

EFFECTIVE RESPONSE TO INTERVENTION STRATEGIES FOR INCREASING MIDDLE  
SCHOOL AND HIGH SCHOOL STUDENT ACHIEVEMENT IN COMPREHENSION

by

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Table of Contents

Abstract .....4

Chapter 1: Introduction

    Statement of Problem.....4

    Background.....4

    Purpose of Study.....5

    Research Question(s) .....5

    Model .....6

    Definition of Terms.....6

Chapter II: Review of Literature.....8

    Components in an Effective RTI Program.....8

    Tiers Implemented .....10

    Intervention Strategies and Programs Implemented.....13

Chapter III: Results and Analysis Relative to Problem .....24

    Components in an Effective RTI Program.....24

    Intervention Strategies and Programs Implemented.....30

Chapter IV: Recommendations and Conclusion.....33

    Recommendation .....33

    Areas for Further Research .....33

    Summary and Conclusion .....35

References .....36

## Chapter 1: Introduction

### Statement of the Problem

Response to Intervention (RTI) is an approach to closing the achievement gap between students at risk of academic failure and students who are proficient. A vast amount of research has been conducted at the elementary level in terms of the effectiveness of closing the achievement gap for students in primary grades, but there's only a minimal amount of research at the secondary level. Because Response to Intervention requires a large amount of funding, it is necessary to research whether or not RTI is effective in helping those students who are at risk of not reaching academically proficiency. This study examines several research studies conducted at the secondary level and aims to answer the question of to what extent RTI increases reading comprehension at the middle school level.

### Background

In 1997, the National Joint Committee on Learning Disabilities (NJCLD) expressed concern to the U.S. Office of Special Education Programs (OSEP) about the lack of early identification of children with learning disabilities. NJCLD's concerns led to the Learning Disabilities (LD) Initiative, and Response to Intervention (RTI) was a large part of the initiative (Bradley, Danielson, and Doolittle, 2007). RTI was developed under the belief that there should be alternate ways in identifying students who are learning disabled other than achievement test, observations, and past history. RTI promises to provide the needed supports and intervention for students in order to close the gap between those students at risk and students who are performing

at academic proficiency. A large benefit of RTI was that classroom teachers did not have to wait until a student failed to begin services. The model is based upon scientifically researched, school wide interventions, and is highly concentrated in intervention effectiveness as opposed to specific SLD conditions and causes (Bradley, Danielson, and Doolittle, 2007).

### **Purpose of Study**

The purpose of this literature review is to examine the current and relevant past research on the effectiveness of RTI in increasing reading comprehension at the secondary level, middle school specifically. It will also examine how effective RTI is at closing the achievement gap of those students at risk, and if so what makes the program effective. The study will cover research of schools currently implementing an effective model of RTI, and the practices used to increase achievement in struggling readers.

### **Research Questions**

The review will also examine the necessary components in an effective RTI program, the appropriate levels of intervention or tiers needed, the intervention strategies and programs utilized at each stage, and to what extent RTI increases student achievement in reading comprehension at the middle school and high school level.

**Model**

Both empirical and theoretical research is used in the literature review. An analysis and critique of findings will be highlighted in Chapter III and the following chapter will suggest areas for further studies.

**Definition of Terms**

**NJCLD.** National Joint Committee on Learning Disabilities (Bradley, Danielson, and Doolittle, 2007).

**RTI.** Response to Intervention: Practice of providing high quality instruction and interventions matched to students need, monitoring progress frequently to make changes in instruction or goals and applying child response data to important educational decisions ((Bradley, Danielson, and Doolittle, 2007).

**MAP.** Measures of Academic Progress (Cowan and Skalski, 2010).

**CBM.** Curriculum Based Assessment (Cowan and Skalski, 2010).

**ORF.** Oral Reading Fluency (Cowan and Skalski, 2010).

**VOC.** Test of Vocabulary (Pyle et al., 2011).

**DRP.** Degrees of Reading Progress (Faggella-Luby and Wardwell, 2011).

**SS.** Story Structure (Faggella-Luby and Wardwell, 2011).

**TP.** Typical Practice (Faggella-Luby and Wardwell, 2011).

**SSR.** Sustained Silent Reading (Faggella-Luby and Wardwell, 2011).

**TAKS.** Texas Assessment of Knowledge and Skills (Vaughn et. al, 2010).

**CSR.** Collaborative Strategic Reading Instruction (Vaughn et al., 2011).

**CRCT.** Criterion Referenced Competency Test (Feng and Horn, 2012).

## Chapter II: Literature Review

### Components in an Effective RTI Program

Although there is still a need for further research at the middle school level in the effects of implementing an RTI model with older students, researchers have identified components essential in any effective RTI program based on meta-analysis of reading intervention studies for older students (grades 6-12). Participants included 976 struggling readers ages 11-21 from both urban and suburban schools. Edmonds and et. al (2008) conducted 29 studies that focused on reading comprehension outcomes with interventions that addressed decoding, fluency, vocabulary, and comprehension. Of the 29 studies, 13 met criteria for meta-analysis. The mean weighted effect size on comprehension outcomes was  $ES=.89$  in favor of treatment over the comparison group.

The tertiary approach to intervention ensures that students are receiving instruction that is tailored to their needs and that intervention is intensive enough to result in academic gain. Assessments must also be instruction-driven and progress monitoring must happen frequently enough for adjustments to be made if need be. Also, it is just as important to intervene as soon as possible in the general education classroom (Tier 1) to help close the gap in achievement and reduce the need for further intervention. Studies have revealed that older students may struggle with reading for several reasons: not all students are provided with substantive early intervention, some students are provided with inadequate early intervention, some students are provided with effective intervention early struggle later when text and knowledge demands increase, and some



students manifest reading difficulties later in their schooling who did not have reading difficulties early (S. Vaughn et al., 2013).

Although research in remediation of reading difficulties with older students is limited, “several studies with older students with reading difficulties suggest that interventions may yield effect sizes equivalent to or even higher than in studies of intervention with younger students” (S. Vaughn et al., 2013). Based on the combined research of Edmonds and colleagues, Vaughn et. al (2008) recommended the following components as fundamental in increasing student achievement in reading as part of RTI: accurate universal screening to assure that all students at-risk for reading difficulties are identified as early as possible, valid and reliable progress monitoring to determine students’ response to instruction that may vary in intensity and differentiation, and a multi-tiered research-based reading interventions to provide confidence that students whose response is less than expected have been provided with the most effective instruction and intervention protocols available (S. Vaughn et al., 2013).

Research suggests that older students who struggle with decoding and fluency benefit from the use of systematic instruction in comprehension strategies and vocabulary, having the opportunity to practice strategies taught and opportunities for corrective and immediate feedback, and instruction on useful strategies to quickly and accurately read words (Vaughn et. al, 2013). Studies have also shown a strong correlation between low reading achievement and minimal vocabulary knowledge; therefore, many struggling readers benefit greatly from vocabulary intervention. Effective strategies for teaching vocabulary include explicit instruction combined with activities that involve students manipulating words and word meanings. Teaching reading

comprehension is also essential in increasing student reading achievement. Effective strategies include vocabulary instruction of words embedded in the text, assisting students in engaging in text and monitoring their understanding, and providing opportunities for students to engage in discussion of what they have read (Vaughn et. al, 2013).

### **Tiers Implemented**

One middle school team of teachers realized their need for further interventions for their students when their comprehension scores were considerably below grade level for students in sixth through eighth grade (Fuchs et. al, 2010). They focused their research on the effects of implementing a Tier 3 RTI program for reading comprehension. This was a quantitative study conducted among 200 middle school students in grades sixth through eighth with 81% of the student population eligible for free and reduced lunch and 83% from minority backgrounds. The measure utilized for identifying underachieving students or those “at risk” was the Measures of Academic Progress (MAP) test. The MAP test is a standardized test that ranks academic proficiency according to percentiles. After analyzing the MAP test, the teachers and administrative staff at Alice Birney Middle School found that 40-48% of students fell below the 25<sup>th</sup> percentile in reading comprehension. These students were considered “at risk” academically. Because of the large amount of at risk students, Birney Middle School staff decided to implement an RTI program. The staff was already familiar with implementing RTI at the elementary level, but they were aware of the “need to conduct RTI differently at the middle school level” (Fuchs et. al, 2010). The teachers and administrative staff focused on implementing Tiers 1 and 2 implementation. Students scoring below the 25<sup>th</sup> percentile were

given two assessments, a curriculum based assessment (CBM) and an oral reading fluency (ORF) probe.

The Tier 1 implementation strategies were focused on whole group instruction utilizing the Six Minute Solution: A Reading Fluency Program. Tier 2 employed scientifically researched interventions and strategies that focused on literacy instruction. Soar to Success and Corrective Reading were also implemented with students who were grouped according to standardized test scores (Fuchs et. al, 2010).

Students who failed to make progress received more intensive interventions that were based on need. Progress monitoring was also utilized on a weekly basis throughout the interventions as a means of checking for understanding and readjusting interventions when the students fail to show progress in reading.

The results of the implementation of RTI at Alice Birney Middle School were as follows: students who scored below the 10<sup>th</sup> percentile on the MAP in the fall increase by 12.1 RIT points, students in the 11<sup>th</sup> to 25<sup>th</sup> percentile grew by 8.32 RIT points, and the overall average increase for students in sixth grade was 4.5 RIT points, 5.9 RIT points for seventh grade, and 6.5 RIT points for eighth grade. This study, as the numbers indicate, reflects that implementing an RTI program has very positive effects on overall reading scores for students at Alice Birney Middle School (Cowan and Skalski, 2010).

While Alice Birney Middle School was one example of the effects of RTI on reading comprehension at one school, many studies have been conducted using multiple schools or dual studies. One such study was conducted by Graves, Pyle, Brandon, and MacIntosh (2011). The

studies conducted were two experimental, quantitative studies with 109 sixth grade students. The studies both utilized Tier 1 and Tier 2 interventions. The middle school where the research was conducted had a population of students that were 95% English language learners and where 100% of students received free and reduced lunch.

The treatment group was identified via teacher observation and pretest data. Students were divided into groups of three students each based on the data and received Tier 1 interventions three hours per week over the course of ten weeks. The interventions included in tier 1 were guided reading leveled groups, differentiation based on individual student needs, and weekly writing and reading assignments.

Tier 2 interventions consisted of three students per group receiving one hour of interventions daily. Interventions focused on word analysis, fluency development, and reading comprehension aside vocabulary development. Corrective Reading, Read Naturally, and Daybook were utilized to target each specific reading area. Each program was research based and included intensive strategy instruction.

In both studies, the following pretests were administered: Test of Oral Reading Fluency (ORF), Test of Vocabulary (VOC), Test of Syntactic Reading Comprehension (MAZE), and the passage comprehension subtest of the Woodcock Reading Mastery Test. Both studies were conducted by graduate students with backgrounds in special education. These students also were given the responsibility of implementing RTI. Observations of instructors were conducted twice a month using specific criteria to ensure fidelity of treatment. The criteria included a checklist based on

standard activities and structure-typical lessons based on the materials used. Fidelity of implementation of instructional components and practices was 89%.

Pre and post test scores for the first study came from the ORF, VOC, and MAZE test and were analyzed using a mixed-model, repeated measure ANOVAS. Oral reading fluency rates in the intervention group grew from a mean of 88.7 to 106.8 in relation to words/minutes. The mean of the control group grew from 102.1 to 103.2. Vocabulary and comprehension were two areas that showed no difference in growth means between the control group and the treatment group.

The pre and posttests in the second study resulted in a mean growth in oral reading fluency of 88.3 to 109.9 for the treatment group. There was also no mean growth difference for vocabulary and comprehension in the second study.

For both of these studies, students showed significant growth in oral reading fluency after implementation of RTI, but resulted in no growth for vocabulary and comprehension (Brandon et. al, 2011).

### **Interventions Strategies and Programs Implemented**

Research has shown that tiered intervention is very effective when implementing RTI, but just as important as providing various levels of instructional intensity is choosing the appropriate type of intervention. One study analyzed closely the use of Collaborative Strategic Reading Instruction (CSR) on increasing the reading comprehension for students in grades seventh and eighth. The quantitative research study was conducted in 2010 by Vaughn et. al and included six middle schools in Texas and Colorado. The following criteria were used when choosing the

participating schools: students with reading difficulties were taught in English/Language Arts classes; some of these students also received instruction in reading intervention classes for struggling 7th and 8th graders; and socio-economic status of students attending the school were low to moderate. Thirteen teachers implemented the instruction, and the classes did not include special education English classes or Advanced Placement English courses.

The CSR instructional program focused on the following strategies: activating prior knowledge and predicting, monitoring understanding, finding the main idea, and generating questions and reviewing key ideas. The teacher provided a mini lesson with explicit instruction initially and then the students were divided up into groups of four to practice the strategies independent of the teacher and each student had a role to fulfill. The lessons were delivered two to three times per week over a twenty-six week period. The research design was a randomized field trial to compare the effects of the CSR program to school designed comparison interventions. All students in both the comparison group and treatment groups received both pre and posttests that assessed word identification, fluency, and comprehension skills. Students were identified as struggling based on the previous year's state reading test.

In year one, there were statistically significant main effects for treatment on the Gates-MacGinitie with a one-point standard score difference between the two groups. In year two, the model-estimated group means on Gates-MacGinitie were 98.67 and 99.74 for comparison and treatment groups. The difference was not statistically significant.

In conclusion, this research study resulted in the following: in year one, there was a small but significant main effect of CSR on reading comprehension for post testing. Because increasing reading comprehension with older students who are struggling poses many challenges, even a

small increase is very positive; therefore, evidence in year one indicates that CSR is effective with struggling middle school readers. Findings in year two result in an overall gain for both the treatment groups and the control groups. This could be due to the fact that teachers across the board in all six schools received additional professional development for reading comprehension in year two that could have affected the overall reading comprehension for all students on post testing. Overall, the implementation of CSR proved beneficial in increasing reading comprehension for both seventh and eighth grade students (Vaughn et al., 2011).

Another experimental examination was conducted by Faggella-Luby and Wardwell (2011) and focused on the use of three scientifically researched programs and their effect on reading comprehension with a group of at-risk fifth and sixth grade students. The students in the study were randomly assigned to treatment groups and consisted of 86 fifth and sixth grade at-risk students attending a public urban middle school in a northeastern state. The teachers implementing the interventions were reading specialists with varying years of experience. The SS teachers were fifth-year student interns working on their master's degrees in education. The at-risk students were identified using the Degrees of Reading Progress (DRP) screening test scores, which is a nationally norm-referenced measure of reading. The instructional materials included passages that had varying levels of difficulty as well as the use of leveled text for instruction and student practice.

The Story-Structure (SS) condition was comprised of three strategies to improve reading comprehension: students would ask themselves seven story-structure related questions, they would engage in analysis of the narrative on a diagram, and would then produce in writing a

summary of the narrative. Instruction time took place in 30 minute sessions, two to three days per week over the course of 18 weeks.

The Typical Practice (TP) method of instruction was designed and implemented by the expertise of the three reading specialists. They each employed various strategies to increase reading comprehension and were monitored and observed on a regular basis to ensure fidelity. Although flexibility was given to each teacher, instruction included core components. The components included the following: mini lessons on active reading, practice independent and guided reading, vocabulary practice, and journal writing.

SSR or Sustained Silent Reading was implemented during intervention instruction for 30 minutes daily. Students were allowed to bring books to class and were given one if they forgot. The only expectation during SSR was that every student was silently reading.

The standardized, curriculum based CLOZE test was administered to the students as a posttest assessment. The Strategy-Use Test was also administered and assessed the extent to which the students learned the SS strategies taught in intervention.

Cloze test results suggested no main effect per grade level but did reveal a large grade-by condition interaction. Results were statistically significantly between the sixth grade SS mean scores and the SSR groups mean scores (.536<X>12.23) as well as between the TP mean scores and the SSR group scores (1.5<X>12.59). Therefore, both SS and TP mean scores were higher than the SSR group. The Strategy Use results reflected no main effect for grade or condition meaning the Strategy-Use mean scores were the same regardless of grade level or instructional condition (Faggella-Luby and Wardwell, 2011).



In conclusion, the study resulted in the following: sixth grade mean scores for students in the SS and TP groups were considerably higher on all three measures as compared to students in the SSR condition. The fifth grade data showed mixed results thus requiring further examination in intervention conditions (Faggella-Luby and Wardwell, 2011).

Another study that closely examined Tier 2 interventions and strategies implemented was conducted with a group of sixth graders over the span of one academic year. The quantitative research study aimed to answer the following primary research question: “What are the effects of a secondary intervention (Tier 2) provided in relatively large groups (ten to fifteen students) on the reading-related outcomes of individuals with reading difficulties?” (Vaughn et al, 2010). The studies participants included sixth graders from seven middle schools. The population comprised of 56% to 86% free and reduced lunch at larger sites and 40% to 88% free and reduced lunch at smaller sites. The Texas Assessment of Knowledge and Skills (TAKS) were used to identify struggling readers. There were 241 Tier 2 students and 115 comparison students. Decoding and Spelling was measured using the Woodcock Johnson Test, fluency was assessed using the AIMS Web Reading Maze and comprehension was assessed using TAKS. The interventions were provided by researchers who analyzed the effects of RTI Tier 2 on reading. The concepts taught focused on word recognition, vocabulary, fluency, and comprehension. The students chosen were those who scored low on the Texas state proficiency test and were compared to those students who were provided with regular school day instruction.

For Tier 1, instructors were given professional development on utilizing evidence-based practices for teaching vocabulary and comprehension. Tier 2 interventions consisted of three

phases. The first phase consisted of lessons that focused on fluency, word study, and comprehension. The evidence-based program used was REWARDS Intermediate. The second phase of Tier 2 intervention focused on vocabulary and comprehension in addition to continuously practicing the skills learned in Phase 1. REWARDS Plus Social Studies lessons and materials were utilized in interventions at Phase 2. More emphasis in Phase 3 was placed on students independently practicing those skills learned in Phase 1 and 2.

The results show a significant effect on decoding and spelling, but not for treatment. Most students in both the Tier 2 group and comparison group continued to meet TAKS benchmark criteria for comprehension. There were significant effects on pretest, but not for treatment. Fluency assessments also revealed a main effect for pretest, but not for treatment. These findings revealed the gap between at-risk sixth graders receiving Tier 2 interventions and those not at-risk at the beginning of the year may be overly ambitious (Vaughn et al., 2010).

The previous study was conducted over one academic year and results indicated that given the time frame, implementation of Tier 2 interventions did not significantly close the achievement gap for struggling readers; however, the same researchers continued the study for another two years with implementation of Tier 3 and Tier interventions. The study supported the belief that RTI implementation for a longer period of time and more intense interventions do significantly increase reading scores among struggling older readers. The same standardized assessments from the first study were utilized as benchmarks, and those students who did not make significant gains in reading in Tiers 1 and 2 moved on to receive Tier 3 and 4 interventions. Students in the higher Tiers were given more intense treatment in smaller groups of five students

per interventionist. Students in the treatment group were also progress monitored weekly as opposed to biweekly and were monitored more closely using curriculum based measures. Individualized instruction and student goal setting plans were also implemented in both Tiers, and in year three with the implementation of Tier 4 interventions, students received even more intense instruction than Tier 3 and the groups were even smaller with about two to three students per group.

The results reveal that students in the Tier 3 group outperformed their peers in the non-treatment group on assessments of decoding, fluency, and reading comprehension. Eighth grade students receiving Tier 4 interventions showed an increase in reading comprehension.

Overall, treatment students on average outperformed those in the non-treatment group. The results were based on a multiple-indicator, multilevel model and the effect size was .26. The effects are small to medium range, but are “practically and significantly significant and suggest that many struggling middle school students may require more than nine months [one academic school year] of intervention to realize significant gains over comparable students”(Roberts et al, 2013).

Another study that was performed resulted in mixed support of implementing RTI as a means of remediation for struggling readers. The study included seventh and eighth grade students from six middle school sites where school populations ranged from 498 to 1,145 students. The struggling readers were selected using the state performance test results. Students who received treatment fell below the 30<sup>th</sup> percentile on the standardized test. The study included 182 students, 86% receiving free and reduced lunch. The comparison group included 42 students, 71

individualized students, and 69 students in the standardized condition. The researchers hired six intervention teachers and provided sixty hours of professional development before beginning intervention services. Interventions and components in the RTI program included fluency work, word study, tracking of student progress, daily vocabulary instruction, and text comprehension. Scientifically based intervention programs were utilized as well as individualized intervention protocols. Student growth after intervention was measured using the state assessment. Results reveal, when considering the findings of the treatments combined, statistically significant differences for reading comprehension but not for tasks involving word reading, word attack, or fluency. The impact on reading comprehension was meaningful when considering closing the achievement gap for struggling readers (Vaughn et al, 2011).

A study conducted by Feng and Horn (2012) examined the effects on reading comprehension and vocabulary acquisition of strategic and explicit vocabulary instruction with a group of middle school students. The experimental, quantitative research was conducted with 58 seventh grade students and included both a control group and an experimental group. The research was a quasi-experimental design in which the experimental group of students was given vocabulary acquisition strategies before, during, and after reading along with the literacy program that was currently being taught and the control group was given the reading without any focus on content specific words. Both the control group and the experimental group were given vocabulary pre and posttests along with a mixed comprehension assessment following the reading selection. The control group was not given any vocabulary instruction, whereas the experimental group was provided with vocabulary acquisition interventions before and during the reading. The interventions consisted of the following: activating prior knowledge, focusing on a small number

of important words, encouraging the use of context clues to identify meanings of unknown words, using graphic organizers to provide opportunities for multiple exposures to and development of word knowledge, and encouraging deep processing to integrate new words into their working vocabularies (Feng and Horn, 2012). The research question was whether or not direct vocabulary instruction had a positive effect on reading comprehension for seventh graders. The participants consisted of two classes of seventh grade students from a middle school in the southeastern region. Both classes had 29 students and the school was located in an area of low to middle socioeconomic status. The school was ethnically diverse, met AYP every year, and was not a Title 1 school. Economically disadvantaged students made up 18%, students with disabilities were 11%, and English Language Learners made up 1% of the school's total population. Students participating in the study were identified as on-level on the school's standardized assessment, no special needs students were included in the research. Each student's reading ability and comprehension level were identified using Lexile Reading Scores. The pretest scores of both groups showed no statistical significance between the two groups in terms of reading comprehension. In addition to utilizing the Lexile Reading Scores as a means of determining reading level pretest, a Criterion Referenced Competency Test (CRCT) was also administered along with a teacher developed reading comprehension test. The teacher developed test was used as a baseline score for comprehension within and between the two groups.

The study lasted for a total of four weeks. The results indicate that there were no statistically significant mean gains in reading comprehension between the experimental group and the control group. However, there was a significant increase in the median score for reading comprehension in the experimental group. The median test scores for group 1 increased by only 9.82 points

while the median post test scores for group 2 increased by 17.77 points. This indicates that students in the experiment group had larger gains in reading comprehension. When the post test scores were analyzed by gender, the median test scores for female participants were even more pronounced. The experimental group also answered a significantly greater number of vocabulary dependent comprehension questions correctly on the posttest as compared to the control group.

There were quite a few limitations to the study. For one, previous research has shown that direct vocabulary instruction has very positive effects on reading comprehension when employed over a longer period of time, closer to a year. Also, the interventions were chosen and implemented by teachers, which could have an effect on post scores in comparison to researcher employed interventions. The students participating in the study did not represent a full range of diversity in terms of special education, language learners, and at risk students, which could have changed the results significantly. The study was also limited due to the fact that the participants consisted only of seventh graders. Further research including various grade levels and age ranges could improve the validity of the experiment (Feng and Horn, 2012).

### **Summary**

The literature review aimed to answer the research question of how the implementation of an RTI program affects the reading comprehension of students at the secondary level. A vast amount of research has been conducted on the effects of RTI implemented at the elementary level, but there is still a significant need for research at the middle school level. In analyzing the research included in this study, the conclusion as to the effect that RTI has in increasing reading

comprehension for middle school students is mixed. Some studies resulted in mean gains and statistically significant gains in reading comprehension, but not for treatment, while others showed strong gains in both. Also, some studies revealed the positive impact that RTI has on areas such as decoding, vocabulary, and fluency, but not for reading comprehension as a whole. Alice Birney Middle School staff found that after implementing their RTI program, the students test scores increased dramatically. However, another study revealed that closing the reading comprehension gap between at-risk students and academically proficient students through the use of Tier 2 interventions was overly ambitious.

### **Chapter III: Results and Analysis Relative to Problem**

#### **Components in an Effective RTI Program**

Researchers have identified several factors that impact the effectiveness on reading comprehension of implementing an RTI program at the middle school level. Among these factors are the essential components necessary for an effective program.

Edmonds et. Al (2009) conducted 29 studies in which 13 of the studies met the criteria for meta-analysis. The studies were conducted in grades 6-12. The studies included 976 participants all of whom were struggling readers. Struggling readers included those students with unidentified reading disabilities, dyslexia, and learning, speech, or language disabilities. The studies included research designs that used treatment-comparison, single-group, or single-subject designs. At least one dependent measure assessed one or more aspects of reading. The mean weighted effect size was  $ES=.89$  for favor of treatment over the comparison groups. The findings indicate that the following components are necessary in an effective RTI program: accurate universal screening to identify students at risk of reading difficulties, progress monitoring, and a multi-tiered approach (Edmonds et. al, 2009). This study included many participants across grade levels and the research studies chosen were based upon strict and multiple sets of criteria. This was a large scale study that analyzed many different components in an RTI program, and the researchers presented their findings of the most effective components that were scientifically researched. The methods used to collect the data in this study were adequate, not limited in scope. The only limitation to this study was that it did not specify the exact demographics of the schools in the studies. The study needed to identify whether or not the participants were mostly comprised of urban or suburban students. This could have an effect on the results of the studies.



Fuchs et. al (2010) research also resulted in recommendation of specific components in an effective RTI program. The quantitative research study was conducted among 200 middle school students (grades 6-8) with 81% of the student population eligible for free and reduced lunch and 83% from minority backgrounds. The participants were struggling readers identified using the NWEA standardized test. The study utilized standardized progress monitoring and universal screening methods as well as a multi-tiered approach to intervention. The interventions implemented included scientifically researched based programs. The results yielded an increase of RIT scores for reading comprehension at all three grade levels (Fuchs et. al, 2010). The scope of the research was limited only in the fact that it was conducted in one school, which made it not very representative of a wide population of students. If it was conducted among several middle schools, the study would have yielded greater implications. The methods utilized to collect the study were very adequate. They were based on standardized testing both for pre and post research.

Both Edmonds (2009) and Fuchs (2010) studies had implications for secondary schools implementing an RTI program. These schools must have universal screening for identification of those students at risk for reading comprehension, a multi-tiered approach must be utilized in order for the program to be effective, and progress monitoring must be in place for the program to be successful. When these components are evident, reading comprehension scores will improve.

Graves et. al (2011) conducted a study that included a multi-tiered approach, multiple components effective in an RTI program, scientifically research based programs and interventions, and standardized testing. The experimental, quantitative studies were conducted

among 109 sixth grader students. The middle school student population was comprised of 95% English language learners with 100% of students receiving free and reduced lunch. The research was analyzed using a mixed-model and resulted in the control group growing from 102.1 to 103.2 in oral reading fluency while the experimental group grew from 88.7 to 106.8. There was no growth in vocabulary or comprehension for either group (Graves et. al, 2011). This study was conducted on a smaller scale; therefore, making it somewhat limited. The student population was also conducted among majority ELL students with a very low socioeconomic status. If the research was done on a larger scope with a more diverse population of students, this could greatly affect the results. This study has implications for schools utilizing an RTI model to increase reading comprehension in the fact that by utilizing a scientifically based intervention program, schools should see improvements in oral reading fluency scores. Because oral reading fluency is directly correlated to reading comprehension, those scores should have seen an improvement as well. The fact that they did not in this study may suggest that the specific program being used was driven more toward increasing fluency then directly effecting comprehension and vocabulary.

Vaughn et. al (2010) research suggests that the use of CSR has positive gains on reading comprehension. The quantitative research study conducted among 7<sup>th</sup> and 8<sup>th</sup> graders from low to moderate socioeconomic status who were identified as at risk in reading were provided with intervention over a two year time span. The interventions included CSR and pre and posttests, but did not indicate a multi-tiered approach. The research design was a randomized field trial comparing school wide interventions to the effects of CSR. The mean results in the first year were statistically significant for treatment with a one-point standard score difference between

control and treatment groups. The results in year two were 98.67 for the control group and 99.74 for the treatment group (Vaughn et. al, 2010). The limitations to this study are the following: the number of student participants is not identified, the demographics did not specify a wide range of students from different backgrounds, and the study did not include a multi-tiered approach. The lack of these factors could have an impact on the results of the study. The study is adequate in the fact that it utilizes standardized testing, pre and post test data, and the interventions are implemented over an extended amount of time. This study has implications for schools implementing RTI in the fact that it did not result in significantly positive gains. This could be due to the fact that a multi-tiered approach was not utilized, nor was the study conducted over a very large scope. This may have affected the reading comprehension scores. While the gains were small, the increase in reading scores cannot be overlooked. This study is beneficial in the fact that it supports the use of pre and post test data, and the implementation of an RTI program over an extended amount of time.

Faggella-Luby and Wardwell conducted their study with 86 fifth and sixth grade students in a public school district in an urban area in the northeastern region of the U.S. The students were identified as at risk in reading based on the DRP. The instructors were reading specialists. The interventions were implemented over the course of 18 weeks. The Story Structure program as well as the Typical Practice method resulted in positive gains for the group of sixth graders, whereas fifth grade results were mixed. SSR did not result in any growth for either grade (Faggella-Luby et. al, 2011). The limitations to this study may have been that the student participants were not really representative of the student population. This information is vital in determining the validity of results when applied on a broader scale. Also, the intervention was

only implemented over the course of a short time, 18 week time frame. It is best to implement intervention strategies over a longer period of time, closer to one year, to see positive results especially at the middle school level. The programs researched were scientifically based, which lead to an increase in student scores. The intervention teachers were also well trained as reading specialists, which would have also led to more positive gains. This study has implications for schools in the fact that the use of TP and Story Structure programs is beneficial in increasing reading comprehension scores, while the use of SSR is ineffective.

Vaughn et. al (2010) also conducted a study that was specific to Tier 2 interventions. The studies participants included 356 sixth grade students from seven middle schools with a population that comprised of 56% to 86% of students receiving free and reduced lunch at large sites and 40% to 88% free and reduced lunch at smaller sites. TAKS and the Woodcock Johnson were used to identify at risk students. REWARDS Intermediate was utilized at the Tier 1 and Tier 2 level, and more intensive instruction in vocabulary and comprehension was implemented at Tier 2. Tier 3 consisted of the students working independently on skills learned. The study resulted in gains that were not statistically significant (Vaughn et. al, 2010). The limitations to this study were that it does not identify the amount of intervention time over the course of the study, nor does it specify the student population. Therefore, the study is less valid, because the student population may not have been representative of a very diverse population of learners. This could greatly affect the results. The study did however include a large number of students from several schools, which make the results more valid in that aspect. The implications of this study is that REWARDS Intermediate may not be a beneficial program to utilize to increase reading comprehension at the secondary level, nor is allowing the students to work independently on

skills at higher tier levels beneficial.

Roberts et al. (2013) conducted a study on tier 3 and tier 4 interventions with the same group of students who participated in the research of Vaughn et. al (2010) and continued the implementations for another year. The results were based on a multiple-indicator, multi-level model and the effect size was .26. The researchers found very positive gains in decoding, fluency, and reading comprehension. While the student population was the same in the both conducted studies, positive gains were shown throughout the second year and support the idea that intervention implemented over a longer period of time is very beneficial to the students. This has huge implications for schools implementing an RTI program in supporting the fact that utilizing interventions over a longer period of time increases students' ability to decode, read fluently, and comprehend text.

Feng and Horn (2012) conducted an experimental, quantitative research study with a very diverse group of 58 seventh graders from a low to middle class socioeconomic status and included a control group and experimental group. The groups were given pre and post standardized tests. The experimental group was given explicit instruction in vocabulary while the control group did not receive any vocabulary instruction. The median test scores for reading comprehension in the control group increased by 9.82 points while median post test scores for the experimental group increased by 17.77 points. The limitations to this study were that some of the comprehension tests were created by classroom teachers as opposed to intervention teachers, and the study was not conducted over a long period of time. If given more time, reading comprehension gains may have resulted in greater growth. The implications for schools is that providing students with direct and explicit vocabulary instruction could greatly increase their

reading comprehension.

What is clear from the culmination of studies conducted, and this researcher's conclusions, is that an effective RTI program which aims to increase reading comprehension for middle school students must implement the following components:

- a tertiary approach to intervention
- standardized testing
- accurate universal screening for identification
- participants must include a diverse group of students
- adequate progress monitoring
- implementation over an extended period of time (more than half a school calendar year)
- use of a scientifically based intervention program

The research that implemented the majority of these components resulted in very positive gains in reading comprehension (Edmonds, 2009; Fuchs et. al, 2010; Graves et. al, 2011). Feng and Horn's research showed positive gains and included a diverse group of students. The research of Edmonds et. al (2009) and Faggella-Luby et. al (2011) and Vaughn et. al (2010) did not include a very large diverse group of students and while they saw gains in some areas of reading comprehension, others resulted in no gains or gains that were not statistically significant. This could be due to the fact that the studies were not conducted on a large scale. The research also identifies the importance of utilizing a multi-tiered approach with frequent progress monitoring to ensure increased reading comprehension. The majority of the research studies implemented a minimum of two tiers and many of them included Tier 3. One study implemented Tier 4 interventions. The research study that did not utilize a multi-tiered approach, but conducted

universal screening, standardized testing, and a significant amount of time did not see gains that were as significant, which supports the notion that a multi-tiered approach is very beneficial in increasing reading comprehension (Vaughn et. al, 2010). Interventions should also be implemented over a larger period of time in order to see gains in reading comprehension (Roberts et. al, 2013; Vaughn et. al, 2010; Feng and Horn's (2012) research did result in gains; however, gains in reading comprehension may have been even more significant had the interventions been implemented for longer than four weeks. Standardized testing for screening and identification was also utilized in each of the studies.

### **Intervention Strategies and Programs Implemented**

The interventions implemented in the research studies were also directly related to the increase in reading comprehension or lack of. Those studies that revealed significant gains had many of the same components, they each implemented research based interventions and programs. Some of the programs utilized that resulted in reading comprehension gains were the following: Six Minute Solution: A Reading Fluency Program, Soar to Success, Corrective Reading, Read Naturally, Daybook, Collaborative Strategic Reading Instruction, Story Structure, Typical Practice, and REWARDS Intermediate. The programs also included many of the same components. Among them were the following: explicit vocabulary instruction, intensive literacy instruction, guided reading level groups, differentiation based on individual needs, weekly writing assignments, word analysis, fluency development, and core comprehension strategies. One study implemented SSR and resulted in no positive mean gains for reading comprehension;

therefore, SSR may not be beneficial in closing the gap for students at risk in reading comprehension.

Also, in many of the research studies that resulted in positive gains for reading comprehension, a separate group of intervention teachers were implementing the interventions. The teachers were reading specialist, graduate students in an education program, or instructors trained in the effective use and implementation of RTI. Vaughn et. al (2011) conducted a study that resulted in small gains had the same teachers implementing the interventions in both the first and the second year. The first year resulted in higher gains than the second; this could be due to the fact that the teachers received increased and more focused professional development in reading comprehension strategies after year 1 which could have had a large impact on scores on posttest for year 2.

**Comment [K1]:** Take a few minutes to review each study and ask yourself...did I include how the authors of this study conclusions relate to the research question ( Did the authors conclusions lead you to believe that their study helps you answer your research question?) Is what they found in the study somehow linked to what could be an effective strategy at the middle/secondary level?

**Revised for Final Draft:** I included this information in the separate paragraphs for each study under "Components Effective in an RTI Program."



## **Chapter IV: Recommendations and Conclusion**

### **Recommendation**

The research on the positive impact of implementing an RTI program at the elementary level is very extensive. School districts throughout the country are seeing positive gains in reading comprehension for students in the primary grades, but we cannot ignore the students who are struggling academically at the levels beyond the elementary level. The research indicates that an RTI program at the middle school and high school level that is implemented with fidelity, where intervention teachers are supervised by trained RTI personnel, and includes the essential components that are data driven, research based, and implemented by instructors who are highly knowledgeable in RTI, will result in positive gains for reading comprehension. It is highly recommended that schools begin implementation as soon as students are identified as being at risk of academic failure in reading and the interventions are intensive and intentional and are implemented for more than one academic school year.

### **Areas for Further Research**

The researchers in each of the studies identified reasons for their findings. In the studies where there were no significant gains in reading comprehension, the researchers suggested the following as probable causes for the lack of growth: the length of time spent on the study, the need for a more diverse group of students, the type of intervention programs implemented, the size of the small groups for each tier, the intensity of instruction at each tier level, teachers implementing interventions as opposed to more highly trained staff in the use of RTI. These

factors affect the results of each study, and further research is needed to truly understand the impact that RTI has on the reading comprehension level of middle school students.

A future quantitative study could be constructed that would provide more research findings on the effectiveness of RTI in increasing reading comprehension at the middle school level. The study would include six sixth grade classes from three middle schools within the district, two sixth grade classrooms at each site. Each class would include both female and male students who were special education students, at risk students who were struggling readers, and ESL students. Each class would have a minimum of 20 students participating, and the students would be selected based on the Northwestern Evaluation Association test. The Northwestern Evaluation Association test would be administered three times per school year, once in the fall, the winter, and in the spring. The test would be administered by the school technology teacher and students would be tested by grade level with no more than sixty students in the testing area at a time. The students would have as much time as necessary to complete the test. Those students receiving accommodations would be pulled by the special education teacher or English Language Learner teacher to complete testing. The test is norm referenced, standardized, and computer based. It ranks students by percentile and those students falling below the 10<sup>th</sup> percentile would receive Tier 3 interventions. The intervention programs would include the Six Minute Solution program to increase fluency and the Soar to Success and Corrective Reading Programs for vocab, comprehension, and word work. Students would be progress monitored by the intervention teachers in Tier 3 once a week, Tier 2 biweekly, and Tier 1 once a month. Students in Tier 3 would be serviced for thirty minutes daily in their English Reading classes, 30 minutes twice a week in Tier 2, and those in Tier 1 would receive general education interventions from the

classroom teacher. Reading specialists would be assigned in implementing the interventions. Grade level mentoring teachers would be required to observe the reading specialist on a biweekly basis throughout the year. The observer would meet with intervention teachers once per month to review observations and areas for improvement. Students would move fluidly throughout the tiers based on results of progress monitoring. Results from the Northwestern Evaluation Association (NWEA) test would be analyzed by the general education teacher to determine reading growth after the course of one academic school year, nine months. Those students who were identified using the NWEA test must show gains in the area of reading comprehension to support the continued use of interventions in the classroom. Analyzing percentile growth gains would provide this information. The interventions would be implemented for at least two years to ensure adequate time for growth gains. This implementation would require a great deal of government and state funding, which is typically supplied to Title I schools who are most at risk of academic failure.

### **Summary and Conclusion**

In conclusion, RTI has proven to be an effective means of closing the achievement gap between those students who are proficient in reading and those students who are at risk. To increase the amount of gains in reading comprehension, it is essential that school districts keep in mind the following: utilizing pre and post test assessments that are standardized and norm referenced, carefully choosing the intervention strategies utilized to ensure they are data driven and research based, that the instructors implementing the interventions are highly trained and qualified, ensuring the fidelity of treatment through frequent observations, and employing a tertiary RTI

approach. When all of these criteria are met, RTI proves to be a very effective means of increasing reading comprehension for middle school students.

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