UC Riverside
UC Riverside Previously Published Works

Title

Special Education in a 4-Year Response to Intervention (RtI) Environment: Characteristics of Students with Learning Disability and Grade of Identification

Permalink

https://escholarship.org/uc/item/09h6q4k4

Journal

Learning Disabilities Research and Practice, 28(3)

ISSN

0938-8982

Authors

O'Connor, Rollanda E
Bocian, Kathleen M
Beach, Kristen D
et al.

Publication Date

2013-08-01

DOI

10.1111/ldrp.12013

Peer reviewed

RUNNING HEAD: Special Education in a Model of RtI

Special Education in a Four-year Response to Intervention (RtI) Environment:

Characteristics of Students with Learning Disability and Grade of Identification

Rollanda E. O'Connor

Kathleen M. Bocian

Kristen D. Beach

Victoria Sanchez

University of California, Riverside

Lindsay J. Flynn

University of North Carolina, Charlotte

Inquiries should be sent to Rollanda E. O'Connor at 1207 Sproul Hall, UCR, Riverside, CA 92507.

In LDR&P (2013)

Special Education in a Four-year Response to Intervention (RtI) Environment:

Characteristics of Students with Learning Disability and Grade of Identification

Abstract

This four-year longitudinal research was designed to study special education determinations of students who participated in Tier 2 intervention in a Response to Intervention (RtI) model focused on reading across Grades 1 through 4. We compared identification rates for learning disabilities and student characteristics of 381 students the year prior to implementation with 377 students in the RtI environment. Across schools 38 to 60% of students were English Language Learners (ELL). Key outcomes by Grade 4 for students with learning disabilities who had participated in a model of RtI were relatively greater reading impairment with effect sizes ranging from 0.64 to 0.82, and more equitable representation across ELL and native English speakers than in the cohort prior to RtI implementation. Notably, one-third of the students identified for special services as LD in these schools were not identified until 4th grade.

Descriptors: Learning Disability, Response to Intervention, English Language Learners, reading intervention, special education

Special Education in a Four-year Response to Intervention (RtI) Environment:

Characteristics of Students with Learning Disability and Grade of Identification

Schoolwide RtI models of early reading intervention have been studied now for over a decade, both as a system for identifying struggling readers early in school and providing immediate short-term intervention without the delays of formal evaluation, and for determining eligibility for special education. This intervention often begins as early as kindergarten (e.g., Blachman et al., 1999; O'Connor, Fulmer, Harty, & Bell, 2005; Simmons et al., 2008; Vaughn, Wanzek, Murray, Scammaca, Linan-Thompson, & Woodruff, 2009) and certainly by first grade in most studies (e.g., Linan-Thompson et al., 2006; Speece et al., 2011; Vellutino et al., 2008). Students whose learning trajectory shows little improvement may be considered for additional, more intensive intervention or evaluated for special education services.

Researchers study the short- (Coyne, Simmons, Kame'enui, & Harn, 2004; Linan-Thompson et al., 2006; Denton et al., 2010; Vellutino et al., 1996) and long-term (O'Connor et al., 2005, in press; Simmons et al., 2008; Torgesen, 2009; Vaughn et al., 2009; Vellutino et al., 2008) effects of intervention through RtI models on students' reading achievement. One-year studies consistently report strong positive effects; those of two or three years report weaker, but still positive effects. If students' reading difficulties are not easily remediated, or the learning trajectory suggests that students will continue to lag behind their peers despite small-group intervention, they may be considered for formal evaluation for special education services because opportunity to learn can be discounted as a result of the high-quality intervention provided.

RtI and Identification of Learning Disability (LD)

In contrast to support for early intervention, sparse experimental evidence supports whether participation in RtI will reduce the proportion of students with high incidence disabilities (Compton et al., 2010; Denton, 2012; VanDerHeyden, Witt, & Gilbertson, 2007). Several researchers have reported trends toward decreased incidence of LD in 2nd or 3rd grade with - RTI focused on reading, although these decreases often do not differ statistically. As examples, O'Connor et al. (2005) implemented RtI with a two-school sample (i.e., one high and one low SES school) from kindergarten through 3rd grade, which began with extensive professional development for teachers in scientifically based reading instruction. Students in the low SES school began kindergarten with uniformly lower scores; however, their gains across the 4-year study were as strong as their more affluent peers. The outcomes for students who had access to Tier 2 intervention in Grades K through 3 were compared with students who were 3rd graders in the same schools in Year 1, which provided a historical control group of students who had the same teachers, but who did not participate in the RtI model. By the end of 3rd grade, overall reading achievement was significantly higher for students in the RtI years than for students in the historical control (i.e., the same schools and teachers in the year before RtI). A sub-analysis of 3rd grade outcomes for the students most at risk produced similar findings. While the number of students with LD was smaller after the implementation of RtI, the proportion of students with LD did not differ statistically.

Taking an LD identification approach, VanDerHeyden et al. (2007) examined procedures for using responsiveness to intervention to identify students with LD in Grades K-5. Unlike researcher-implemented studies that focused on intervention, they

trained school psychologists to use a decision model for LD identification. Their first steps were similar to other RtI studies (e.g., Coyne et al., 2004; Denton et al., 2010; Vaughn et al., 2009), including screening, intervening with eligible students, and monitoring reading growth. They recommended students who made minimal progress for further evaluation. Over time, the number of referrals dropped, and the proportion of referrals that resulted in special education eligibility increased. The most notable findings were increased reliability of referrals for LD, decreased proportion of LD (from 6 to 3.5%), and a more equitable representation of students who were culturally and linguistically diverse.

Wanzek and Vaughn (2011) studied 3 successive cohorts of students with 222 to 279 students per cohort: (1) Grades K-3 prior to implementation of RtI (the Control), (2) Grades K-3 after the implementation of RtI, and (3) Grades K-2 with RtI the following year, both for replication and potential change due to an additional year of implementation experience. Between the K-3 cohorts with and without access to RtI, the proportion of students with LD did not differ (6.3 vs. 6.5%, respectively). Although the proportion of students with LD appeared to drop with the following year's implementation of RtI (Cohort 3: 4.4%), this cohort was only followed through Grade 2, which is early for LD identification in most districts. They did not report the timing of identification (i.e., the grade in which children with LD were identified), which could shed light on this issue. Wanzek and Vaughn reported the ethnicity of students in participating schools; however, they did not report the impact of RtI on students who were ELL.

In a large study of the Florida Reading First schools, which used a model of RtI to provide tiered interventions in reading, Torgesen (2009) reported a decline in the rate of students identified with LD in Grades K-3. From Year 1 to Year 3 of implementation, rates for LD identification dropped from 10.4% to 6.0%, which supports Wanzek and Vaughn's (2011) suggestion that identification rates might decrease as teams gain experience with an RtI model. Regrettably, Torgesen's study lacked fidelity of implementation data. Across these studies of tiered intervention, the highest proportion of students with LD was identified in third grade, suggesting that 4th grade could again generate a jump in identification rates.

Representation of Minority Students and English Language Learners

The studies conducted by VanDerHeyden et al. (2007), Torgesen (2009), and Wanzek and Vaughn (2011) each implied that use of RtI models may reduce the incidence of LD in reading. VanDerHeyden et al. also suggested that providing access to RtI could reduce issues of disproportionality of minority students in special education, although Wanzek and Vaughn found no difference across cohorts, and disproportionality was not addressed by O'Connor et al. (2005) or Torgesen (2009). The worth of various models of RtI has been judged typically based on the proportion of students who remain at risk following intervention, the outcomes of students who participated in RtI compared to similar students who did not have access to RtI, or the proportion of students identified for special education services at the end of the study.   We add to this list the potential RtI might have for improving issues of over- and underrepresentation in special education of students from cultural or linguistic minorities and specifically who are English Language

Learners (ELL) (Artiles et al., 2005; Donovan & Cross, 2002; Rueda & Windmueller, 2006).

For over twenty years examination of minority representation in special education has revealed troubling inequities. In their review of this issue, the National Research Council (Donovan & Cross, 2002) recommended early intervention in academics as a means toward decreasing these inequities. With a focus on early intervention for any struggling learner, RtI models could serve this purpose. Nevertheless, monitoring reading acquisition of students who are ELL can be challenging. Determining whether a reading difficulty is seated in English vocabulary and comprehension or in indicators of LD, such as phonemic awareness and letter-sound knowledge in addition to comprehension, is difficult for students with limited English proficiency (Klingner, Artiles, & Barletta, 2006), and may contribute to the underidentification of students who are ELL in the primary years. Artiles et al. (2005) speculate that this underidentification of students for special education during the years that academic difficulties may be easier to remediate may contribute toward the overidentification of students from linguistic minorities in middle and high school.

Identification of LD among students who are ELL is further complicated by the reported decrease in the influence of word identification on reading comprehension for students who are ELL versus native English speakers (Crosson & Lesaux, 2010; Mancilla-Martinez & Lesaux, 2011). The weaker relationship between word reading and comprehension opens the possibility that measures often used to identify young students with reading difficulties, such as rapid decoding or word reading in 1st grade or rate of

reading aloud in 2nd or 3rd grade, could miss students who are ELL and have LD in the area of comprehension.

RtI and Late-emerging LD

Students who are native English speakers (NES) may also have comprehension-based LD, often called late-emerging LD, and studies have suggested that the proportion may be higher than once believed (Catts, Compton, Tomblin, & Bridges, 2012; Kieffer, 2010; Leach, Scarborough, & Rescorla, 2003; Lipka, Lesaux, & Siegel, 2006). For example, Lipka et al. reported over 30% and Leach et al. reported nearly 50% of students with LD fit a late-emerging profile of adequate reading skills in Grades 1-3 but poor reading skills by Grade 4 or 5. For these older students who are ELL, school personnel are once again faced with the difficulty of determining whether the comprehension difficulties are due to language comprehension in general or English language comprehension specifically.

Most models of RtI have been studied with students in Grades K-3 and few studies have followed students into 4th grade or beyond, when most students who have high-incidence disabilities—and LD in particular--are receiving special education services. Fourth grade has been identified as a crucial year for identifying LD in reading due to the often-mentioned "fourth grade slump" (Chall, 1983), where the classroom demand for competent reading comprehension highlights reading difficulties that may have been shadowed in earlier grades for both ELL and NES.

In the current study, we compared the proportion of special education placements of students in an RtI environment (Grades 1 to 4) to a cohort one year older in the same schools (Grades 2 to 4) who did not participate in an RtI model. This historical control

group had the same teachers, and allowed us to compare student outcomes and special

education placements during the same grade levels before and after implementation of

Tier 2 intervention.   Our research questions comparing the two cohorts were: (1) Does

the percentage of special education placements for LD or timing of identification differ?

(2) Do reading skills of students identified with LD differ? and (3) Do proportions of

students who are ELL identified for LD differ? These questions stemmed from a larger

four-year study of multiple aspects of RtI and its effects.

Method

Participants

All students in Grades 1 (n = 377: Cohort 1, RtI) and 2 (n = 381: Cohort 2,

comparison) in five low-income schools from two school districts in the SW United

States participated. The schools served children whose Free and Reduced Lunch status

ranged from 56% to 95% and the proportion of ELL students (primarily Spanish

speaking) ranged from 38% to 60% across schools. The English Language Arts

achievement proficiency levels of the students in these schools were below average, with

17-25% of students scoring in the proficient range on state-mandated tests. Demographics

for the total cohorts are shown in Table 1, along with those of students in Cohort 1 who

received Tier 2 intervention. None of the schools had participated previously in a model

of RtI. We collected informed consent letters from all teachers in first through fourth

grade to allow class-wide administered assessments and class observations, and from

parents of all students who participated in Tier 2 intervention. State-mandated

procedures were followed for special education identification, which allowed data from

RtI measures to be included as part of a comprehensive evaluation, although only Cohort

1 had RtI data to contribute to the special education evaluation process. Because RtI had

not been instituted in these districts by school personnel, LD determination was based on a discrepancy between ability and academic performance, although not necessarily reading performance. Our model of RtI included the districts' general education teachers as Tier 1 providers, the research team as Tier 2 providers, and the districts' special education teachers as Tier 3 providers.

Treatment and comparison groups. Although the five participating schools were all labeled by their districts as low-income schools, they varied on proportions of free and reduced lunch and proportion of ELL, and we judged it likely that random assignment by school would not control for these differences. Therefore, we used a historical control design in which students who were in 1st grade across schools in Year 1 were identified as the experimental (RtI) group, and students who were in 2nd grade across the same schools in Year 1 were identified as the comparison group. By using this design, the teachers in 2nd, 3rd, and 4th grade would be consistent across the two groups of students, which should help to control for teacher effects.   Tests for differences across cohorts are shown in the results.

Students in Cohort 1 received Tier 2 intervention as needed from 1st through 4th grade as their scores indicated risk. Students in Cohort 2 (2nd grade in Year 1; the comparison group) did not participate in RtI, except for two students who were retained in grade after the study began, and were not identified for special education during this study. School district personnel determined when to evaluate and identify students for special education in both cohorts. The Tier 3 instruction that occurred in special education was outside the scope of this study. Data on special education placements

were collected annually through Grade 5, one year after the intervention through RtI ended.

Measures

To determine comparability across cohorts, we used the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997) and Test of Oral Language Development (TOLD; Newcomer & Hammill, 1997). Although both are designed for native English speakers, they have been used also to describe vocabulary and English skills of students who are ELL (e.g., see Lesaux, Crosson, Kieffer, & Pierce, 2010; Silverman, 2007; Vaughn et al., 2009).

To select students for placement in intervention and monitor the effects of students' responsiveness, we used the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, Good & Kaminski 2003) subtest of Oral Reading Fluency (ORF), and Word Identification Fluency (WIF, Fuchs, Fuchs, & Compton, 2004). Hosp, Hosp, and Dole (2011) found that ORF at Grade 3 demonstrated strong sensitivity for ELL (i.e., identifying the ELL who would not meet proficiency on a 3rd grade high stakes test), but lower specificity for ELL than for native English speakers (i.e., ORF as a sole measure of reading proficiency would over-select students who were ELL as needing additional support; see also Quirk & Beem, 2012).

Our outcome measures were DIBELS ORF, the Woodcock Reading Mastery Tests-NU (WRMT; Woodcock, 1998), the Gray Oral Reading Test-4 (Wiederholt & Bryant, 2001), and special education eligibility. Researchers have used the WRMT-NU and GORT-4 extensively in studies of students' responsiveness to reading intervention, including studies in which researchers sought comparisons across responsiveness for ELL

and native English speakers (e.g., Crosson & Lesaux, 2010; Linan-Thompson et al., 2006; O'Connor et al., 2010).

Descriptive measures. The Peabody Picture Vocabulary Test-3rd edition (PPVT-R; Dunn & Dunn, 1997) was used to describe receptive language in English for all students. The PPVT is an individually administered, norm-referenced measure of receptive vocabulary designed for individuals 2.5 years old through adult. The child selects from among four pictures, one which best represents a word read by the examiner. We report standard quotient scores here (raw scores standardized for age in years and months at the time of testing), with a mean of 100 and standard deviation of 15. Concurrent validity with the Wechlser Intelligence Scale for Children (3rd edition) Verbal IQ is .91 (Williams & Wang, 1997).

The Test of Language Development, Primary: Third Edition (TOLD-P:3; Newcomer & Hammill, 1999) is an individually administered, norm-referenced test designed to assess expressive and relational vocabulary, grammatical understanding, semantics, and syntax. Internal consistency reliability is above .8 on all subtests, with good evidence of construct validity (Salvia & Ysseldyke, 2001).

Measures of RtI. To select students for placement in intervention and monitor the effects of students' responsiveness, we used the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, Good & Kaminski 2003) subtest of Oral Reading Fluency (ORF), and Word Identification Fluency (WIF, Fuchs, Fuchs, & Compton, 2004), both of which are timed and individually administered.

ORF measures reading rate and accuracy as students read text aloud, and scores are reported as words read correctly in one minute. Alternate-form reliability ranges from

.79 to .94 across measures, and inter-rater reliability for the second grade sample was

0.96. Roehrig, Petscher, Nettles, Hudson, and Torgesen (2008) found a correlation

between 3rd grade ORF and reading comprehension as measured by the Stanford

Achievement Test-10 of .71. In the current sample, concurrent validity correlations

between scores on ORF and the WRMT Word Identification in grades 2, 3, and 4 were

.77, .72, and .64, respectively.

Word Identification Fluency (WIF) consists of word lists developed by Fuchs et

al. (2004), which contain 100 isolated words randomly selected from Dolch pre primer,

primer, and first grade high frequency word lists. Students are presented with this list

and asked to read the words as quickly as they can. The score is the number of words

read correctly within one minute, a measure of automaticity of reading skill. The

alternate-test form stability coefficient from two consecutive weeks was .92 in the

beginning of first grade (Compton, Fuchs, Fuchs, & Bryant, 2006) and from two

consecutive months was .91 (Fuchs, Compton, Fuchs, & Bryant, 2004). Concurrent

validity to the WRMT-R Word Identification Subtest (WRMT-R WID) was .77 in fall of

first grade. Predictive validity to the WRMT-R WID and the Comprehensive Reading

Assessment Battery (CRAB) was .63 and .80 respectively in fall of first grade (Fuchs et

al., 2004).

Outcome measures. The WRMT Word Identification subtest required students

to identify words in isolation, the Word Attack subtest required students to apply phonic

and structural analysis to pronounce pseudowords, the Vocabulary subtests required

students to identify synonyms, antonyms, and analogies to written words, and the Passage

Comprehension subtest required students to read one or two sentences silently and supply

a missing word signaled by a blank space. Split-half reliability estimates on these subtests ranged from .89-.92. Total reading normed scores are reported. In the current sample, concurrent validity correlations between standardized scores on the WRMT and the GORT-4 (below) were .74 and .76 in Grades 3 and 4, respectively.

The *Gray Oral Reading Test 4* (GORT-4; Wiederholt & Bryant, 2001) was selected to generate standardized scores for reading fluency and comprehension of paragraph-to-page length passages, which may represent a different construct than the cloze task of comprehension in the WRMT (Francis, Fletcher, Catts, & Tomblin, 2005; Keenan, Betjemann, & Olson, 2008). The GORT-4 assesses students' reading accuracy, rate, and comprehension on passages of 50 to 200 words in length. Students read increasingly difficult passages orally, while the examiner notes errors and miscues. Following oral reading, the examiner asks passage-dependent comprehension questions that tap a range of comprehension types, from literal to inferential. The internal consistency reliability (coefficient alpha) of the GORT-4 at ages 8-10 ranges from .89-.91.

Procedures

Reading measures were administered to all students three times per year by a team of five testers who were not involved in Tier 2 instruction. Three of the five were doctoral students in school psychology who received their initial training and qualification through that program. The other two testers were graduate students in education who were trained by the lead psychology doctoral student. Training procedures for the team were explained, rehearsed, and validated in a half day session in late summer, followed by a 1.5 hour training review meeting before each testing cycle.

Reliability of administration was checked during each training session (validated through simultaneous scoring with a second scorer), and all collected protocols were scored a second time in the project office prior to data entry. Fewer than 2% of protocols had scoring errors, and these errors were resolved by the 2nd author.

In Cohort 1, students whose scores fell below cut-point criteria (approximately 25% each year) constituted our risk and Tier 2 intervention sample. These cut-points are shown in Table 2. Many students who met criteria for Tier 2 at some time points met criteria for typically developing readers at other time points. Students in the RtI condition entered Tier 2 intervention at any time their scores indicated risk and exited when adequate response was demonstrated by exceeding the cut-point for the next measurement criteria.

Tier 2 intervention. Tier 2 intervention consisted of small group (two or three students) instruction for 25-35 minutes, four times per week. Students in the Tier 2 sample were assessed every three weeks with brief measures of decoding, word identification, and oral reading rate in 1st grade, and with oral reading rate in 2nd through 4th grades.

Tier 2 in all grades included about 5 minutes of preview and discussion of text to encourage use of academic language (see Jean & Geva, 2009; Mancilla-Martinez & Lesaux, 2011), which was planned to assist students who were ELL, although many students with or at risk for LD also have difficulty with vocabulary and comprehension. First grade Tier 2 was based on *Sound Partners* (Vadasy et al., 2005) and included explicit and scripted instruction of letter-sounds, decoding, sight word identification, and reading of sentences and decodable books. Second grade Tier 2 included explicit and

scripted instruction in word study, vocabulary, reading and rereading books at students'
current reading level, comprehension strategies, and brief spelling and sentence-writing
opportunities. In 3rd and 4th grades proportionally more time was spent on comprehension
activities, although explicit and scripted decoding instruction for words with multiple
syllables continued in most groups.

In each grade, students receiving Tier 2 who scored above the risk range on
progress monitoring measures were released from intervention, but continued to be
monitored throughout the year. If those released fell back into the bottom quartile on
progress monitoring measures, they were placed back into Tier 2 intervention. Likewise,
students who fell into the bottom quartile on the three-times-per-year measures
administered to all students (those initially labeled typically developing readers) were
folded into Tier 2 instruction, regardless of initial risk status in Grade 1.

Observations and Fidelity

We did not provide professional development to general education teachers
through this study; however, they had received 120 hours of language arts professional
development from the California Reading Development Center on implementing the Tier
1 curriculum (40 hours of training followed by 80 hours of follow up). This level of
professional development and the reading curricula were accepted as evidence-based
reading instruction in California's application for Reading First funding. California
further requires that 'teachers of English learners (EL) hold an appropriate document or
authorization for English language development (ELD), specially designed academic
instruction delivered in English (SDAIE), or content instruction delivered in the primary

language.' (California Commission on Teacher Credentialing, Teaching English Learners, 2010).

We observed the reading instruction of general classroom teachers (Tier 1 teachers) three times per year in each cohort and across all grades using a low-inference observation tool (see Appendix A) that documented student grouping and instructional focus (e.g., phonemic awareness, phonics, word study, reading aloud or silently, vocabulary, or comprehension), along with student engagement of one Tier 1 and one Tier 2 student. We scored student engagement during each minute of observation as actively engaged, passively engaged, or off task. We calculated the percentage of student engagement of each type separately for the Tier 1 and Tier 2 student we observed that day. We scored teaching behaviors as percentage of occurrence across each dimension: teacher reading alone, student reading, and the particular literacy skill addressed during each minute of the observation. For each instructional behavior, we noted whether students worked as whole class, in small groups, or independently. We reported these behaviors as the percentage of minutes for each item and each grouping.

Because the same teachers taught across both conditions just one year apart with the same reading curriculum, we did not expect differences, and did not find any significant differences across instruction between cohorts. Following each observation, observers completed a total quality rating using the CETP Core Evaluation (2001) tool developed at the University of Minnesota. This instrument is attached as Appendix B. Means and standard deviations for total quality ratings on teacher observations were 2.91 (sd = 1.01; range 1 to 4) and 2.97 (sd = 1.05; range 1 to 5) for the RtI and historical control cohorts, respectively.

Tier 2 instructional fidelity. Tutors were hired and trained by project staff, and included experienced special education teachers, general education teachers, graduate students, and teacher aides. The lead tutor in each school participated in 30 hours of training on reading development in grades K-4 and the instructional activities of the specific Tier 2 package for each grade level. Each year, the initial training lasted four hours, and included a theoretical introduction of each activity, modeling of the activity, guided practice, independent practice in small groups with observation, feedback, and discussion of common problems. Tutors also received a teacher manual generated by the researchers. This project specific manual included detailed descriptions of student activities, teacher scripts, a pacing guide for daily lessons, a pacing guide for monthly progress based on average growth, and flow charts linking specific types and levels of activities to progress monitoring scores. This initial training was supplemented by two-hour bi-monthly follow up training (by the lead author) where new activities were introduced, common issues noted during field observations were discussed, and additional practice provided. Project staff also met bi-weekly in small groups by school site and reviewed progress monitoring data and monthly lesson plans for each individual student.

An experienced classroom or special education teacher was designated as the lead tutor at each site. In addition to observing, supporting, and providing feedback to the project staff, the lead tutor oversaw weekly the progress of students and modifications to the monthly lesson plans. The lead tutor collected daily activity logs completed by tutors for each of the small groups, and these were reviewed by the authors. In reviewing the activity logs, we examined completion of the each of the steps/activities outlined in the

teacher scripts, and progress through the lesson sequence. Progress below the pacing guidelines triggered a conference where activities and/or pacing were changed.

The fidelity observations were specific to each grade level curricula and included direct actions on the part of the tutors for each segment of the lesson. Fidelity was computed as a percentage of all observed actions compared to all actions expected. If any observation fell below 85% fidelity, the tutor was provided coaching and feedback, followed by co-teaching with the lead tutor until acceptable fidelity was reached. Fidelity observations were collected every 6 weeks on all tutors for each of the four years of the study. During this time period, we observed three instances (4% of all observations) of less than acceptable fidelity in Year 1, six instances in Year 2 (3% of all observations) and no instances in Year 3 or 4. In each of these cases, fidelity immediately rose to acceptable levels after the corrective action noted was applied. The average fidelity rating for Tier 2 instruction in Grade 1 was 93%; and for Grades 2-4 89%. The observation protocol for Tier 2 in Grade 1 is in Appendix C.

Special Education Status

We collected data on special education status for all students annually for each cohort. In most cases, students ceased to participate in Tier 2 after they began to receive special education, which was considered to be Tier 3 in this model. We were most concerned with eligibility for LD because LD is the category most likely to be influenced by intervention in Grades 1-4 (Council for Exceptional Children, 2007).

<div align="center">Results</div>

Comparability Across Cohorts

We tested for differences across the treated and comparison cohorts by conducting multivariate analysis of variance (MANOVA) on 2nd grade vocabulary scores

(PPVT and TOLD). This analysis revealed no significant difference in language ability across cohorts (Wilks' lambda $_{(2,751)}$ = 0.58, ns).   Mean scores and standard deviations for Cohorts 1 and 2, respectively, were PPVT = 86.78 (12.03) and 87.18 (12.61); TOLD = 8.11 (2.34) and 8.12 (2.35).

Thus, we concluded that groups did not differ on 2nd grade measures of vocabulary or language use. We did not include tests for reading differences in 2nd grade because students in the RtI cohort had access to reading intervention in Grade 1 that was unavailable to students in the comparison group.

Special Education Placement and Timing

We concentrate our analyses on students with LD.   The number of students identified for LD across cohorts is shown in Table 3. By the end of Grade 4, 3.4% of Cohort 1 and 5.0% of Cohort 2 had LD diagnoses. The chi square test was not significant (X^2 (1) = 1.93, p > .05), suggesting that with this small sample the frequencies of LD diagnosis did not differ significantly across cohorts.

Although outside the scope of this study, we also show in Table 3 data for identification of students with OHI (most often ADD/ADHD; Semrud-Clikeman et al.,1992), and in fact 3 students in the Grade 2 cohort had initial diagnoses of OHI in preschool or kindergarten that were changed to LD in Grade 3. Because we lack specific information on the health diagnoses of these children, we conduct no further analyses with these students.

ELL status and gender of students with LD. ELL status and the grade in school when students who were ELL began special education services are shown in parentheses in Table 3. Although twice as many students who were ELL were identified

as LD during the years of access to RtI, the timing of identification was similar across cohorts.

In Cohort 1 (RtI) gender distribution of students with LD was close to equal (7 boys, 6 girls); however, in Cohort 2 (Comparison) twice as many girls as boys were identified as LD (13 vs. 6).

Reading skills. Table 4 shows reading scores of students identified as LD at the end of Grades 2, 3, and 4 across cohorts, along with students in each cohort without disabilities. Due to the small and unequal numbers of students with LD across cohorts, we have presented these scores descriptively and calculated effect sizes. By 4th grade, effect size differences between students with LD in the RtI environment and the comparison cohort (using Cohen's d with pooled standard deviations) were 0.82, 0.74, and 0.64 for ORF, WRMT, and GORT-4, respectively. All differences favored students in the comparison cohort, which suggests that students identified with LD in the RtI cohort were more impaired, on average, than those who were identified in the comparison group.

<center>Discussion</center>

Researchers of RtI models have questioned whether tiered early intervention can, or even should, reduce the prevalence or severity of high-incidence disabilities (Fuchs & Vaughn, 2012). Although small numbers of students with LD across cohorts make conclusions difficult to draw, in our study the proportion of students identified with LD did not change significantly. Once identified with LD, effect sizes showed moderate to strong differences across cohorts, with comparatively lower scores on all reading measures for students who participated in Tier 2 prior to LD identification. The representation of ELL in the LD group approximated that of the total sample with RtI

implementation. Notably, few studies have followed students in RtI models longitudinally through 4th grade, and it is clear by the timing of identification shown in Table 3 that one-third of the students with LD were not identified until 4th grade, past the timeframe of most RtI longitudinal studies.

Wanzek and Vaughn (2011) reported a practical decrease in the percent of special education placements for the 2nd cohort of students experiencing an RtI model; however, not for their first cohort of RtI participants. Along with VanDerHeyden et al. (2007), they attribute the decrease in trend of special education identification across cohorts to experience with the model. As teachers and school psychologists became more adept at differentiating instruction across tiers, student responsiveness to the interventions they implemented may improve, thus decreasing special education referrals and placements. Unlike these studies, professional development for general education teachers was provided across both cohorts by the state-designated providers prior to the start of this study. Indeed, the teachers were the same across cohorts, and classroom observations suggested that teachers did not change their practices between the two successive cohorts.

Our results offer an alternative explanation for the decrease in special education identification in Wanzek and Vaughn's (2011) study. Their data collection in the second RtI cohort ended at the end of Grade 2, rather than Grade 3 for their first cohort. The patterns of identification we found across grades shown in Table 3 suggests that the bulk of placements in special education for LD occurred after Grade 2, with three times as many students identified in Grades 3 through 5 in the RtI cohort as in Grades K-2. Although less dramatic in the comparison cohort, again more students were identified with LD in Grades 3-5 than in K-2.

Another surprising trend relates to the reading skills of students in special

education in an RtI environment versus those in typical settings. Although the numbers

were too small for statistical analysis, effect size differences suggest that when students

with access to RtI were identified with LD, their reading skills were more impaired than

those without access to RtI (i.e., moderate to large effects). Because we only measured

and intervened in reading, we cannot rule out the possibility that some students with LD

in each cohort were identified due to math disability without concomitant reading

difficulties. Nevertheless, students in the RtI cohort had ongoing access to Tier 2

instruction prior to identification for Tier 3 (i.e., special education); thus we had thought

their reading skills might be somewhat higher than those of students in Cohort 2.

Unexpectedly, effect sizes favored students in the comparison group. These effects

support the possibility that the identification of LD may be more robust within an RtI

environment, at least regarding persistent difficulties with reading. Students'

responsiveness to intervention may have helped school personnel distinguish between

students whose low reading skills were due to environmental factors from low skills

related to a learning disability, as RtI was designed to do.

Students Who are English Learners and Special Education

The National Research Council (Donovan & Cross, 2002) and Klingner et al.

(2006) recommended a greater emphasis on early intervention in reading and math to

decrease disproportionate representation of minority students in categories of high-

incidence disabilities. Although our study did not address RtI in mathematics, models of

RtI provide such a blueprint for early intervention that is accessible prior to referral for

special education. Our results were consistent with VanDerHeyden et al. (2007) who

found that implementation of an RtI model reduced disproportionate representation.

Wanzek and Vaughn (2011) reported no change in minority representation; however,

their comparison group showed no evidence of disproportionality.

Neither of those studies analyzed their results for students who were English

Language Learners, specifically. In our study, the proportion of students diagnosed with

LD who were ELL matches the proportion in the schools in the RtI cohort; however, the

proportion who were ELL in the comparison cohort suggests underrepresentation (16%

of students diagnosed with LD in schools where 50% of students are ELL), a concern

raised by Artiles et al. (2005). Typical identification practices rely on one comprehensive

evaluation for special education; by contrast, a model of RtI can provide direct reading

intervention along with evaluation over time, including adjustments to intervention when

student progress is slow. Several studies have suggested that the responsiveness of

students who are ELL to reading intervention in English is similar to that of native

English speakers overall (Author; Linan-Thompson et al., 2006). Thus, the processes in a

RtI model could alleviate the fears teachers and school personnel may have over

inappropriate referral due to lack of language proficiency.

Language proficiency influences reading comprehension whether students are

ELL or NES (Catts et al., 2012; Mancilla-Martinez & Lesaux, 2011). As comprehension

becomes the primary marker of reading achievement in 3rd grade and beyond, one might

expect the reading difficulties of students with vocabulary and comprehension problems

to become increasingly salient, and that is what we found. Examination of Table 3 shows

that half of the students who were ELL and LD were identified in 3rd, 4th, and 5th grade—

beyond the scope of most studies of RtI models. This result mirrors the findings of

Keiffer (2010), who found increasing incidence of reading difficulties for ELL after 2nd grade. As research continues on models of RtI, it could be useful to study the effect of adding substantial oral language instruction in Tier 2 interventions for students who are ELL.

Limitations and Suggestions for Future Study

Despite 5 schools participating in this study, the sample sizes for students identified with LD through the end of study were too small (i.e., 13 and 19 in the RtI and comparison cohorts) to provide a firm answer to whether the proportions and reading abilities of students ultimately identified with LD differed significantly across cohorts. We can only present our data descriptively. The comparison of effect sizes for reading ability across cohorts surprised us and seems worthy of further study with other samples and other models of RtI.

We were intrigued by hints of differences in identification of students with OHI across cohorts. Another area for further study is whether alternative classifications (e.g., ADHD or OHI) might be used by schools to provide help to students who do not qualify for services as LD. Inspection of the pattern of OHI in Cohort 2 (the historical comparison) shown in Table 3 suggests the possibility that students who were found ineligible for reading assistance as LD may have qualified for assistance instead with the label of OHI. We noted more than twice the incidence of OHI in the comparison cohort, with 78% of these students identified after 1st grade; by contrast no students with OHI were identified later than kindergarten in the RtI cohort. Without access to specific information used by schools or parents to generate diagnoses, we cannot draw

conclusions about the effect of RtI on identification of students with OHI; however, we

suggest that these late-identified students with OHI could be worth studying in the future.

Implications

Three implications are particularly relevant to the role of RtI in identification of

students with LD. First, we speculate that participation in a model of RtI assisted school

personnel with identifying students with persistent reading difficulties that could not be

improved substantially through Tier 2 intervention. Students found eligible for services

as LD in the RtI cohort scored consistently below the students who received LD services

in the comparison cohort, on average. Students whose poor reading skills could be

remediated successfully through Tier 2 intervention were not referred for special

education evaluation or placement, leaving students with very difficult-to-remediate skills

in the LD pool.

Second, prior to implementation of the RtI model, teachers referred a much

smaller proportion of students who were ELL for special education services than their

presence in the schools. We speculate that students who were ELL with reading

difficulties were not referred because teachers assumed that their reading problems were

due solely or primarily to language proficiency. Whereas national concern has been

voiced due to overrepresentation of minority students in special education (e.g., Donovan

& Cross, 2002), the field should also be concerned with whether these students may be

underserved when school professionals and training programs emphasize ensuring

language proficiency prior to consideration for special services, especially in light of

evidence that students who are ELL respond well to reading intervention and reading

disability may become increasing difficult to treat successfully in the intermediate and middle school grades.

Third, we reiterate the possibility that Tier 2 intervention has been too narrowly focused on word reading for students whose oral language skills and vocabulary are substantially below average. Regardless of home language or cohort, students with late-emerging LD were prevalent in our sample. Although this recommendation would seem obvious for students who are ELL, the vocabulary gaps early in school between students who are more and less affluent (Adams, 1990) also lend support for vocabulary instruction for many poor readers regardless of home language. Whether early intervention in oral language could decrease the proportion of late-identified LD remains to be seen.

To translate this research to practice, it is important to consider the conditions under which RTI unfolded in this study. Most notably, results from three screenings per year were used to identify students for Tier 2 instruction and to identify students whose scores warranted release from Tier 2. The result was increased flexibility of student participation in RTI, which may require additional time, scheduling flexibility, and resources from school personnel to manage effectively. Additionally, comparison of effect size differences in reading ability across cohorts suggests that RtI may alter the nature of the student population receiving special education services as LD, who may face greater reading difficulties that are more challenging to remediate than those identified prior to RtI. These changes may call for special education teachers to receive additional training and/or to utilize different instructional strategies to meet these

students' needs--tasks that can be difficult for staff with limited school hours and

competing responsibilities.

Appendix A

Tier 1 Teacher Observation Tool

Grade Level:		Tier 1 Student	Tier 2 Student	Teacher Reading alone	Student Reading (choral, repeated, turns, echo)	Phonics Instruction; Chunking, orthog patterns, syllables Sight words	Rhyming, Blending, Segmenting, directed listening. etc.	Eliciting Story grammar retelling	Predictions Summarizing Vocabulary Think alouds	manipulating letters, writing,	book conventions, daily story, using text features, sentence conventions	Independent, paired, guided practice, teacher models, think pair share
Minute	1											
Minute	2											
Minute	3											
Minute	4											
Minute	5											
Minute	6											
Minute	7											
Minute	8											
Minute	9											
Minute	10											
Minute	11											
Minute	12											
Minute	13											
Minute	14											
Minute	15											
Minute	16											
Minute	17											
Minute	18											
Minute	19											
Minute	20											

Minute	21										
Minute	22										
Minute	23										
Minute	24										
Minute	25										
Minute	26										
Minute	27										
Minute	28										
Minute	29										
Minute	30										

Appendix B
CETP: Capsule Description of the Lesson

Level 1: Ineffective Instruction
There is little or no evidence of student thinking or engagement with important skills of reading. Instruction is *unlikely* to enhance students' understanding or to develop their capacity to successfully decode or comprehend reading passages. The lesson was characterized by either (select one below):

Passive "Learning"
Instruction is pedantic and uninspiring. Students are passive recipients of information from the teacher or textbook; material is presented in a way that is inaccessible to many of the students.

Activity for Activity's Sake
Students are involved in hands-on activities or other individual or group work, but it appears to be activity for activity's sake. Lesson lacks a clear sense of purpose and/or a clear link to conceptual development.

Level 2: Elements of Effective Instruction
Instruction contains some elements of effective practice, but there are *substantial problems* in the design, implementation, content, and/or appropriateness for many students in the class. For example, the content may lack importance and/or appropriateness; instruction may not successfully address the difficulties that many students are experiencing, etc. Overall, the lesson is *quite limited* in its likelihood to enhance students' understanding of the discipline or to develop their capacity to successfully do mathematics.

Level 3: Beginning Stages of Effective Instruction (Select one: Low 3 Solid 3 High 3)
Instruction is purposeful and characterized by quite a few elements of effective practice. Students are, at times, engaged in meaningful work, but there are *some weaknesses* in the design, implementation, or content of instruction. For example, the teacher may short-circuit a planned exploration by telling students what they "should have found"; instruction may not adequately address the needs of a number of students; or the classroom culture may limit the accessibility or effectiveness of the lesson.
Overall, the lesson is *somewhat limited* in its likelihood to enhance students' understanding or to develop their capacity to successfully decode or comprehend text.

Level 4: Accomplished, Effective Instruction
Instruction is purposeful and engaging for most students. Students actively participate in meaningful work (e.g., investigations, teacher/faculty member presentations, discussions with each other or the teacher/faculty member, reading). The lesson is well-designed and the teacher implements it well, but adaptation of content or pedagogy in response to student needs and interests is limited. Instruction is *quite likely* to enhance most students' understanding of the discipline and to develop their capacity to successfully decode or comprehend written text.

Level 5: Exemplary Instruction
Instruction is purposeful and all students are highly engaged most or all of the time in meaningful work (e.g., investigation, teacher presentations, discussions with each other or the teacher, reading). The lesson is well-designed and artfully implemented with flexibility and

responsiveness to students' needs and interests. Instruction is *highly likely* to enhance most students' understanding of the discipline and to develop their capacity to decode or comprehend written text.

CETP Core Evaluation (2001). Classroom Observation Handbook. College of Education & Human Development, University of Minnesota. Paper presented at the American Educational Research Association, Seattle, WA, April 2001.

Appendix C

Tutor Observation Form

Tutor: _____ **School:** _____ **Observer:** _____

Students _____ **Lesson:** _____ **Date:** _____

Instruction	Criteria	Never	Rarely	Some-times	Mostly	Always
Learning Letters, Patterns, Sounds	Adheres to lesson directions/script __Models new sounds in boxes __Models correct/clear sounds __Checks that student produces sounds correctly __Has student write 3 sounds	1	2	3	4	5
Notes:						
Word Reading	Adheres to lesson directions/script __Models words in boxes __Requires student to attempt/demonstrate sounding out words correctly __Provides listening practice on new/difficult sounds	1	2	3	4	5
Notes:						
Spelling Tasks	Adheres to lesson directions/script __Chooses 3 spelling words that match student needs __Has student read all written words	1	2	3	4	5
Notes:						
Sight Words	Adheres to lesson directions/script __Models new words in boxes __Requires student to read, point, and orally spell word __Reviews weak/new sight words where directed	1	2	3	4	5

Notes:						
Instruction	**Criteria**	*Never*	*Rarely*	*Some-times*	*Mostly*	*Always*
All Sentence, Text, and Book Reading Tasks	Adheres to lesson directions/script __Spends 1 minute book reading __Requires student to finger point __Requires student to re-read fluently if error made __Tutor re-reads sentence when needed to refresh meaning __Reads new book 2x, then reads previous books OR __Reads repeated book 1x, then reads previous books	1	2	3	4	5
Notes:						
Materials Use	Adheres to lesson directions/script __Chooses the best task for student, based on skill __Follows directions for the task	1	2	3	4	5

Tutor Behavior		**Criteria**	*Never*	*Rarely*	*Some-times*	*Mostly*	*Always*
		Maximizes time on instruction	1	2	3	4	5
		Quick pace/smooth transitions/minimal pauses	1	2	3	4	5
		Uses appropriate specific praise	1	2	3	4	5
		Provides appropriate error correction/scaffolding	1	2	3	4	5
	Delivery	Materials are organized	1	2	3	4	5
		Maintains accurate attendance records	1	2	3	4	5
Feedback to Tutor:							

References

Adams, M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

Artiles, A., J., Rueda, R., Salazar, J., & Higareda, I. (2005). Within group diversity in minority disproportionate representation: English language learners in urban school districts. *Exceptional Children, 71*, 283-300.

Blachman, B. A., Tangel, D. M., Ball, E.W., Black, R. S., & McGraw, C. K. (1999). Developing phonological awareness and word recognition skills: A two-year intervention with low-income, inner-city children. *Reading and Writing: An Interdisciplinary Journal, 11*, 239-273.

Catts, H.W., Compton, D., Tomblin, J.B., & Bridges, M.S. (2012). Prevalence and nature of late-emerging poor readers. *Journal of Educational Psychology, 104*, 166-181.

Chall, J. (1983). *Stages of reading development*. New York: McGraw-Hill.

CETP Core Evaluation (2001). Classroom Observation Handbook. College of Education & Human Development, University of Minnesota. Paper presented at the American Educational Research Association, Seattle, WA, April 2001.

Compton, D., Fuchs, D., Fuchs, L., & Bryant, J. (2006). Selecting at-risk readers in first grade for early intervention: A two-year longitudinal study of decision rules and procedures. *Journal of Educational Psychology, 98*, 394-409.

Compton, D. L., Fuchs, D., Fuchs, L. S., Bouton, B., Gilbert, J. K., Barquero, L. A., Cho, E., & Crouch, R. C. (2010). Selecting at-risk readers in first grade for early intervention: Eliminating false positives and exploring the promise of a two-stage screening process. *Journal of Educational Psychology. 102,* 327-340.

Council for Exceptional Children, Division on Developmental Disabilities (2007).

    Position on response to intervention (RtI): The unique role of special education

    and special educators. Retrieved from http://www.cec.sped.org

Coyne, M.D., Kame'enui, E.J., Simmons, D.C., & Harn, B.A. (2004). Beginning reading

    intervention as inoculation or insulin: First-grade reading performance of strong

    responders to kindergarten intervention. *Journal of Learning Disabilities, 37*, 90-

    104.

Crosson, A.C., & Lesaux, N.K. (2010). Revisiting assumptions about the relationship of

    fluent reading to comprehension: Spanish-speakers' text-reading fluency in

    English. *Reading and Writing: An Interdisciplinary Journal, 23*, 475-494.

Denton, C.A. (2012). Response to intervention for reading difficulties in the primary

    grades: Some answers and lingering questions. Journal of Learning Disabilities,

    45,232-243.

Denton, C. A., Kethley, C., Nimon, K., Kurz, T.B., Mathes, P.G., Minyi, S., Swanson,

    E.A. (2010). Effectiveness of a supplemental early reading intervention scaled up

    in multiple schools. *Exceptional Children, 76*, 394-416.

Donovan, M.S., & Cross, C.T. (Eds.) (2002). *Minority students in special and gifted

    education*. Washington, DC: National Academic Press.

Dunn, L., & Dunn, L. (1997*). Peabody Picture Vocabulary Test-Revised (3rd edition)*.

    Circle Pines, MN: American Guidance Services.

Francis, D.J., Fletcher, J.M., Catts, H.W., and Tomblin, J.B. (2005). Dimensions affecting the

    assessment of reading comprehension. In S.G. Paris & S.A. Stahl (Eds.), *Children's

    reading comprehension and assessment* (pp. 369-394). Mahwah, NJ: Erlbaum.

Fuchs, L.S., Fuchs, D., & Compton, D.L. (2004). Monitoring early reading development in first grade: Word identification fluency versus nonsense word fluency. *Exceptional Children, 71*, 7-21.

Fuchs, L.S., & Vaughn, S. (2012). Responsiveness-to-intervention: A decade later. *Journal of Learning Disabilities, 45*, 195-203.

Good, R.H., & Kaminski, R.A. (2003). *Dynamic Indicators of Basic Early Literacy Skills 6th Edition* (6th ed.). Longmont, CO: Sopris West Educational Services.Jean, M., & Geva, E. (2009). The development of vocabulary in English as a second language and its role in predicting word recognition ability. *Applied Psycholinguistics, 30*, 153-185.

Hosp, J.L., Hosp, M.A., & Dole, J.K. (2011). Potential bias in predictive validity of universal screening measures across disaggregated subgroups. *School Psychology Review, 40*, 108-131.

Keenan, J.M., Betjemann, R.S., & Olson,R.K. (2008). Reading comprehension tests vary in the skills they assess: Differential dependence on decoding and oral comprehension. *Scientific Studies of Reading, 12*, 281-300.

Kieffer, M.J. (2010). Socioeconomic status, English proficiency, and late-emerging reading difficulties. *Educational Researcher, 39*, 484-486.

Klingner, J.K., Artiles, A.J., & Barletta, L.M. (2006). English language learners who struggle with reading: Language acquisition or learning disabilities? *Journal of Learning Disabilities*, *39, 108-128.*

Leach, J.M., Scarborough, H.S., & Rescorla, L. (2003). Late-emerging reading disabilities. *Journal of Educational Psychology, 95*, 211-224.

Lesaux, N.K., Crosson, A.C., Kieffer, M.J., & Pierce, M. (2010). Uneven profiles:
Language minority learners' word reading, vocabulary, and reading
comprehension skills. *Journal of Applied Developmental Psychology, 31*, 475-
483.

Linan-Thompson, S., Vaughn, S., & Prater, K., Cirino, P. T (2006). The response to
intervention of English language learners: At-risk for reading. *Journal of
Learning Disabilities, 39,* 390-398.

Lipka, O., Lesaux, N., & Siegel, L. (2006). Retrospective analyses of the reading
development of Grade 4 students with reading disabilities: Risk status and profiles
over 5 years. *Journal of Learning Disabilities, 39,* 364-378.

Mancilla-Martinez, J., & Lesaux, N. (2011). The gap between Spanish speakers' word
reading and word knowledge: A longitudinal study. *Child Development, 82*, 1544-
1560.

Newcomer, P.L. & Hammill, D.D. (1997). *Test of Language Development* (3rd ed.).
Austin, TX: Pro-Ed, Inc.

O'Connor, R.E., Bocian, K., Beach, K.D., & Sanchez, V. (in press, 2012). Access to a
Responsiveness to Intervention model: Does beginning intervention in
kindergarten matter? *Journal of Learning Disabilities*,

O'Connor, R.E., Bocian, K., Beebe-Frankenberger, M., & Linklater,D. (2010).
Responsiveness of students with language difficulties to early intervention in
reading. *Journal of Special Education, 43,* 220-235.

O'Connor, R.E., Fulmer, D., Harty, K., & Bell, K. (2005). Layers of Reading

Intervention in Kindergarten through Third Grade: Changes in Teaching and

Child Outcomes. *Journal of Learning Disabilities, 38*, 440-455.

Quirk, M., & Beem, S. (2012). Examining the relations between reading fluency and

reading comprehension for English language learners. *Psychology in the*

Schools,49, 539-553.

Roehrig, A.D., Petscher, Y., Nettles, S., Hudson, R.F., & Torgesen, J.K. (2008).

Accuracy of the DIBELS Oral Reading Fluency measure for predicting third

grade reading comprehension outcomes. *Journal of School Psychology, 46*, 343-

366.

Rueda, R., & Windmueller, M.P. (2006). English language learners, LD, and

overrepresentation: A multiple-level analysis. *Journal of Learning Disabilities,*

39, 99-107.

Semrud-Clikeman, M., Biederman, J., Sprich-Buckminster, S. & Lehman, B. K. (1992).

Comorbidity between ADDH and learning disability: A review and report in a

clinically referred sample. *Journal of the American Academy of Child &*

Adolescent Psychiatry, 31, 439-448.

Silverman, R. (2007). A comparison of three methods of vocabulary instruction during

read-alouds in kindergarten. *The Elementary School Journal, 108*, 97-314.

Simmons, D.C., Coyne, M.D., Kwok, O., McDonagh, S., Harn, B.A., & Kame'enui, E.J.

(2008). Indexing response to intervention: A longitudinal study of reading risk

from kindergarten through third grade. *Journal of Learning Disabilities, 41*, 158-

173.

Speece, D.L., Schatschneider, C., Silverman, R., Case, L.P., Cooper, D., & Jacobs, D.M. (2011). Identification of reading problems in first grade within a response-to-intervention framework. *The Elementary School Journal, 111*, 585-607.

Torgesen, J.K. (2009). The response to intervention instructional model: Some outcomes from a large-scale implementation in Reading First schools. *Child Development Perspectives, 3*, 38-40.

Vadasy, P.F., Wayne, S. K., O'Connor, R.E., Jenkins, J.R., Pool, K., Firebaugh, M., & Peyton, J. (2005). *Sound Partners: A tutoring program in phonics-based early reading.* Longmont, CO: Sopris West.

VanDerHeyden, A.M., Witt, J.C., & Gilbertson, D. (2007). A multi-year evaluation of the effects of a response to intervention (RTI) model on idenfication of children for special education. *Journal of School Psychology, 45*, 225-256.

Vaughn, S., Wanzek, J., Murray, C., Scammaca, N., Linan-Thompson, S., & Woodruff, T.L. (2009). High and low responders to early reading intervention: Response to intervention. *Exceptional Children, 75*, 165-183.

Vellutino, F. R., Scanlon, D. M., Sipay, E. R., Small, S. G., Pratt, A., Chen, R., & Denckla, M. B. (1996). Cognitive profiles of difficult-to-remediate and readily remediated poor readers: Early identification as a vehicle for distinguishing between cognitive and experiential deficits as basic causes of specific reading disability. *Journal of Educational Psychology, 88*, 601-638.

Vellutino, F.R., Scanlon, D.M.. Zhang, H., & Schatschneider, C. (2008). Using response to kindergarten and first grade intervention to identify children at-risk for long-term reading difficulties. *Reading and Writing, 21*, 437-480.

Wanzek, J. & Vaughn, S. (2011). Is a three-tier reading intervention model associated

with reduced placement in special education? *Remedial and Special Education,*

32,167-175.

Wiederholt, J.& Bryant, B. (2001). *Gray Oral Reading Test-4*. Austin, Pro-Ed.

Williams, K.T. & Wang, J.J. (1997). *Technical references to the Peabody Picture*

Vocabulary Test (3rd ed.). Circle Pines, MN: American Guidance Service.

Woodcock, R. (1998). *Woodcock Reading Mastery Test–Revised/Normative Update*.

Circle Pines, MN: American Guidance Service

Table 1

Demographic Description of Participating Students for Total Cohorts and Tier 2 Recipients in Percentages

	Gender		Ethnicity					ELL
	Boys	Girls	Hispanic	African American	White	Other	Missing	
Cohort 1 (RtI)	50.3	49.7	66.5	13.6	11.4	6.1	2.4	43.9
Cohort 1, Tier 2	53.1	46.9	74.2	10.3	10.3	2.6	2.6	51.6
Cohort 2 (Comparison)	47.5	52.5	66.4	12.9	14.7	3.7	2.4	41.7

Table 2

Criteria for Student Entry into Tier 2 Intervention Across Grade Levels

	Grade 1		Grade 2		Grade 3		Grade 4	
Measure	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
Letter Naming	< 45	< 45						
Segmenting	< 25	≤ 30						
Nonsense Word Fluency	≤ 25	≤ 50						
Word Identification Fluency	≤ 8							
Oral Reading Fluency		≤ 7	≤ 39	≤ 60	≤ 65	≤ 79	≤ 82	≤ 93

Note: Raw scores are shown above as correct responses per minute.

Table 3

Number and Timing of Students Found Eligible for Special Education

	Grade 1 (RtI Available), N = 377		Grade 2 (Comparison), N = 381	
	LD	OHI	LD	OHI
Total	13 (6 ELL)	2 (no ELL)	19 (3 ELL)	9 (1 ELL)
	3.4%	1%	5.0%	2.4%
Placed in:				
K or before:	1 (1)	2 (0)	2 (0)	1 (1)
Gr 1	0		1 (0)	1
Gr 2	3 (2)		5 (2)	1
Gr 3	5 (1)		6 (0)	3
Gr 4	2 (1)		4 (1)	2
Gr 5	2 (1)		1 (0)	1

Note: The numbers in parentheses are students of that total who are English Language

Learners.

Table 4

Descriptive Statistics across Cohorts for Students Diagnosed with LD and Students without Disabilities

	RtI		Comparison	
	RtI with LD	Without Disabilities	Comparison with LD	Without Disabilities
Gr 2 Oral Reading Fluency	31.33 (23.54)	95.50 (21.86)	47.5 (30.56)	97.41 (27.03)
Gr 2 WRMT Total Reading	78.00 (27.32)	106.38 (9.71)	88.06 (9.07)	104.62 (9.62)
Gr 2 Gray Oral Reading Test-4	69.14 (7.49)	[not administered]	71.36 (12.40)	[not administered]
Gr 3 Oral Reading Fluency	34.33 (25.54)	110.49 (25.78)	59.56 (33.05)	113.63 (27.95)
Gr 3 WRMT Total Reading	81.50 (5.09)	103.61 (8.38)	86.89 (9.19)	104.76 (9.26)
Gr 3 Gray Oral Reading Test-4	68.20 (9.25)	[not administered]	72.54 (14.17)	[not administered]
Gr 4 Oral Reading Fluency	46.00 (29.22)	116.09 (28.19)	75.85 (37.12)	119.48 (32.06)
Gr 4 WRMT Total Reading	79.50 (11.52)	99.78 (6.52)	86.57 (7.51)	98.81 (9.87)
Gr 4 Gray Oral Reading Test-4	69.40 (10.26)	[not administered]	77.20 (14.23)	[not administered]

Note: Oral Reading Fluency scores are words read correctly per minute, scores for the WRMT Total Reading (Woodcock Reading Mastery Tests) and Gray Oral Reading Test-4 are standardized scores.