the St. Croix River Education District (SCRED) has followed RTI practices. The St. Croix River Education District is located in central Minnesota and consists of five school districts with approximately 9,000 students (Peterson et al., 2007). SCRED provides resources and direction to general education teachers and manages special education services. Some of the guidance they give is for basic skills instruction. Through the years the SCRED has used data in their problem-solving model. "…SCRED was one of the initial pilot sites for examining the efficacy of curriculum-based measurement (CBM) in the early 1980s (Tindal et al., 1984)" (as cited by Peterson et al., 2007, p. 319). From 1997-2007 SCRED has used an RTI model consisting of repeated use of curriculum-based measurement (CBM), research-based instruction, and involving the entire school with the goal that each student receives optimal instruction (Peterson et al., 2007).

SCRED has collected CBM data to measure reading progress since 1996. From 1996 onward SCRED has seen reading performance increase based on this measure and also on other early literacy and math skills of more recent times (Peterson et al., 2007). For 10 years, from 1997-2007 the amount of students who reached the target scores for CBM in reading had increased (Peterson et al., 2007). The percentage of students who were above target went from about 35% in the 1996-1997 school year to 70% in the 2005-2006 school year" (Peterson et al., 2007, p. 325). Further, according to Peterson et

al. (2007), in addition to increasing scores on the CBM for reading statewide assessment scores have also increased with the implementation of the RTI model in SCRED. "The percentage of students reaching grade-level standard on the statewide assessment has increased from 51% at its inception in 1998 to 80% in 2005. This is a slightly faster increase than that of the state overall" (Peterson et al., 2007, p. 326).

SCRED has seen significant gains in lowering the number of students who score in the lowest level of the statewide assessments. In 1998 20% of students fell within this low level whereas in 2005 that percentage dropped to 6% (Peterson et al., 2007). Another positive outcome of the implementation of the RTI model in SCRED is the percentage of students referred for special education services has dropped (as cited by Peterson et al., 2007, p. 326). From 1997-2007 the number of students referred for special education services has dropped by over 40% (Peterson et al., 2007). It is hypothesized that this number has decreased because more students are making progress with interventions and do not need special education services. The RTI model in SCRED is preventative of more students needing special education services (Peterson et al., 2007).

Through their research at SCRED, Peterson et al. (2007) identified many critical pieces that need to be in place for an RTI model to be effective. The first piece is that the school needs to understand the RTI model begins in the general education classroom. Next, research-based instructional programs and interventions provide the most effective instruction in the general education classroom. Third, valid and reliable assessments are needed "for the purposes of screening, diagnostics, progress monitoring, and outcomes evaluation" (Peterson et al., 2007, p. 328). Schools and districts need to define what data to use at what time through the use of system-wide measurement throughout the

buildings. Finally, organization and structured steps within the problem-solving model need to be established. Teams need to be organized to determine what actions to take in what circumstances arise within the problem-solving model. Membership, meetings, and forms, all need to be organized within this team. In addition, communication is key to an effective RTI model. Staff members and parents need to be made aware of the process of identifying struggling students and the procedures set forth to give these students the support they need to be successful (Peterson et al., 2007).

Conclusion

The IDEIA 2004 law does not state that a specific RTI model be used across all schools. There are problem-solving, standard protocol and hybrid models. The most effective RTI model is that one that meets the school's needs and that is up to the school to decide. There have been many state models that have proven to be effective, but the most critical element of an effective RTI model is one that will accomplish the goals of the school implementing it. In Chapter 4 RTI research conclusions are examined which include: positive outcomes of RTI, gaps in RTI research, and implications for the future of RTI.

Chapter 4

Research Conclusions

Overall, there have been positive outcomes of RTI implementation through the reduction of students labeled learning disabled and improvements in reading. However, there continues to be some gaps in the research in areas such as how RTI is implemented in the early grades, middle school, and high school. Much of the research conducted has been in the elementary grades. Other gaps in RTI research include implementation of RTI across content areas, the implementation of progress monitoring, and the RTI implementation as a whole system.

Based on the research already conducted and research that is continuing RTI has a promising future. In order to maintain its positive outcomes, continuing professional development is needed for school staff, especially general education teachers. Also, adherence to fidelity in implementing RTI is imperative. Further implications include future research is needed on which RTI procedures seem the most effective.

Positive Outcomes of RTI

Reduced or sustained population of students labeled as learning disabled. VanDerHeyden, Witt, and Gilbertson (2007) conducted a multi-year study on the effects of an RTI model on identification of children for special education through a STEEP RTI model. They discovered there is evidence to support the finding that RTI models can reduce the amount of students referred for evaluations for special education services. Examples of how RTI is an effective model in reducing the amount of students eligible for special education services can be found in research conducted in the Heartland model in Iowa, the Minneapolis schools model, the STEEP model in Mississippi, Louisiana and

Arizona, and the St. Croix River Education District Model (Bradley, Danielson, & Doolittle, 2007; Peterson et al., 2007). In addition, Hughes & Dexter (2011) also found that RTI kept special education referrals and placements either at the same percentage or at a decreased level.

Positive student outcomes. Many research studies found positive student outcomes of RTI (Coleman, Buysse, and Neitzel, 2006). In one significant case study on reading intervention in kindergarten through third grade, (O'Connor, Fulmer, and Harty, 2005), teachers and their students in kindergarten through third grade took part in a tiered approach to reading intervention. Teachers were given professional development on scientifically based reading instruction, student progress was monitored, and additional one-on-one instruction or small group instruction was given to struggling students who did not maintain adequate grade-level progress. Outcomes were compared to control groups of students in the same schools (O'Connor et al., 2005). They analyzed the outcomes of Tier 2 and Tier 3 reading interventions (Hughes & Dexter, 2011). The Tier 2 instruction was 10-20 minutes, three times a week, and conducted in a small group. The Tier 3 instruction was 30 minutes, five times a week, conducted in both group and one-on-one instruction (Hughes & Dexter, 2011). O'Connor et al. (2005) found that compared to a control group, students who received Tier 2 or Tier 3 instruction achieved higher scores on all reading assessments. The findings revealed overall improvements in reading, improved reading for students who began the study in high-risk categories, and decreases in the incidence of reading disability at the end of third grade (Hughes & Dexter, 2011).

A second case study (Vaugh, Linan-Thompson, and Hickman, 2003) created a tiered program of interventions that consisted of small groups receiving supplemental instruction for 35 minutes, five times per week. They then examined the amount of at-risk students who received this tiered instruction and were able to score in the average range to exit the program (Vaugh et al., 2003). Vaughn et al. (2003) discovered that "of the 45 students (primarily students in English as a second language [ESL] programs) participating in the study, 10 exited after 10 weeks of intervention, 14 after 20 weeks, and 10 after 30 weeks, with 11 students (24%) never meeting exit criteria. All students showed large gains on reading measures, especially those exposed to 30 weeks of intervention" (p. 401).

Finally, additional research reviewed different studies on the effectiveness of RTI programs. They found that in all of the studies students made some academic progress which was a result of the RTI program implemented (Hughes & Dexter, 2011).

Gaps in RTI Research

Although there have been many positive outcomes of RTI, there is still room for further RTI research. There continues to be gaps in the research and ongoing studies are needed to alleviate these concerns. The gaps in research include RTI implementation as a whole and its effectiveness as well as implementation across grades and content areas. Research is still needed in how RTI is implemented across schools and what components are the most effective and efficient (Fuchs & Vaughn, 2012). Gaps in RTI research consist of how to best use data, the procedures and structure that is the most effective, how to continue to differentiate in the general education classroom, and the most beneficial research-based interventions to use. Furthermore more research is needed in

how to implement RTI in middle and high school and among all the academic areas as well as with students in preschool.

Implementation as a whole. Research on RTI effectiveness as a whole system is varied because there is no set standard way to implement RTI (Coleman, Buysse, and Neitzel, 2006). Certain areas in RTI implementation as a whole remain unclear. Procedures, assessments, and decision making methods around how data is collected, how instruction is differentiated in the general education classroom, and what research-based interventions have not been standardized as a means of the one way to implement RTI (Fuchs & Vaughn, 2012). Fuchs & Vaughn (2012) also voice the concern of educators wondering how to best structure the stages of intervention and how to best go about doing this considering the context of schools.

Coleman, Buysse, and Neitzel (2006) conducted a research synthesis in which they analyzed 14 studies about RTI programs. They concluded more research is needed to see what components of RTI are the most effective. They also found a lack of consistency on how RTI was implemented and evaluated, which creates variability and makes it hard to draw any sweeping conclusions about RTI. There does seem to be some consensus on key parts of the RTI, including using various tiers or levels of intervention. However, it was also noticed that the use of many components of the RTI model varied in several areas: assessment and data, interventions, and delivery of the interventions; length and intensiveness of the interventions, and benchmarks for when a student may need to move on to another tier (Coleman, Buysse, and Neitzel (2006). Researchers also concluded that RTI was implemented differently in many areas such as: 1.What were the goals of RTI; 2. Who taught the interventions, whether it be a research team, teachers, or other school

staff; 3. How long the student(s) received the intervention (weeks or years); 4. The type of model used, either problem-solving or standard treatment protocol; and 5. the assessment of interventions. Finally, most of the studies of the models focused on assessment of interventions and improving student performance - not on the RTI framework as a whole multi-tier model. Coleman, Buysse, & Neitzel (2006) concluded that there were no studies that evaluated the effectiveness of the three-tiered RTI model as a whole.

In addition to the research conducted by Coleman, Buysse, and Neitzel (2006), Hughes & Dexter (2013), Burns (2010), and Denton (2012) also concluded the research base for RTI effectiveness is still developing. Continuing research needs to be conducted in areas such as whether RTI is appropriate for all students as an early intervention framework and how RTI affects students classified as special education. There also needs to be continued empirical research conducted on problem-solving RTI models (Burns, 2010). However despite the shortcomings of research on RTI as a whole, Burns (2010) concluded that overall RTI is a positive framework for students.

Implementation across grades and content areas. Another challenge in the implementation of RTI and need for more research is how to implement it in all subjects and grade levels (Bradley, Danielson, Doolittle, 2007).

Research shows that much of the RTI studies conducted were on the primary grades 1-3 and not early education with 3 and 4-year-old students (Coleman, Buysse, and Neitzel, 2006) or middle and high school. In addition, Fuchs & Vaughn (2012) point out the need for more research on interventions within an RTI model in middle school because most of the studies on the importance of effective Tier 1 instruction have been

done in the primary grades. Therefore, more research on RTI implementation in early education and in middle and high school is needed.

Analysis of research also indicates that in many of the studies the interventions were mostly for reading and specifically phonemic awareness. There are less studies on interventions for "…math, social-emotional development, behavior, and for other precursors of learning disabilities that have been identified in the literature for younger children, including language delays, attention, and self-regulation difficulties" (Coleman, Buysee, & Neitzel, 2006, p. 28).

Progress monitoring. Fuchs & Vaughn (2012) stress the importance of more research on progress monitoring. Unfortunately there has been more research conducted on initial benchmark screenings for students than on research of progress monitoring (Fuchs & Vaughn, 2012). There may be more research on benchmark screenings because it is easier to conduct than research on progress monitoring (Fuchs & Vaughn, 2012). Fuchs & Vaughn (2012) reiterate the importance of progress monitoring when they state that "schools' failure to integrate progress monitoring into RTI systems is unfortunate in light of research showing that progress monitoring can save schools many dollars in providing costly intervention to students who are falsely identified with risk on the basis of universal screening (Compton et al., 2006; Compton et al., 2010) and that progress monitoring provides a critical tool for addressing the intensive instructional needs of students who fail to respond to standard forms of small-group tutoring (D. Fuchs, Fuchs, & Stecker, 2010).

Research Implications for the Future of RTI

There are many positives of the effectiveness of RTI components such as a reduction in students identified as learning disabled and positive student learning outcomes. To strengthen and build upon the studies and research already conducted on RTI, professional development for teachers and all staff involved in the implementation is paramount to an effective model. Professional development is ongoing and is needed for future RTI success. Furthermore, it is imperative that an RTI model be implemented with fidelity because it requires research-based intervention and instruction.

Professional development for teachers. Bradley, Danielson, & Doolittle (2007) found that instruction in the general education classroom plays an integral part in the RTI model. Preparing teachers to meet the needs of all learners, including students with disabilities, is paramount to achieving an effective RTI model (Bradley, Danielson, & Doolittle, 2007). Fuchs & Vaughn (2012) also stress the importance of the critical role effective Tier 1 instruction or the general education classroom plays in limiting the population of students who are at-risk, as well as helping those students with learning disabilities. Fuchs & Vaughn (2012) emphasize the need for good general education classroom instruction and argue that effective general education classroom instruction results in fewer students identified as at-risk and in need of intervention services. In addition, Fuchs & Vaughn (2012) also argue good general education classroom instruction results in a reduced amount of students referred and found eligible for special education services while maintaining an even amount of males, English Language Learners and minorities in the population.

Implementation with fidelity. How the RTI model is implemented with fidelity is important in maintaining the integrity of the interventions and process of how students are assessed, monitored, and reevaluated. RTI relies on research-based practices; therefore, it is imperative that the interventions and instruction be carried out in the same manner as in other studies; otherwise, research findings will not be valid. It continues to be a challenge on how to most effectively implement an RTI model with fidelity (Burns, 2010).

Continuing Research

Through this extensive conceptual study on Response to Intervention, research suggests that the future of RTI is positive and concludes that it is built on a foundation of "sound instructional principles", such as benefitting all students, starting interventions early, using scientifically-based interventions, monitoring progress, and using assessments to make decisions on instruction (Coleman, Buysse, & Neitzel, 2006). Response to Intervention continues to have a major impact on education today. It has been included in the Individuals with Disabilities Education Improvement Act of 2004 as a means of identifying students with learning disabilities, it has been authorized for every state to use RTI as a means of identifying students with a learning disability, and it is being considered as a component of the Elementary and Secondary Education Act reauthorization (Fuchs & Vaughn, 2012). Furthermore, across the fields of special education, school psychology, and general education the critical parts of RTI such as benchmark screening for at-risk students, progress monitoring, and research-based Tier 1 general education instruction and interventions, have been prevalent in many recent

research studies, policy arguments, presentations at conferences, and literature (Fuchs & Vaughn, 2012).

There are many questions that still remain after conducting this review of research on how to effectively implement a Response to Intervention model. Some of the more critical questions are: Who receives Tier 2 and Tier 3 instruction? What should that instruction be? When should this instruction be given? Who should provide the instruction? How long should this instruction last? What procedures make an RTI model effective? and What type of RTI model is more effective - the problem-solving model, standard protocol model, or a hybrid of both?

Through reviewing the research in this conceptual study RTI is a positive framework for all students because it is built on a foundation of research-based practices. RTI research is ongoing and has promising prospects for the future of education.

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