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# The Efficacy of Response to Intervention (RTI) for Students Struggling with Reading

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## Abstract

Response to intervention (RTI) is a means of assisting primary and secondary school students who struggle with reading. It uses three different tiers of intervention: general classroom instruction, small group instruction, and individual instruction. Using a PsycINFO search, I examined articles to analyze the RTI model's efficacy as remedial reading instruction for struggling children and to suggest improvements for its administration. For elementary school students, I found that RTI increased students' achievement of grade-level benchmarks. For secondary school students, there was much less available research, although the results were generally positive. RTI was less successful with nonresponsive students on both levels. I also found that elementary- and middle-school teachers were optimistic about RTI implementation but needed more support in training, data collection, collaboration, and time management. On the other hand, high-school teachers were more pessimistic towards RTI, which may reflect inadequate RTI training. Overall, RTI seems to be helpful to most students struggling with reading, but it also seems to have issues reaching students with more severe difficulties. More research and support are needed to increase RTI efficacy.

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Dyslexia and other reading disabilities were officially recognized in the United States education system with the establishment of the Education for All Handicapped Children Act in 1975. Subsequently, school administrators used the *discrepancy formula* to identify students with “learning disabilities” (Aaron, 1997). In this model, a learning disability was indicated by a discrepancy between a student’s standardized test scores and their IQ score. Students with reading disabilities thus had low reading scores but average-to-high IQ scores, while “slow readers” were identified as students who had both low IQ scores and low reading scores. Aaron (1997) raised an issue with the discrepancy formula, namely, that the level of correlation between IQ tests and reading-achievement tests did not allow the score on one to be a reliable predictor of the score on the other, making it difficult for teachers to identify the most effective means to aid struggling students quickly. To remedy this problem, Aaron suggested that teachers first identify the key reading and reading-comprehension skills that their students struggled with and then provide them with small-group instruction that would approximate an individualized instructional approach for each student.

### **The Response to Intervention (RTI) Model**

In 2004, the Response to Intervention (RTI) model was officially recognized by the US Department of Education as a means for identifying students with reading disabilities as mandated by the Individuals with Disabilities Education Act. RTI mirrored some of Aaron’s (1997) suggestions and included three methods of instruction categorized into tiers. Tier 1 indicated general classroom instruction, Tier 2 included more closely monitored support (such as small-group instruction) for students who struggled with Tier 1 instruction, and Tier 3 involved an individualized approach for students who continued to struggle with instruction in Tiers 1 and 2 (Castro-Villarreal, Rodriguez, & Moore, 2014). Struggling students would thus be engaged in a differentiated support system that could meet their specific needs.





The RTI model has now been widely used for nearly 15 years. To date, numerous studies have investigated the best methods to implement RTI reading interventions in classrooms, but there has not been a published overview of the model's progression and its efficacy for teachers and students. To determine how well RTI provides effective remedial reading instruction in primary and secondary school classrooms, I reviewed published reports and the results thereof of its implementation with students who struggle with reading, teachers' perceptions of their experience with RTI. I have summarized my findings in what follows and offered suggestions for improving the model in the future.

### Method

To find articles for this review, I used the search engine PsycINFO and searched for "response to intervention" or "RTI" and "dyslexia" or "reading disabilities," limiting the search to peer-reviewed academic sources. This review focuses on RTI instruction for American students who speak English natively, so I eliminated search results including "English as a second language," "ESL," "English language learners," and "ELL" as their primary research focus. This search yielded approximately 300 results, from which I eliminated any articles that were not in English or did not focus on American schools using the RTI system. To be included in my review, articles had to make specific mention of RTI effectiveness or the effectiveness of implementing an intervention within an RTI framework. Using these further criteria, I pared the original results to 28 references and read their abstracts to determine whether they specifically addressed the issue of the efficacy of RTI implementation in American schools. In the process, I eliminated several articles involving non-American schools, those which did not mention RTI specifically, and those which did not sufficiently address the RTI framework, which yielded 6 articles for review on RTI efficacy with students.

To include more references dealing with teachers' perceptions of RTI, I conducted a second search using PsycINFO. This search included the terms "response to intervention" or "RTI" and





“teacher perceptions or feelings or attitudes.” I eliminated results that focused specifically on specialists or school psychologists, as I was interested perceptions of RTI from general and special education teachers. This search provided the 6 additional articles I relied on in my review of teachers’ perceptions of RTI.

## Results

RTI’s tiered framework generally seemed to be effective in helping teachers identify struggling students and providing them with research-based remedial reading instruction (Denton, 2012; Greenwood et al., 2013; Hamm & Harper, 2014; Vaughn et al., 2012; Wanzek & Vaughn, 2007; Wanzek & Vaughn, 2008). However, there were problems with students who reached Tier 3 and were nonresponsive to RTI intervention (nonresponsive students). There were also problems with implementing RTI in secondary schools and with ensuring that classroom teachers had adequate resources to implement RTI.

### Remedial Reading Instruction

**Primary grades.** At the primary-school level, RTI intervention aims to prevent reading disability through monitoring students’ progress within the tiers of intervention they are assigned to. Tier 1 typically involves instruction in phonemic awareness, phonics, irregular words, and reading comprehension and fluency (Denton, 2012). Greenwood et al. (2013) studied the potential for RTI implementation in preschool classrooms and found that non-RTI instructional methods varied widely in quality, which affected children’s gains in reading skills. The authors suggested that the implementation of the RTI model should be considered in order to achieve more consistent, higher quality instruction in Tier 1. While this study addressed the potential for RTI usage in preschool classrooms, elementary school students could similarly benefit from RTI in the general classroom as it may increase both the quality of classroom instruction and student achievement.

Within the RTI model, students who do not respond to general classroom instruction are assigned to Tiers 2 and 3, where they can





receive more individualized instruction. Denton (2012) found that Tier 2 instruction should be provided to groups small enough for all students to actively participate and for teachers to respond to each student. Tier 3 instruction should involve smaller groups (as small as one student). Additionally, the author found that Tiers 2 and 3 were usually effective in helping students move from at-risk status. Wanzek and Vaughn (2012) synthesized results from research-based early reading interventions in primary grades and found that phonics and textual-reading instruction had the largest effect sizes. Hamm and Harper's (2014) study of RTI implementation in a kindergarten enrichment program exemplifies this efficacy, as most participants in their RTI program achieved kindergarten benchmarks for phonemic awareness, letter knowledge, and vocabulary knowledge as a result of the intervention. These students' improvements may have been increased by additional instruction provided on skills involved in handwriting and the encouragement of home instruction. Regardless, both studies indicate that in schools where RTI is well supported and implemented, struggling students can make enough improvement to be removed from at-risk status.

***Factors influencing efficacy.*** Based on the results from three studies of RTI (Denton, 2012; Wanzek & Vaughn, 2007; Wanzek & Vaughn, 2008) several factors were hypothesized to account for its efficacy, including the age of the students, the size of the instructional group, the duration of the intervention, and the use of standardized versus individualized instruction.

***Age of students.*** A frequent question in the literature was whether intervention is more effective for younger students as they first learned to read. Although intervention in earlier grades may provide an opportunity for students and classroom teachers to remediate reading difficulty before it develops into a more serious problem, it is not clear whether there is a particular grade or age at which students are most receptive to intervention (Denton, 2012). Wanzek and Vaughn (2007) reported that first-grade interventions produced a larger effect size than those that the second or third grade did; however, they indicated that this result could be





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attributed to variables that were not controlled for. For example, the standard screening of student performance in the first grade is highly sensitive to reading difficulty so it avoids failure to detect any students who need assistance. This may result in false positives, so that some students who do not necessarily need intervention still receive it; thus, these false positive students leave the intervention tiers at a faster rate, thereby increasing the effect size.

*Group size.* Because Tiers 2 and 3 may involve small-group instruction, it is important to consider how the number of students in these groups affects the outcome of the instruction. Denton (2012) and Wanzek and Vaughn (2007) considered group size in their analyses of effective RTI implementation and found that some studies suggest one-on-one instruction could be more helpful to certain students than instruction in groups of 2-8 students, but they were not conclusive as to whether one-on-one instruction was necessarily more effective than instruction in smaller groups of 2-4 students. Denton (2012) noted that in Tiers 2 and 3, comparisons of small-group versus individual instruction did not always produce significant differences. Overall, the author suggested that groups should be small enough to allow the teacher to respond to each student individually. If small-group and individual instruction are equally efficacious, it may be desirable to use the former more often in order to avoid overtaxing teacher resources.

*Duration.* The length of time that students spend in intervention programs may also influence their responsiveness to instruction. Wanzek and Vaughn (2007, 2008) conducted two studies in which the duration of exposure was a factor. In the earlier study, they defined an “extensive” intervention as lasting at least 20 weeks. A comparison of outcomes in which duration ranged from 20 weeks to 2.5 years did not find increased efficacy beyond 20 weeks. However, their study did not analyze interventions ranging less than five months, and thus there is a possibility that there is a plateau in efficacy before that point. The absence of data from shorter durations prevented conclusions about the greater efficacy of such shorter interventions.





Wanzek and Vaughn (2008) focused on whether or not the amount of time spent in RTI sessions per week (known as duration intensity) made a difference to the program's efficacy for students with low reading scores. They conducted two studies, selecting groups of low responding students from a population of first graders and giving them small group instruction. In Study 1, students received a daily 30-minute session of intervention over 13 weeks from a trained research tutor. In Study 2, students received 30-minute sessions of intervention twice daily over the same duration from a similar tutor. Each study also included a control group, which received standard intervention for their school district, where teachers administered as much intervention as they deemed necessary for each student during the same period. Each treatment group produced gains greater than those produced by the respective control group, but there was no significant difference in the gains by the two treatment groups. They indicated that this lack of responsiveness could be due to student fatigue, and they suggest that low responders might need different intervention that would not require such intense duration, such as special education.

*Standardized vs. individualized instruction.* Standardized instruction includes a more rigid script for classroom teachers to follow, whereas in individualized instruction, teachers customize the curriculum to suit the teacher's perception of the student needs. Within RTI literature, there is some debate as to how individualized instruction should be, because curriculum fidelity and intervention effectiveness may be compromised if there is not some standardization. However, Wanzek and Vaughn (2007) found no significant difference between standardized and individualized instruction.

**Secondary grades.** Reading difficulties are still present in secondary-school students, but the reading intervention in these grades is more limited than in the primary grades, and consequently, there is less research available on RTI intervention for these students. Thus, this section is specific to middle school (sixth through eighth grade), as there was no available research on RTI intervention for high school students (ninth to twelfth grade).





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Because middle school curriculum reflects the assumption that students already have adequate reading skills, preventing reading difficulty is no longer possible, and thus RTI instruction functions differently (Vaughn & Fletcher, 2012; Vaughn et al., 2012). Moreover, middle school teachers view subject-specific instruction as their prime assignment, and they are not provided with materials or time to provide reading instruction (Vaughn & Fletcher, 2012), which further limits intervention in these grades.

To determine whether RTI is effective in middle schools, Vaughn and Fletcher (2012) conducted a study of intervention provided middle school students with reading difficulties. The researchers recruited teachers whom they trained during one 6-hour session on the RTI method. They also met with the teachers monthly and were available for in-class coaching at the teacher's request. The goal was to enhance students' vocabulary, background knowledge, and reading comprehension strategies in order to improve their reading skills for material in all their classes. In Tier 1, teachers incorporated subject-specific vocabulary instruction into their curriculum. In Tier 2, students received 50 minutes of instruction in small groups that focused on word study, fluency, vocabulary, and comprehension. Students in Tier 3 were randomly assigned to receive either individualized or standardized instruction in small groups. The results contained a modest indication of efficacy in Tier 2 and no significant difference between individualized and standardized instruction in Tier 3.

**Nonresponsive students.** These students may present a particular challenge to teachers. Vaughn et al. (2012) conducted a study with a small group of students (11) whom they considered nonresponsive after two years in Tiers 1 and 2 with no significant improvement in reading skills. The students were given a year of individualized Tier 3 instruction on phonics, word reading, fluency, and comprehension. The students showed a general trend of improvement in word identification and comprehension in contrast to their control-group peers. They failed to catch up to their grade-level peers, but they maintained the distance between their scores. This differed from the case of their control-group peers where distance between the groups widened.





## Teacher Perceptions of RTI

Because such teachers are the primary educators for instruction in Tiers 1 and 2, they are a key touchstone for understanding RTI efficacy (Castro-Villareal & Rodriguez, 2014). To this end, I reviewed five qualitative studies in which classroom teachers were surveyed about their attitudes toward the RTI model and its implementation. I organized the findings into the following categories: training, data collection, collaboration, and time management.

**Training.** A major hurdle to effective RTI practice is sufficient training in RTI and its implementation. In three of the studies (Castro-Villarreal & Rodriguez, 2014; Regan, Berkeley, Hughes & Brady, 2015; Wilcox, Murakami-Ramalho, & Urick, 2013), teachers frequently expressed frustration or confusion with the RTI model and a desire for further training. Common confusions involved the definition of the RTI tiers, how students were selected move from one tier to another, whether general or special education teachers oversaw instruction in each tier, and how to provide remedial instruction to struggling students who failed to respond to tier-specific instruction.

Regan et al. (2015) provided insight into perceived RTI efficacy in school districts with low RTI support and training for secondary school teachers. The survey from their study was limited to one school district with no external support for implementing RTI and only one RTI coordinator. Additionally, workshops for training, progress monitoring, and intervention skills were only available for elementary-school educators. According to the survey administered by the researchers to teachers throughout the district, less than half of the high-school respondents felt that implementing evidence-based reading instruction was feasible or likely to be effective. They were also significantly less clear about the definition of RTI than their elementary-school peers were. Thus, less training seems detrimental to teachers' perception of RTI success.

Schools that provided teachers with more RTI training tended to have more positive perceptions of the RTI model, but they still reported concerns. Greenfield, Rinaldi, Proctor, and Cardarelli's





(2010) study was unique in that they evaluated a single, well-supported elementary school where the principal scheduled time for teacher training and a university partner provided monthly professional-development training workshops specific to RTI. In their responses to a survey, teachers generally felt positive about RTI. However, confusion persisted about the differences between Tier 2 and Tier 3 instruction and about teaching students who failed to respond to instruction.

**Data collection and application to struggling students.** One of the key components of the RTI model is consistent progress monitoring in each tier. This provides classroom teachers with ongoing data on how students respond to teaching strategies and, in theory, allows teachers to change their strategy to refer struggling students to special education more quickly than might occur otherwise. Generally, teachers have responded positively to the data-collection feature of RTI, but less so when the data demonstrated that students continued to struggle despite intervention (Greenfield et al., 2010; Regan et al., 2015; Wilcox et al., 2013).

Several studies suggested that data collection required by RTI enables teachers to administer intervention or special education referrals more efficiently. Greenfield et al. (2010) found that that access to ongoing data collection directly influenced some teachers' instructional plans and allowed them to produce more individualized instruction. Respondents in Wilcox et al.'s (2013) study agreed that frequent data collection was an important method for determining the effectiveness of teaching strategies and instructional plans, thus facilitating early identification of students needing enhanced intervention—a finding resonant with that from special education teachers in Swanson et al.'s (2012) study.

Without proper guidance, however, classroom teachers may have difficulty utilizing the RTI data to formulate more efficacious instruction for nonresponsive students. Specifically, Greenfield et al. (2010) found that teachers did not to use the data in order to identify alternative interventions, and some of the respondents





in Regan et al.'s (2015) study had not learned how to apply the data to instructional design even though they considered the data collection effective. In two studies (Castro-Villarreal & Rodriguez, 2014; Wilcox et al., 2013), many teachers who responded indicated that the data had little value for comparing interventions and were often confusing. In some cases (see, especially, the results from Texas teachers in Wilcox et al., 2013), teachers indicated that the emphasis on passing state-required exams pulled their focus away from helping students develop reading skills.

**Collaboration.** In the RTI model, teachers often collaborate in interdisciplinary teams that include general and special education teachers, curriculum specialists, and administrators. Swanson et al. (2012) surveyed special education teachers about their experience with RTI. They reported working frequently with their generalist peers, who sought them out for consultation about students who struggled with reading across all three tiers of intervention. Special education teachers from Greenfield et al.'s (2010) study reported similar results. It should be noted that these surveys occurred in schools that sponsored extensive RTI training, which seems to have supported successful collaboration in these schools.

**Time Management.** Across the five studies I reviewed, teachers indicated that the logistics of sustaining the RTI model require a sizable amount of teachers' time, including attending and conducting meetings, producing classroom-based and individual-student assessments, data analysis, and paperwork (Greenfield et al., 2010; Regan et al., 2015; Swanson et al., 2012; Wilcox et al., 2013). Teachers in these studies reported the inadequate allotment of time for planning and for staff meetings, which limited their ability to create intervention plans for students. Some teachers expressed frustration with the assessment demands of RTI in combination with the assessments already required by their schools and districts (Wilcox et al., 2013). Paperwork also demands a significant amount of some teachers' time (two hours), although some districts report lower demand (30 minutes), which implies that certain process may be more streamlined than others (Wilcox et al., 2012).





## Discussion

For primary-grade students, RTI has been generally effective in preventing reading disability and addressing potential reading difficulty early on. Denton (2012) and Hamm and Harper (2014) provided evidence that RTI's tiered framework helps students achieve grade-level benchmarks should Tier 1 instruction prove to be insufficient. The frequency of RTI sessions, the duration of RTI intervention, and individualized versus standardized instruction did not have significant effects on students' reading achievement, but one-on-one instruction may be more beneficial to students in Tier 3 as opposed to group instruction. In the secondary grades, there is insufficient literature for a similar positive conclusion. The implementation of RTI in these classrooms also varies from that in the elementary grades, not least because the older students tend to have more severe reading difficulties.

While some teachers reported positive perceptions of the RTI model, it was clear that schools, school districts, and research should provide more training and support to teachers in newly initiated RTI programs. Perhaps the most urgent training needs are data collection and interpretation, and the application thereof to small-group and individualized instruction. Vital collaboration among teachers, especially between general and special education teachers, should also be encouraged by sufficient training and preparation by the school or school district.

Overall, RTI is efficacious with students who struggle with reading in the elementary grades and identifying those students who may need help early on, but it is less efficacious with students in the secondary grades. Future research is called for in order to identify factors that directly contribute to this inefficacy and to tweak or extensively revise RTI interventions to address those factors and mitigate them. Future research should also investigate means to streamline the RTI process for teachers, especially in terms of creating more standardized scripts for intervention within each tier and effective training on data collection and interpretation. By exploring and implementing improvements, the RTI model can be strengthened to effectively remediate a wider population of students and increase their reading abilities.





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