

Investigating the Efficacy of a Web-Based Early Reading and Professional Development Intervention for Young English Learners

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ABSTRACT

The purpose of this study was to evaluate whether the Targeted Reading Intervention (TRI), a professional development and early reading intervention program delivered via webcam technology, could support the early reading progress of English learners (ELs). Participants for the current study were drawn from a larger three-year randomized controlled trial and included 108 ELs from 47 classrooms randomly assigned to treatment and control conditions. Teachers in treatment classrooms used the TRI in one-on-one sessions in the regular classroom for approximately 15 minutes per day. Weekly, and later biweekly, webcam coaching sessions between a TRI coach and each classroom teacher allowed the coach to interact with both the teacher and students in real time and allowed classroom teachers to receive real-time feedback from the coach. Two-level hierarchical linear models suggested that ELs struggling with learning to read in intervention classrooms significantly outperformed their peers in control classrooms on word-level measures of early reading, with effect sizes of .43 and .45, but not on text-level measures. Results also suggested that ELs struggling with learning to read were gaining at the same rate as their nonstruggling peers but were unable to catch up within the study year.

English learners (ELs) are a rapidly growing population in the United States (KewalRamani, Gilbertson, Fox, & Provasnik, 2007; National Center for Education Statistics, 2015a); from 2003 to 2013, the number of ELs in U.S. public schools grew from 4.1 million (8.7%) to 4.4 million (9.1%). According to the most recent data, almost 10% of public school students (approximately 4.3 million) in the United States participate in school-based programs for ELs (National Center for Education Statistics, 2015a), and an even greater number of students speak a language other than English at home (Kids Count Data Center, 2015).

At the same time, the early school years are critical for cognitive, academic, and social development (e.g., Takanishi, 2004). However, national assessments of ELs' early progress in reading have suggested that, on average, ELs' reading achievement lags behind their native English-speaking counterparts at fourth and eighth grades and that a persistent achievement gap exists between the scores of students identified as ELs and those identified as non-ELs (National Center for Education Statistics, 2015b). In addition, ELs are often overrepresented in special education programs because of the difficulty in

distinguishing between a disability and difficulty with reading in English related to language acquisition (De Valenzuela, Copeland, Qi, & Park, 2006; Sullivan, 2011).

To address ELs' reading achievement, researchers have investigated effective reading interventions for ELs (Cheung & Slavin, 2005), including those in English, in students' native language, or in two languages simultaneously (Ashdown & Simic, 2000; Escamilla, 1994; Escamilla, Ruiz-Figueroa, Hopewell, Butvilofsky, & Sparrow, 2010). Lyon and colleagues (2001) asserted that providing effective research-based early interventions could prevent up to 70% of all struggling readers from experiencing reading failure or even from being identified for placement in special education. However, given limited budgets and personnel, recent emphasis has been placed on increasing the efficacy of classroom teachers' early reading intervention or instruction, particularly for students at risk of reading failure, such as young ELs.

Unfortunately, evidence has shown that professional development programs for classroom teachers do not always result in significant reading gains for struggling readers (e.g., Garet et al., 2008). The exception is a small group of studies that employed individual students' diagnostic information to directly inform the basis for instructional practice (e.g., Amendum, Vernon-Feagans, & Ginsberg, 2011; Connor, Morrison, Fishman, Schatschneider, & Underwood, 2007; Scanlon, Gelzheiser, Vellutino, Schatschneider, & Sweeney, 2008; Speece, Case, & Molloy, 2003; Vernon-Feagans, Kainz, Hedrick, Ginsberg, & Amendum, 2013). In these studies, professional development provided to classroom teachers was related to students' gains in reading.

Therefore, the purpose of the current study was to evaluate the efficacy of a diagnostic early reading intervention and professional development program, the Targeted Reading Intervention (TRI), delivered by the classroom teacher for young ELs. Within a daily one-on-one instructional framework, the TRI uses a diagnostic teaching approach to help classroom teachers improve the reading skills of students who are struggling with reading acquisition, supported by a remote literacy coach using webcam technology, which allows real-time interaction and feedback to teachers during intervention sessions. Of note, the TRI was designed for use in the general education classroom to support classroom teachers and struggling readers and was not developed specifically for ELs. Although some may view this as a limitation, we do not because effective interventions are likely to positively affect students with a diverse range of needs (August & Shanahan, 2010), including students who are ELs.

In the current study, we asked four questions:

1. Controlling for fall performance, do struggling ELs in TRI classrooms demonstrate better spring

performance on tests of early literacy compared with struggling ELs in non-TRI classrooms?

2. Does the spring performance of struggling ELs in TRI classrooms indicate that they are catching up to their nonstruggling EL classroom peers?
3. Do struggling ELs in non-TRI classrooms exhibit slower growth rates compared with their nonstruggling EL peers?
4. Is students' spring performance related to TRI treatment status or struggling reader status moderated by beginning-of-the-year oral vocabulary skills?

Guiding Frameworks

An ecological systems perspective (Bronfenbrenner, 1979; Bronfenbrenner & Evans, 2000) provides the overarching theoretical framework for the current study and details the importance of proximal processes within the context of the classroom. Person-to-person interactions, specifically teacher-student interactions, are theorized as the primary drivers in children's development (Bronfenbrenner & Evans, 2000) and are central to helping teachers individualize instruction and to children's learning. Proximal learning interactions may be particularly important for EL students, whose reading success may depend on teachers' enhanced instruction during one-on-one positive interactions in the classroom.

Within this broad ecological systems perspective, we embed specific theories and corresponding instructional strategies for effective reading instruction. First, we primarily focus on automatic word recognition guided by automaticity theory (LaBerge & Samuels, 1974), which theorizes the importance of providing reading instruction in word-level decoding to automaticity and subsequent oral reading fluency development, which are necessary, but not sufficient, for successful reading comprehension. Because of primary-grades students' developmental stage of reading (Chall, 1996), much attention is given to instructional strategies for word recognition in these grades.

In addition, freeing cognitive resources accessible to students from automatic decoding does not alone produce comprehension; instead, we draw on construction-integration theory (Kintsch, 1994) as we consider the beginnings of comprehension instruction; this theory considers how three levels of representation interact to allow simultaneous meaning extraction and construction (RAND Reading Study Group, 2002). Given primary-grades students' emerging abilities related to accessing Kintsch's levels of representation, the construction-integration framework supplements the main focus on word recognition with beginning strategies for reading comprehension.

Issues Related to ELs' Reading Development

ELs often work to attain multiple goals simultaneously: continued development of their native language, mastery of English, and academic content knowledge (Calderón, 2007; Coltrane, 2003). Given that English literacy development is an active process influenced by multiple individual differences (e.g., age, oral native-language proficiency, native-language literacy, oral English proficiency, cognitive ability, background knowledge, the overlap between first and second languages; August & Shanahan, 2006; Fitzgerald, Amendum, Relyea, & Garcia, 2015), ELs benefit when teachers provide explicit instruction in English reading processes that address both word- and text-level skills (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006; Silverman, 2007; Vaughn et al., 2006). Most note the importance of aspects of oral language proficiency, such as vocabulary, and language comprehension for ELs' literacy development. However, research on the relation between ELs' English oral language and reading development has been mixed. Some researchers found that English oral language ability is related to reading comprehension (Lesaux, Crosson, Kieffer, & Pierce, 2010) or reading level growth (Fitzgerald et al., 2015; Kieffer, 2012), whereas others found no relation between English oral language and aspects of reading (e.g., Y.-S. Kim, 2012).

Currently, school districts must demonstrate yearly academic gains for ELs and other subgroups of students (Every Student Succeeds Act of 2015, 2016). Instruction in the key components of reading at both the word and text level identified by the National Reading Panel (National Institute of Child Health and Human Development, 2000)—phonemic awareness, phonics, fluency, vocabulary, and text comprehension—not only supports reading development for monolingual English-speaking students but also benefits ELs' reading development (August & Shanahan, 2006). On average, ELs achieve similar performance compared with native English-speaking students in word-level reading skills, such as decoding, but continue to lag behind in text-level skills, such as comprehension (August & Shanahan, 2006). Therefore, identification and implementation of English reading interventions are vital to support ELs' word- and text-level reading skill development. The mandate for schools and teachers is clear: Effective instruction for all students includes a literacy program that accommodates ELs' needs.

Effective Early Intervention

Researchers and practitioners have agreed that early intervention is vital for all students who need extra

support for reading acquisition (e.g., Cheung & Slavin, 2005; Connor, Morrison, & Katch, 2004). Selected early reading interventions demonstrate positive relations with reading improvement for struggling readers. Interventions include those given in English such as Reading Recovery (Ashdown & Simic, 2000; May et al., 2013), which is a pull-out model for struggling readers, or the Interactive Strategies approach (Vellutino & Scanlon, 2002), which focuses on classroom teacher instructional approaches. Specific to ELs, the same interventions are often used with positive effects, such as Reading Recovery (e.g., Ashdown & Simic, 2000). Additionally, *Descubriendo la Lectura*, a Spanish-language version of Reading Recovery, has shown positive results for ELs (Cheung & Slavin, 2005), as well as bilingual intervention in two languages simultaneously with Literacy Squared (Escamilla et al., 2010).

According to findings from key research, components of the most effective interventions for young students with low reading performance include (a) explicit instruction in the alphabetic principle and decoding while incorporating these processes with oral language and reading or understanding (Baker et al., 2014), (b) a focus on reading intervention and prevention in the early grades (Lyon et al., 2001), and (c) intensive individual or small-group literacy instruction (Baker et al., 2014). Additionally, comprehensive early reading intervention programs that offer both word-level (e.g., decoding) and text-level (e.g., reading comprehension) instruction may have the most sustained impacts on student reading achievement (e.g., May et al., 2013; Vellutino & Scanlon, 2002).

Two dissimilarities may highlight differences between ELs and their monolingual peers who struggle with reading. First, ELs' English reading development is likely affected by their English oral language development (e.g., Lesaux et al., 2010), which on average lags behind their monolingual peers' development. Second, on average, ELs often make similar amounts of progress to their monolingual peers, but because they generally begin with initial lower reading achievement, ELs subsequently remain behind their monolingual peers (e.g., August & Shanahan, 2006; Fitzgerald, Amendum, & Guthrie, 2008).

For ELs, word-level instruction and support from teachers often mirror effective instructional techniques used with monolingual students (August & Shanahan, 2006). Effective word-level instruction typically involves systematic presentation of content and skills provided through explicit instruction for monolingual students (National Institute of Child Health and Human Development, 2000). These same types of instructional strategies have been positively related to outcomes for ELs (e.g., Vaughn et al., 2006) and, on average, lead to similar levels of achievement with monolingual peers

(August & Shanahan, 2006). Conversely, effective instruction in text-level skills such as comprehension is more complex (Fletcher, 2006) and includes direct instruction in academic vocabulary and integrating language and literacy instruction with content areas (Baker et al., 2014). Additionally, intentional scaffolding of ELs' learning of text-based skills is vital, and using strategies such as questioning with a gradual release model can support ELs' participation in classroom activities and language learning (Y. Kim, 2010).

Professional Development Intervention for Classroom Teachers

Given that ELs spend the majority of their school day in the general education classroom, it is critical for their classroom teachers to possess the knowledge and skills needed to provide them with effective instruction. Due to the challenges associated with students' reading achievement in elementary school, classroom teacher quality has been the focus of a number of descriptive studies and interventions in an attempt to improve the reading instruction of classroom teachers (Garet et al., 2008; No Child Left Behind Act of 2001, 2002; Risko et al., 2008; U.S. Department of Education, 2004). Studies investigating distal characteristics of teacher quality (e.g., teacher qualifications, education, experience) have shown rather weak relations to student reading achievement, especially for students at risk for reading failure (Kainz & Vernon-Feagans, 2007). Therefore, most recently, the development and evaluation of professional development programs to improve teachers' reading instruction has received attention. However, reviews have shown these professional development efforts to be largely unsuccessful (e.g., Al Otaiba & Fuchs, 2006).

Findings from a key 2008 study (Garet et al., 2008) demonstrated that teachers who received professional development had greater increases in reading knowledge and provided more explicit reading instruction compared with a control group, but there were no significant differences in student achievement between students with teachers in the treatment and control groups. Possible reasons for the lack of student reading differences may have been due to a lack of emphasis on important components crucial to successful professional development programs for classroom teachers: (a) supporting teachers to use diagnostic reading information to individualize instruction (i.e., instructional match; e.g., Scanlon et al., 2008); (b) setting the stage for teachers to learn by doing, such that they learn effective pedagogical knowledge through successful teaching

(Risko et al., 2008); (c) highlighting the need for teachers to use one-on-one teaching sessions every day with an individual student to help them improve their instructional practices and knowledge to help all students in their class (e.g., Massey, 2003; Speece et al., 2003); and (d) providing teachers with extended experience over an entire year or more so they can consolidate their improved reading practices in helping to prevent reading failure (Wayne, Yoon, Zhu, Cronen, & Garet, 2008).

The TRI has several key components that make it a potentially effective early reading intervention for young ELs. First, the TRI has a successful record as an effective reading intervention for struggling readers in early elementary school (Amendum et al., 2011; Vernon-Feagans et al., 2010, 2012, 2013). Second, the TRI provides an instructional framework with the potential to develop ELs' word- and text-level skills (August & Shanahan, 2006). Third, because ELs spend the majority of their day in the general education classroom, the TRI maximizes alignment between classroom and intervention instruction by having the classroom teacher deliver the intervention.

Method

Background, Design, and Participants

Data for the current study were drawn from a larger three-year randomized controlled trial of the TRI. We first describe the broader three-year trial study context and selection of participants. Then, we provide details related to the current study.

Context of the Larger Study

The broader study was conducted at 10 schools in three high-poverty rural counties in the Southeastern United States. Each school received Title I funding, with the percentage of students eligible for free or reduced-priced lunch ranging from 64% to 87%. All of the kindergarten and first-grade classrooms in each school participated in the TRI randomized controlled trial, which occurred across three academic years. Randomization occurred at the classroom level, with approximately half of the classrooms in each school randomized as TRI treatment classrooms and half as control classrooms. First-grade teachers participated in years 1 and 2 of the study, and kindergarten teachers participated in years 2 and 3. A limited amount of teacher turnover occurred, primarily during the summer, such that teachers were involved in either one or two years of grade-level participation. Thus, during the three years of the project, 119 teachers in 100 classrooms were involved in the broader study.

Students were selected to participate in the study based on their classification as a struggling or nonstruggling reader according to grade-appropriate screening subtests from AIMSWeb (Shinn & Shinn, 2002) and the DIBELS (Good & Kaminski, 2002). For kindergarten students, the screening subtests were AIMSWeb Letter Sound Fluency and DIBELS First Sound Fluency. For first-grade students, the screening subtests were DIBELS Phoneme Segmentation Fluency and DIBELS Nonsense Word Fluency. We used grade-level and fall timepoint AIMSWeb and DIBELS benchmarks to categorize all students as being at high risk, some risk, or low risk for reading difficulties. Students from both the high-risk and low-risk groups were randomly ordered onto a list to receive additional assessment on two subtests, Letter-Word Identification and Word Attack, from the Woodcock–Johnson III Diagnostic Reading Battery (WJ–III; Woodcock, Mather, & Schank, 2004). Because of the developmental reading level of student participants (Chall, 1996) and the difficulty in measuring comprehension (Fletcher, 2006), only word-level assessments were used to identify struggling readers. To be selected as a struggling reader eligible for study participation, students with parental consent whose screening subtest scores identified them as high risk were required to score below 35% on the grade percentile score for one or both WJ–III subtests. To be selected as a nonstruggling reader eligible for study participation, students with parental consent whose screening subtest scores identified them as low risk were required to have an average grade percentile score on both subtests greater than 50%, with neither subtest falling below 35%. For the full study sample ($N = 1,108$), this process led to the selection of three struggling readers and three nonstruggling readers within each classroom.

Context of the Current Study

Because of our interest in the effectiveness of the TRI for EL students, the current study included a subsample of ELs derived from the full sample in the broader study. EL status was based on information received from parent/caregiver respondents on a demographic questionnaire sent home at the beginning of the school year with consent forms. Questionnaires and consent forms were available to families in English and/or Spanish. ELs were required to meet one of the following criteria: (a) Their first language was a language other than English, and English was not spoken in the home; or (b) their first language was a language other than English, and although English was spoken in the home, the family reported that the student received English as a Second Language (ESL) services at school and/or the family received a Spanish consent form. These criteria

led to the inclusion of a subsample of 108 ELs, 76 of whom were considered struggling readers (treatment $n = 38$, control $n = 38$) and 32 of whom were considered nonstruggling readers (treatment $n = 13$, control $n = 19$). Of the current study's sample of 108 ELs, 70 were kindergartners and 38 were first graders. Most ELs were Spanish speakers ($n = 101$, 93%), but the other languages were Creole ($n = 4$, 4%), Arabic ($n = 1$, 1%), Chinese ($n = 1$, 1%), and Greek ($n = 1$, 1%).

Forty-seven teachers (treatment $n = 24$, control $n = 23$) taught the 108 ELs. Given grade-level teachers' participation in the study for one or two years, the number of ELs in their classrooms ranged from one to eight. The teachers serving the subsample of ELs were all female, and over 80% were white. The majority of the teachers were certified in early elementary education, but only about a fifth had obtained a master's degree. Across treatment status, they averaged between eight and nine years' teaching experience.

As in the broader study, to support similar instructional models across treatment and control conditions, EL students did not receive the TRI in place of any normal instruction. Students in both conditions continued to receive the regular classroom instruction, as well as any supplemental instruction, provided by the schools (e.g., instruction from an ESL teacher), and only ELs in treatment classrooms received the TRI in addition to typical classroom and small-group supplemental instruction.

Intervention Description

The TRI employs webcam technology to help classroom teachers use specific strategies with individual learners to prevent reading failure. From hundreds of miles away, literacy coaches watch and talk with classroom teachers each week in live webcam sessions to help teachers use diagnostic literacy strategies to individualize instruction for low-performing struggling readers, who then progress rapidly in early reading. Teachers are asked to work individually with one struggling reader for 15 minutes three or four times per week, on separate days, until the student makes rapid progress in reading (typically ranging from six to 10 weeks), at which point teachers move to another selected struggling reader. Coaches provide immediate and real-time diagnostic feedback to help classroom teachers choose the best individualized instructional strategies for each student. One half-time literacy coach works with 12 to 15 teachers via webcam each week. Recent evidence from past TRI studies showed that webcam coaching produces better reading gains for struggling readers and greater gains in classroom teacher efficacy compared with face-to-face coaching (Vernon-Feagans, Bratsch-Hines, Varghese, Bean, & Hedrick, 2015). In a series of

randomized controlled trials, the TRI produced effect sizes of .30 to .70 for struggling readers; additionally, nonstruggling readers in TRI classrooms also profited from the TRI, with effect sizes of .30 to .40, signifying that TRI teachers were able to generalize TRI practices to benefit all students in their classrooms (e.g., Amendum et al., 2011; Vernon-Feagans et al., 2013).

TRI and Content

TRI literacy coaches meet weekly (later transitioning to biweekly) with individual teachers via webcam to observe each teacher instructing a struggling reader. Coaches provide immediate feedback and scaffold teachers toward improved reading instruction. Using observation and diagnostic tools, coaches and teachers decide which strategies are most appropriate for an individual student. Each TRI teacher uses a TRI Diagnostic Map (see Figure 1) to plan and chart the struggling reader's daily progress. Teachers are given TRI materials, including a whiteboard, letter sound tiles, a picture dictionary, a TRI reference tool, and books matched to progressively challenging TRI instructional levels.

TRI Instructional Framework

Three instructional activities compose each 15-minute TRI session: Rereading for Fluency, Word Work, and Guided Oral Reading. Although the strategies used are slightly different as students progress through the four TRI levels (described fully in the subsequent section), the strategies build on one another in order for the student to reach fluent reading with beginning comprehension.

In Rereading for Fluency, the student rereads part of a book that he or she has read at least once the previous day. The teacher might model or scaffold fluent expressive reading with some or all of the text, depending on the skill level of the student. Rereading for Fluency is primarily designed to build students' early reading fluency and automatic word recognition (LaBerge & Samuels, 1974).

In Word Work, the teacher uses several instructional strategies to help the student manipulate, say, and write words (cf. Bear, Invernizzi, Templeton, & Johnson, 2012; Moats, 1998; Morris, Tyner, & Perney, 2000), based on progress monitoring and the TRI Diagnostic Map. In addition, the teacher makes sure each word presented during the word identification strategies can be defined by the student and used in a sentence that demonstrates understanding of that word. If needed, direct vocabulary instruction is provided to students, with teachers using the TRI picture dictionary as needed. Along with the help of his or her literacy coach, the teacher makes decisions about when to progress to more challenging levels of word identification and

adopt slightly different strategies. Thus, each teacher learns to assess a student's level of word identification and vocabulary skills and select a particular diagnostic strategy that is matched to the skill level of the student to achieve instructional match (Connor et al., 2004, 2007). All TRI strategies help students define and use tier 1 and tier 2 vocabulary words (Beck, McKeown, & Kucan, 2002), demonstrate the alphabetic principle and phoneme-grapheme (sound-symbol) relations within words, develop segmenting and blending abilities (phonemic awareness tasks), and recognize sight words.

In the last of the three activities, teachers and students engage in Guided Oral Reading. Teachers choose a text at students' instructional reading level, as guided by Word Work strategies and the Diagnostic Map. Teachers pay particular attention to scaffolding students' abilities to define new words and summarize, predict, and make connections and inferences from the text that they have read. Teachers provide beginning comprehension instruction for students in these selected comprehension strategies by modeling and providing guided practice for students within Guided Oral Reading. Direct vocabulary instruction is provided to students via simple, child-friendly definitions as needed (Beck & McKeown, 2001). We distinguish TRI Guided Oral Reading from contemporary guided reading in small-group classroom instruction in two ways: (1) TRI texts are more closely matched to the individual student's needs, and (2) TRI teachers offer a greater focus on word-level, moment-by-moment scaffolding, as well as a traditional focus on fluency and comprehension strategies. After Guided Oral Reading, the final TRI component in a session, teachers return to the TRI Diagnostic Map to develop a plan for the student's next session (see the Appendix for a transcript of a TRI session).

TRI Instructional Levels

The TRI has four instructional levels that become progressively more challenging in early reading: pink, blue, green, and purple. Each level helps students with fluency, decoding words in isolation and in texts, defining words and using them in sentences, and reading fiction and nonfiction texts with a focus on the student summarizing and answering questions about what he or she has read. At each level, students are encouraged to do the work and are allowed appropriate amounts of time to respond to the reading instructional activities, always referring to letter sounds within real words (not separate from words) and always making sure students blend as they go in segmenting and blending words so fluency is optimized.

Students at the pink level are beginning readers who are gaining knowledge of the alphabetic principle, striving to segment and blend words containing short

FIGURE 1
Targeted Reading Intervention Diagnostic Map: Completed Example

Student: Samantha Sanchez Date: 9/9/2014 PINK

Student's Most Pressing Need: Blending 3 sounds

Today's Plan	Assessment of Work	Notes for Next Time
Re-Reading for Fluency		
Text Read: <u>Fox Hops</u>	Types of Errors: <u>None</u>	<input type="checkbox"/> Re-Read same text <input checked="" type="checkbox"/> Move to next text
Word Work		
Segmenting Words		
PINK words: <u>Skip</u>	Able to segment 3 sound words? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Frequent phonics errors:	<input type="checkbox"/> Repeat segmenting with 3 sound words <input type="checkbox"/> Begin segmenting with 4 sound words <input type="checkbox"/> Repeat sound _____ <input type="checkbox"/> Move to new sound _____ <input checked="" type="checkbox"/> Move to another activity
Change One Sound		
PINK words: <u>Pink 3a:</u> <u>bed, bet, get, got</u>	Able to manipulate sounds in 3 sound words? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Frequent phonics errors: <u>None</u>	<input type="checkbox"/> Repeat changing with 3 sound words <input checked="" type="checkbox"/> Begin changing with 4 sound words <input type="checkbox"/> Repeat sounds _____ <input type="checkbox"/> Move to another activity
Read Write & Say		
PINK words: <u>Pink 3a, 3b:</u> <u>pit, pet, met, mess</u>	Able to blend 3 sound words? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Frequent phonics errors:	<input type="checkbox"/> Model "Blending As You Go" <input type="checkbox"/> Repeat blending with 3 sound words <input checked="" type="checkbox"/> Begin blending with 4 sound words <input type="checkbox"/> Repeat sounds _____ <input type="checkbox"/> Move to new sounds _____ <input type="checkbox"/> Move to another activity
Pocket Phrases (comes after Guided Oral Reading)		
Review Phrases: <u>on top of</u> New Phrases: <u>get in bed</u>	Is reading automatic? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>in, of</u>	<input checked="" type="checkbox"/> Repeat phrase <u>get in bed</u> <input type="checkbox"/> New phrase _____ <input checked="" type="checkbox"/> Target words <u>in, of</u>
Guided Oral Reading		
Text Read:	Types of Errors: (consider both areas) <input type="checkbox"/> Word Recognition <input type="checkbox"/> Comprehension	<input type="checkbox"/> Select an easier text <input type="checkbox"/> Choose another text at the same level <input checked="" type="checkbox"/> Choose a higher level text
Extensions		
<input checked="" type="checkbox"/> For Decoding/Phonics Knowledge <u>Daily 5 Word Work – short vowels</u>		
<input checked="" type="checkbox"/> For Fluency/Sight Word Development <u>Read to TA, pocket phrases</u>		
<input type="checkbox"/> For Comprehension _____		
<input type="checkbox"/> For Vocabulary _____		
<input type="checkbox"/> For Motivation _____		

Try Blue 1 tomorrow

Note. The color figure can be viewed in the online version of this article at <http://ila.onlinelibrary.wiley.com>.

vowels with two or three sounds, and needing practice in developing oral language vocabulary and text comprehension skills. Teachers assist in scaffolding students' ability to define words, use them in a sentence,

and manipulate the sounds within words, by introducing segmenting and blending while also integrating phonics knowledge, early reading, and fluency practice. Guided Oral Reading ensures that students can

summarize texts and answer concrete and abstract questions about the text that they have read.

Students at the blue level consistently show greater understanding of the alphabetic principle, have increasingly greater phonics knowledge, and are progressing in their segmenting and blending skills of words with short vowels by frequently demonstrating the ability to segment and blend sounds in words with four to six sounds. Teachers continue to scaffold students' ability to manipulate the sounds within words by introducing more sophisticated short-vowel words, such as words with complex initial and final consonant blends or digraphs, and focus on fluency, word identification, vocabulary development, oral language development, and comprehension. Comprehension instruction is limited to some degree by the texts students read at the pink and blue levels; often, the texts are simple decodable books with limited depth for comprehension instruction.

Students at the green level understand the alphabetic principle, have stronger phonics knowledge, and are able to segment and blend sophisticated long-vowel words, define these words, and use the words in sentences. Students are ready for more advanced phonics knowledge, including learning that the same long-vowel sound may be represented by different orthographic patterns. Teachers continue to use comprehension strategies such as prediction, summarizing, and retelling to support readers in their understanding of the text.

Students at the purple level understand the alphabetic principle and are progressing in advanced phonics knowledge by demonstrating the ability to segment and blend one-syllable words containing diphthongs and/or long-vowel patterns. Students are ready to learn how to recognize and chunk two-, three-, and four-syllable words flexibly and independently. They are ready to learn how to analyze the pattern of vowels and consonants in words to determine where to divide words into syllables. Reading practice continues to be presented in the contexts of reading real words or real texts and focuses on fluency, decoding multisyllabic words, vocabulary development, oral language development, and comprehension.

TRI Professional Development and Coach Training

In this section, we describe the professional development process and associated activities for classroom teachers. Then, we describe the training process for TRI coaches.

Teacher Professional Development

TRI teacher professional development entailed five components: the TRI institute, the TRI website, weekly/

biweekly webcam coaching sessions, team meetings, and ongoing professional development sessions. At the TRI institute, TRI teachers and relevant school personnel (e.g., principals, reading specialists) attended a three-day training where they received TRI materials and learned diagnostic reading strategies aimed to help struggling readers. Teachers watched video examples and modeling by coaches, participated in role-play using TRI strategies, and practiced using strategies independently with students. A highly interactive TRI website, introduced at the institute to teachers for continued professional development, housed TRI content, including PDFs of strategies, TRI teaching tools, and videos of TRI teaching strategies.

During weekly/biweekly webcam coaching sessions, TRI coaches met individually with each classroom teacher to watch the session, provide individualized feedback, and answer questions and problem solve with the teacher (see the Appendix). At the beginning and end of each coaching session, the coaches and the teacher communicated about the student's most pressing need and the TRI activities, strategies, level, and texts that would most effectively meet that need. Through ongoing modeling and support, the coach helped the teacher reflect on and use student progress monitoring to determine the student's current level of decoding, vocabulary, and comprehension skills and to set goals to help the student progress in his or her skills at a rapid pace. As follow-up to each webcam coaching session, coaches e-mailed feedback and answers to teacher questions. The TRI coaching model emphasized building a relationship with the teacher and student over the webcam and providing a strong support system (Koh & Neuman, 2006). Over the course of teachers' year or two of TRI participation, coaches provided less scaffolding over time; thus, coaching sessions were designed to make teachers independent experts in teaching reading. Finally, during weekly (and eventually biweekly) team meetings, TRI coaches met with the school-based TRI teaching team via webcam for 30 minutes. TRI coaches also provided ongoing professional development, building on teachers' needs and enhancing teachers' TRI practices. Ongoing professional development sessions lasted from one to three hours and were facilitated by the coach via webcam.

Coach Training

A total of six coaches worked with teachers across the course of the study. Five of the coaches were doctoral-level graduate students in education who had previous classroom teaching experience, and one coach was a former classroom teacher and literacy coach. Five of the coaches were female; five coaches were white, and one was Asian American. All coaches spoke English with

the teachers and EL students. Each coach held a master's degree. Although not all coaches held state certification as reading specialists, the TRI purposefully identified and hired coaches who had extensive teaching experience and expertise in elementary literacy instruction. Additionally, all coaches participated in an intensive training process. Coaches were trained during the summer via a five-day coaching institute, where they learned TRI content and strategies, as well as coaching pedagogy. As part of the training, coaches submitted video recordings of themselves completing the TRI with early elementary students and received feedback from the intervention director until they were deemed proficient in delivering the intervention. Coaches attended weekly meetings throughout the school year to discuss any concerns and the content of ongoing teacher professional development. Coaches regularly met with the intervention director and/or master coaches to discuss coaching issues with individual teachers and coaching strategies to best promote high implementation fidelity.

Data Collection Procedures

At the beginning of each study year, all participating students returned consent forms from their parents or primary caregivers, which included consent to participate in the study and information about child and family demographic characteristics. In the fall and spring of each study year, teachers completed questionnaires about their professional background, classroom characteristics, and information specific to selected struggling and nonstruggling readers.

All struggling and nonstruggling ELs in the study were administered a limited battery of standardized tests in the fall and spring of the school year. Prior to data collection, TRI assessors, who were primarily graduate students or former teachers, took part in two 8-hour training sessions led by a TRI research coordinator to become a certified assessor for the project. Because of the remote location of the schools, the project aimed to hire assessors from target areas. Trainings with distance assessors were conducted on site and then followed up via online communication and video conferencing. Following the training sessions, assessors submitted video recordings of themselves completing the full battery of assessments with nonparticipating students. The TRI research coordinator scored and evaluated the video recordings to ensure reliability. Once deemed reliable, assessors visited the schools in the fall and spring to collect student assessment data. All student assessments were administered in a quiet area in the schools and were conducted in English. Assessors spoke English with students during assessments.

Measures

Treatment Variable

As described previously, teachers assigned to the TRI treatment were notified in early summer, invited to an intensive three-day summer institute, and provided ongoing weekly/biweekly webcam coaching and weekly team meetings for the academic year. Treatment teachers were also given TRI-related resources and access to the password-protected TRI website, as well as a laptop to use for remote webcam-based coaching sessions. Teachers in control classrooms received a laptop or iPad and a computerized math curriculum (Building Blocks; Clements & Sarama, 2007) but did not receive TRI training, coaching, materials, or website access until the conclusion of the study.

Four groups of ELs participated in this study, as defined by treatment and struggling reader status: treatment struggling (TS), control struggling (CS), treatment nonstruggling (TN), and control nonstruggling (CN). We created a categorical dummy variable, treatment status, with four levels as our predictor of interest to understand the effects of the intervention for ELs falling into these varying groups.

Outcome Variables

Fall and spring standardized assessments were conducted using three WJ-III subtests conducted in English: Letter-Word Identification, Word Attack, and Passage Comprehension. For all subtests, CompuScore, provided by the commercial test provider, was used to calculate *W* scores, which are Rasch ability scores providing equal interval characteristics of measurement.

The Letter-Word Identification subtest measured each student's word identification skills. Initial items required the student to identify letters that appeared in large type. Remaining items required the student to pronounce words correctly, with items becoming increasingly difficult as the selected words appear less frequently in written English. This subtest has a median reliability of .91 in the 5–19 age range (Woodcock et al., 2004).

The Word Attack subtest measured each student's skill in applying phonic and structural analysis skills to the pronunciation of unfamiliar printed sounds and words. Initial items required the student to produce sounds for single letters. Remaining items required the student to read aloud letter combinations that were phonetically consistent patterns in English orthography but were nonwords or low-frequency words, with items becoming progressively difficult. This subtest has a median reliability of .87 in the 5–19 age range (Woodcock et al., 2004).

Initial items on the Passage Comprehension subtest measured each student's symbolic learning and required

the student to match a rebus with a picture of an item. The more advanced items employed a modified cloze procedure that required the student to read a short passage and provide a missing key word that made sense within the context of the passage. The items became increasingly difficult by removing pictorial support and increasing passage length and difficulty, as well as vocabulary complexity. This subtest has a median reliability of .83 in the 5–19 age range (Woodcock et al., 2004).

Moderating Variable

In the fall and spring of each study year, research assistants assessed students selected as struggling and non-struggling readers with the fourth edition of the Test of Language Development–Primary (Newcomer & Hammill, 2008). The test provided an assessment of each student’s oral language and vocabulary knowledge. The TRI used the Oral Vocabulary subtest, which was a 38-item semantic subtest that measured each student’s ability to give oral definitions for common English words that were spoken by the assessor without the use of pictures. Example items were *hat*, *chair*, *television*, and *cake*. Test–test reliability was .82 (Newcomer & Hammill, 2008). Scaled scores were used in analyses.

Control Variables

Four variables were added as control variables: fall performance, grade, student gender, and family socioeconomic status (SES). Fall performance scores were ELs’ fall WJ–III scores on the respective subtests. Grade was dummy-coded as 0 (kindergarten) or 1 (first grade). Student gender was dummy-coded as 0 (female) or 1 (male). SES comprised two variables reported by parent/caregiver respondents on the demographic questionnaire: family income and maternal education. Family income was coded as a categorical dummy variable with three levels of \$20,000 increments, with 71.26% of families of ELs reporting incomes between \$0 and \$20,000. Maternal education was coded as a continuous variable representing the highest number of years of education of the mother/caregiver in the household (mean [M] = 9.51 years; standard deviation [SD] = 2.33 years). To create the final variable of SES, family income and maternal education were transformed into z -scores and averaged.

Fidelity of Implementation

The TRI developers created a fidelity system to assess the degree to which treatment teachers implemented the TRI according to intervention design. The fidelity system captured struggling readers’ exposure to TRI instructional sessions and teachers’ exposure to TRI webcam coaching sessions, teachers’ adherence to the structure of TRI lessons (e.g., teachers did what was expected), and teachers’ quality of implementation (e.g.,

teachers performed intervention activities well; Nelson, Cordray, Hulleman, Darrow, & Sommer, 2012). For exposure fidelity, at each weekly team meeting, TRI teachers reported how many sessions they had completed with a struggling reader over the course of the previous week, and TRI coaches recorded the number of coaching sessions they had completed with each treatment teacher the previous week.

To capture adherence and quality of implementation, the TRI developers created a coded fidelity system in which trained research assistants coded videos of individual teacher–struggling EL TRI sessions. These sessions were observed live and video recorded via remote webcam by TRI literacy coaches, and subsequently uploaded to a secure drive. Video sessions were typically 20 minutes in length, with the teacher and struggling reader participating in the TRI lesson during the first 15 minutes and the teacher and coach discussing the student’s most pressing need and planning for the next lesson during the last five minutes. Two video sessions for each struggling reader were randomly selected to be coded for fidelity. To allow for variation in student and teacher familiarity with the TRI, the first video was randomly selected from one of the student’s first three TRI sessions and the second video from one of the student’s last three sessions. Research assistants coded each of the teacher videos for adherence and quality fidelity using codes based on intervention elements. A minimum of 15% of videos were double-coded for reliability purposes.

Student exposure was measured as the number of weeks that each student received the TRI over the course of the year and the total number of TRI sessions. On average, ELs received the one-on-one TRI for nine weeks, resulting in approximately 21 sessions per student. Teacher exposure was measured as the number of weeks that each teacher received coaching sessions per student and the total number of coaching sessions. Treatment teachers of EL students received an average of four TRI coaching sessions for each student with whom they worked. On the coded fidelity measure, teachers were coded as having 82% adherence to TRI strategies across sessions with their EL struggling readers. Teachers were coded as providing high-quality scaffolding during 66% of the strategies and using high-quality contextual clues for their struggling readers during 59% of the strategies.

Results

Method of Analysis

Based on our experimental design, we performed an intent-to-treat analysis comparing intervention effects for students of varying TRI treatment and struggling reader status. For treatment students, 0–15% of predictor data and 0–8% of spring outcome data were missing.

For control students, 0–11% of predictor data and 0–3% of spring outcome data were missing. To avoid imprecise estimation of models because of these missing data, we created and analyzed multiple imputed data sets in SAS 9.2. Data for treatment versus control students were imputed separately and combined for analyses based on recommendations from What Works Clearinghouse (2013). Multiple imputation procedures used an iterative method to estimate the multivariate relations among study variables for cases with available data. These observed relations among study variables were then used to estimate plausible values for missing data (Graham, Olchowski, & Gilreath, 2007). Consequently, analyses were run on each of 20 imputed data sets. Model parameters were aggregated across the data sets using the MIANALYZE procedure in SAS. All continuous predictors were centered prior to analyses.

Separate models were conducted for each outcome (Letter-Word Identification, Word Attack, and Passage Comprehension), controlling for fall performance, grade, student gender, and SES. Because preliminary three-level hierarchical linear models (HLMs; Raudenbush & Bryk, 2002) accounting for students nested in classrooms and classrooms nested in schools indicated nonsignificant variation between schools and between classrooms within schools, we dropped level 3 (school) from subsequent analyses. Furthermore, although two-level models yielded significant variation at level 1 (student) but not level 2 (classroom), we kept the random effect for level 2 because classroom was the unit of randomization for the study. Thus, our method of analysis involved fitting two-level HLMs to account for the nesting of students in classrooms. Based on one year of instruction, these models predicted ELs' reading and literacy spring scores, controlling for fall scores. Analyses of covariance (ANCOVAs) were conducted using the MIXED procedure in SAS.

Model 1 of ANCOVAs for the three outcomes entailed using planned comparisons testing four effects of the intervention for ELs: (1) whether the TRI treatment led to larger growth for treatment struggling ELs as compared with control struggling ELs (TS vs. CS), (2) whether the TRI treatment led to catch-up effects for treatment struggling ELs as compared with treatment nonstruggling ELs (TS vs. TN), (3) whether not receiving the TRI treatment led to lower growth rates for control struggling ELs as compared with control nonstruggling ELs (CS vs. CN), and (4) whether the TRI treatment led to teachers generalizing improved reading instructional practices to benefit treatment nonstruggling ELs as compared with control nonstruggling ELs (TN vs. CN).

Model 2 of ANCOVAs for the three outcomes entailed testing moderation effects of EL students' fall oral vocabulary skills and their treatment and struggling status. Treatment effects and interactions were estimated using the same method as in model 1. The

estimates compared gains for treatment and control struggling and nonstruggling students across levels of oral vocabulary skills.

For the continuous outcomes in the study, effect sizes for significant treatment effects using multilevel models were calculated as Hedges's g , as guided by recommendations from What Works Clearinghouse (2013). Hedges's g is adjusted group mean differences divided by the unadjusted pooled within-group standard deviation of each outcome (What Works Clearinghouse, 2013). As seen in the following equation, γ represented the HLM coefficient of the effect of the TRI, adjusting for the level 1 and level 2 covariates in the model. This effect size calculation also accounts for student sample sizes of the treatment (n_t) and control (n_c) groups, as well as student-level standard deviations of the treatment (s_t) and control (s_c) groups.

$$g = \frac{\omega\gamma}{\sqrt{\frac{(n_t-1)s_t^2 + (n_c-1)s_c^2}{n_t+n_c-2}}}$$

Baseline Equivalence

Table 1 provides descriptive information for participating students by treatment and struggling reader status. Based on treatment and struggling status, we examined fall scores for oral vocabulary, Letter-Word Identification, Word Attack, and Passage Comprehension prior to HLM analyses. As expected based on study design, struggling readers across treatment and control status scored significantly lower than nonstruggling readers on all fall tests. For treatment versus control nonstruggling readers, no significant differences in fall scores existed. For treatment versus control struggling readers, only Word Attack fall scores were significantly higher, $M = 407.53$, $SD = 31.18$, $t(75) = 2.83$, $p = .03$.

HLM Results

HLM results for each of the three WJ-III subtests are presented in Table 2. Each outcome is detailed further in this section.

Letter-Word Identification

In model 1, treatment struggling ELs had significantly higher spring Letter-Word Identification scores (conditioned on fall scores) than control struggling ELs did, gaining 11.71 points across the year ($p = .02$, $g = .43$). For this medium effect size, the advantage for ELs in treatment classrooms was over one-third standard deviation in observed spring scores ($SD = 29.29$). The remaining planned comparisons were not significant. In model 2, no evidence existed that the significant treatment effect for treatment versus control struggling ELs was moderated by fall oral vocabulary skills ($B = 2.48$, $p = .10$).

TABLE 1
Descriptive Information for Targeted Reading Intervention Treatment (Struggling *N* = 38; Nonstruggling *N* = 13) and Control (Struggling *N* = 38; Nonstruggling *N* = 19) English Learners

Variable	Struggling				Nonstruggling			
	<i>N</i>	Percentage or <i>M</i>	<i>SD</i>	Range	<i>N</i>	Percentage or <i>M</i>	<i>SD</i>	Range
<i>Treatment</i>								
Grade (percentage in grade 1)	38	0.55	0.50	0–1	13	0.46	0.52	0–1
Student gender (percentage male)	38	0.42	0.50	0–1	13	0.46	0.52	0–1
Family socioeconomic status	37	–0.04	0.66	–0.65–1.59	12	–0.16	0.59	–0.65–1.16
Oral vocabulary, fall scores (TOLD-P:4)	38	4.21	2.70	1.00–13.00	13	6.61	2.06	2.00–10.00
Letter-Word Identification, fall scores	38	356.05	40.17	283.00–413.00	13	399.46	24.13	367.00–439.00
Letter-Word Identification, spring scores	35	412.63	29.29	357.00–464.00	13	433.08	13.95	417.00–468.00
Word Attack, fall scores	38	407.53	31.18	369.00–465.00	13	444.69	22.55	422.00–473.00
Word Attack, spring scores	35	455.40	20.20	422.00–496.00	13	474.69	10.36	461.00–496.00
Passage Comprehension, fall scores	37	405.46	21.62	360.00–443.00	13	427.08	20.71	393.00–458.00
Passage Comprehension, spring scores	35	431.09	31.00	370.00–517.00	13	448.77	16.08	422.00–472.00
<i>Control</i>								
Grade (percentage in first grade)	38	0.16	0.37	0–1	19	0.26	0.45	0–1
Student gender (percentage male)	38	0.42	0.50	0–1	19	0.26	0.45	0–1
Family socioeconomic status	37	–0.08	0.73	–0.65–2.31	17	0.16	1.03	–0.62–3.31
Oral vocabulary, fall scores (TOLD-P:4)	37	3.38	2.64	1.00–10.00	19	6.11	2.33	1.00–9.00
Letter-Word Identification, fall scores	38	342.71	32.96	300.00–428.00	19	386.05	17.76	362.00–417.00
Letter-Word Identification, spring scores	37	392.30	25.57	339.00–446.00	19	426.16	17.49	401.00–468.00
Word Attack, fall scores	38	392.95	29.13	369.00–465.00	19	434.89	21.89	394.00–469.00
Word Attack, spring scores	37	436.92	28.31	378.00–505.00	19	467.26	13.77	422.00–487.00
Passage Comprehension, fall scores	37	402.03	12.80	370.00–427.00	19	421.53	19.13	393.00–458.00
Passage Comprehension, spring scores	37	419.54	18.02	393.00–465.00	19	444.53	15.97	422.00–482.00

Note. TOLD-P:4 = Test of Language Development–Primary, fourth edition. Letter-Word Identification, Word Attack, and Passage Comprehension are subtests of the Woodcock–Johnson III Diagnostic Reading Battery.

TABLE 2
Results From Multilevel Models Predicting to Woodcock–Johnson III Diagnostic Reading Battery Subtests

Variable	Letter-Word Identification		Word Attack		Passage Comprehension	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Model 1						
<i>Main effects</i>						
Fall performance	0.59***	0.09	0.22	0.13	0.22*	0.11
Grade (percentage in grade 1)	-1.50	6.36	6.48	7.72	30.51***	5.09
Student gender (percentage male)	2.21	3.55	-1.33	4.04	-3.75	3.41
Family socioeconomic status	2.87	2.43	-1.66	2.68	3.45	2.32
Oral vocabulary, fall scores (Test of Language Development–Primary, fourth edition)	-0.43	0.76	0.89	0.92	0.16	0.74
<i>Planned comparisons</i>						
TS vs. CS	11.71**	4.52	11.12*	5.29	-2.49	4.89
TS vs. TN	2.38	7.07	-10.93	8.17	-16.23*	6.35
CS vs. CN	-8.43	6.00	-18.27*	7.32	-17.31***	5.26
TN vs. CN	0.90	6.32	3.78	7.52	-3.56	6.68
Model 2, moderation analyses						
Oral vocabulary × CN	2.82	2.11	2.38	2.33	-0.30	2.02
Oral vocabulary × CS	2.48	1.51	3.07	1.77	-0.26	1.59
Oral vocabulary × TN	1.11	2.67	-1.67	3.00	0.47	2.61
Variance components						
Level 2	15.84	43.86	32.95	40.47	49.73	41.37
Residual	275.13***	55.35	362.29***	60.39	248.22***	45.15

Note. CN = control nonstruggling; CS = control struggling; TN = treatment nonstruggling; TS = treatment struggling.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Word Attack

In model 1, treatment struggling ELs had significantly higher spring Word Attack scores (conditioned on fall scores) than control struggling ELs did, gaining 11.12 points across the year ($p = .04$, $g = .45$). For this medium effect size, the advantage for ELs in treatment classrooms was over one-half standard deviation in observed spring scores ($SD = 20.20$). Furthermore, control struggling ELs performed significantly lower than control nonstruggling ELs ($B = -18.27$, $p = .01$, $g = -.74$). This relation was not significant for treatment struggling ELs versus treatment nonstruggling ELs ($B = -10.93$, $p = .18$). In model 2, no evidence existed that the significant treatment effect for treatment versus control struggling ELs was moderated by fall oral vocabulary skills ($B = 3.07$, $p = .08$).

Passage Comprehension

In model 1, treatment status was not significant in predicting to spring Passage Comprehension scores.

Treatment struggling ELs performed significantly lower than treatment nonstruggling ELs ($B = -16.23$, $p = .01$, $g = -.48$). In addition, control struggling ELs performed significantly lower than control nonstruggling ELs ($B = -17.31$, $p = .001$, $g = -.68$). In model 2, no evidence existed that the significant treatment effect for treatment versus control struggling ELs was moderated by fall oral vocabulary skills ($B = -0.26$, $p = .87$).

Main Conclusions and Discussion

Main Conclusions

The main findings from this study supported the effectiveness of the TRI for young ELs. Based on the results of the HLM analysis and the research questions, we drew four main conclusions. First, struggling ELs in TRI classrooms significantly outperformed struggling ELs in control classrooms on two spring reading outcomes. Specifically, struggling ELs from TRI classrooms ended

the year with significantly higher Letter-Word Identification and Word Attack scores. Effect sizes were .43 and .45, respectively, representing close to one-half standard deviation advantage for struggling ELs from TRI classrooms on the two significant outcomes. However, struggling ELs in TRI classrooms did not outperform struggling ELs in control classrooms on the Passage Comprehension subtest. Second, struggling ELs in TRI classrooms were not able to close the performance gap with their nonstruggling EL peers. Third, in control classrooms, on average, struggling ELs had slower growth rates compared with their nonstruggling peers. Finally, for the significant intervention effects for the Letter-Word Identification and Word Attack subtests favoring TRI struggling ELs, there was no evidence that effects were moderated by ELs' fall oral vocabulary skills.

Discussion

The efficacy of the TRI for ELs in the primary grades was supported because struggling ELs in TRI classrooms significantly outperformed struggling ELs in control classrooms. The results suggest that the TRI is an effective intervention to address young ELs' early reading skills (August & Shanahan, 2006; Baker et al., 2014) and that within TRI instruction the teacher-student interactions, or proximal processes (Bronfenbrenner & Evans, 2000), were supportive of effective teaching and learning for ELs. However, prior to the ensuing discussion, we also note the difficulty of identifying ELs who are struggling readers; often, the designation of struggling status may be related to students' proficiency with English rather than true difficulty with reading acquisition, frequently resulting in inappropriate placements in special education (De Valenzuela et al., 2006; Sullivan, 2011). Subsequently, further discussion related to each of the main conclusions is provided.

The significant advantage for struggling ELs from TRI classrooms over those from control classrooms for word-level skills is likely due to the systematic word-level instruction included in the TRI instructional framework, as well as the opportunities for students to apply word-level instruction during the guided oral reading portion of the TRI lesson. This type of systematic word-level instruction is vital for beginning readers (Ehri, 1991; Vernon-Feagans et al., 2013) and reflects the key developmental reading skills for students in the primary grades (Chall, 1996). In addition, guided by the TRI instructional framework, teachers in the intervention were likely able to align TRI Word Work instruction to diagnostic information about each student, a hallmark of effective professional development interventions with classroom teachers (e.g., Connor et al., 2004; Vellutino & Scanlon, 2002). By providing instruction matched to ELs' early

reading skills, the interactions within TRI instruction were likely more effective for those students' early learning (cf. Bronfenbrenner & Evans, 2000).

Researchers have described the importance of providing instruction and intervention to ELs that addresses both word- and text-level skills (August & Shanahan, 2006; Francis et al., 2006; Silverman, 2007), and the TRI was designed to address both. In prior studies comparing struggling students in TRI classrooms with those from control classrooms, the TRI had significant positive impacts on both word- and text-level outcomes (e.g., Amendum et al., 2011). Yet, in the current study, significant advantages for ELs from TRI classrooms were only found for word-level skills (Letter-Word Identification and Word Attack), not for text-level skills (Passage Comprehension).

Several potential explanations exist for the lack of a significant passage comprehension effect. First, because of the small sample sizes within planned comparisons, there may not have been enough power to detect a significant difference. Given the noteworthy differences in the spring Passage Comprehension *W* score gains between struggling ELs in TRI and control classrooms (25.63 vs. 17.51, respectively), an underpowered comparison may have led to the nonsignificant result. Second, nonsignificance of Passage Comprehension could be related to EL students' reading development. Students in the primary grades are often in the emergent stages of reading development, in which word-level skills such as phonemic awareness and beginning word recognition are of primary importance (Chall, 1996; Fitzgerald & Shanahan, 2000). Thus, it may be that differences between ELs in TRI and control classrooms were centered on the particular word-level skills commonly developed during an early developmental period. Third, the lack of passage comprehension effect could be due to students' EL status. It could be that comprehension gains for this group are related to some first-language skills and knowledge or, conversely, that specific adaptations based on effective interventions (e.g., Escamilla, 1994; Escamilla et al., 2010) of the comprehension strategies are needed for ELs. Fourth, it could be that teachers were more skilled at delivering different parts of the intervention. Perhaps teachers felt more comfortable with the Word Work and were more effective at delivering the intervention for students earlier in their reading development who needed a major emphasis on word recognition instruction. Conversely, teachers may have been less comfortable with the vocabulary and comprehension instruction, particularly when working with ELs, a population absent from many teachers' preparation and/or professional development programs (e.g., Ballantyne, Sanderman, & Levy, 2008). Finally, the possibility exists that the TRI did not have any true effect on struggling ELs' comprehension when compared with struggling

ELs in control classrooms and that the differences in the spring means were random.

The analyses also showed that struggling ELs in TRI classrooms were not able to make statistically significant gains relative to nonstruggling ELs in their classrooms and thus catch up to their nonstruggling EL peers. One explanation for this nonsignificant effect is likely due to students' status as ELs. One might surmise that nonstruggling ELs are further along in their English-language development, and we know that young ELs are often simultaneously learning English and acquiring new content and skills (Calderón, 2007; Coltrane, 2003). Thus, for the struggling ELs in the present study, similar to the argument that LaBerge and Samuels (1974) made for decoding and comprehension, it may be that the bulk of their cognitive resources are devoted to the language demands within a lesson rather than the reading skill demands. Conversely, nonstruggling ELs who may have more developed English-language skills may be able to devote more cognitive resources to the reading skill demands within a lesson. At the same time, researchers have theorized that ELs need multiple years to acquire academic English (e.g., Collier, 1987; Cummins, 1984). Combined, these two ideas illustrate the potential difficulty for struggling ELs to catch up to their nonstruggling peers within a single school year and that additional time may be necessary for struggling ELs to match their nonstruggling peers' achievement.

A second possible explanation may be related to the nature of the intervention. The TRI was not a yearlong intervention; on average, struggling ELs received approximately nine weeks of TRI instruction. The typical nine-week length of intervention suggests that the significant learning effect and lack of catch-up are not surprising. Additionally, struggling ELs' limited success in catching up to nonstruggling ELs could hypothetically be related to the lack of comprehension progress made during the intervention period and across the year. Word- and text-level processes are reciprocal; additional wide reading with comprehension supports continued development of students' fluent word recognition skills (Pikulski & Chard, 2005). Such a hypothesis may have important implications for TRI development. New TRI components focused on comprehension and oral language development may be warranted for ELs to support their comprehension, as well as their fluent word recognition.

A final, and alternative, explanation for the lack of catch-up effect is potentially related to the nature of the intervention itself and whether the impacts of the intervention are robust across the typical development of early reading. For example, it may be that the TRI is well suited to moving students from point A (basic alphabetic knowledge of letters and sounds) to point B (fluent decoding of three to five sounds in regularly spelled words) within books with controlled vocabulary

(i.e., limited unique words). However, it may be that because the primary focus of the TRI is not on building oral language, it may be less suited to moving students from point B to point C, where a broader knowledge of vocabulary and oral language knowledge is required to support comprehension. In such a situation, it is likely that the nine-week intervention period is insufficient to support ELs' catch-up to their nonstruggling peers.

Given that classroom teachers dedicated instructional time to a single struggling EL for daily TRI implementation, teachers and administrators are often concerned that other nonstruggling students' achievement will suffer (Amendum, 2014). Accordingly, a comparison of the nonstruggling ELs in TRI classrooms versus nonstruggling ELs in control classrooms provides an interesting view of this concern. Results from the analysis showed no significant effect in a negative direction for nonstruggling ELs, indicating that in addition to the advantage for struggling ELs in TRI classrooms, nonstruggling ELs were not disadvantaged in TRI classrooms, where teachers spent 15 minutes per day providing the TRI. In fact, although statistically nonsignificant for the word-level outcomes, an examination of the means shows slightly higher means for all three reading outcomes for nonstruggling ELs in TRI classrooms than for those in control classrooms (differences of 6.92, 7.43, and 4.24 *W* score points for Letter-Word Identification, Word Attack, and Passage Comprehension, respectively).

Finally, analyses showed no evidence of moderation by students' fall oral vocabulary skills. This nonsignificant result indicates the efficacy of the TRI for ELs with varying levels of English vocabulary comprehension, an important finding because researchers have demonstrated differential growth of English reading for ELs based on English-language abilities (e.g., Fitzgerald et al., 2015).

Limitations and Future Research

One limitation of the current study is the relatively small sample. With analyses that require comparisons among four groups of ELs (TRI struggling, TRI nonstruggling, control struggling, and control nonstruggling), it is possible that power is compromised with 108 participants. Future research should attempt to replicate the findings from the current study with larger samples of ELs to detect differences that may not have been demonstrable with the current sample size.

A second potential limitation is the measures used in the study. No measures of native-language proficiency were included for student participants. Future research studies could include measures of native-language proficiency to see the effect, if any, on English reading outcomes. Also, additional screening measures

to identify struggling ELs should be employed in future studies, including measures of fluency and comprehension in addition to word-level skills.

Third, the current study may have limited generalizability because the majority of the ELs were native Spanish speakers, and teachers were relatively homogeneous demographically. Future studies should include a more diverse sample of both ELs and teachers.

Fourth, in this study, baseline equivalence was established for nonstruggling readers. However, struggling readers in treatment versus control classrooms had significantly higher fall Word Attack scores but not oral vocabulary, Letter-Word Identification, or Passage Comprehension scores. In analytic models, we conditioned outcomes based on fall scores both to allow for this difference and to estimate the growth made by treatment versus struggling ELs over the course of their year-long participation in the study. Nonetheless, there is a chance that treatment students with higher fall scores may have experienced larger growth because of their entry-level skills, and likewise, students with lower fall scores may have experienced less growth. Although a future study with baseline equivalence would be ideal, additional studies examining potential relations between intervention effects and students' initial reading scores and growth would benefit the field.

Finally, as highlighted by the significant word-level effects in the current study, there is a possibility that inadequate emphasis was provided for ELs within both the initial student screenings and the TRI instructional framework on text-level skills, such as comprehension and vocabulary. Future research should include a sample of students initially screened for both word- and text-level skills (e.g., comprehension). Additional studies could also compare the effects of a modified version of the TRI, which more heavily emphasizes oral language and comprehension skills as part of the instructional framework, with the current instructional framework to consider possible enhanced effects for student reading outcomes.

Closing

In summary, results from the current study provide initial evidence of the efficacy of the TRI for young ELs' reading development. Specifically, struggling ELs in TRI classrooms significantly outperformed struggling ELs in control classrooms on selected measures of reading. Although the results of the current study are encouraging, there is additional work to be done in supporting ELs in their development to becoming fully proficient in English reading.

NOTES

Support for this research was provided by grant R305A100654 from the Institute of Education Sciences, U.S. Department of Education, awarded to Lynne Vernon-Feagans at the University of North

Carolina at Chapel Hill. The opinions expressed are those of the authors and do not represent views of the Institute of Education Sciences or the U.S. Department of Education.

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Submitted September 1, 2016

Final revision received February 22, 2017

Accepted February 26, 2017

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A TRI Individual Teacher-Student Session With Webcam Coaching

The context is an EL's first TRI session with the coach watching. All names are pseudonyms.

Time (minutes and seconds)	Activity
0:00–0:40	At the beginning of the TRI coaching session, the teacher (Keshia), the EL (Michel), and the coach (Sheri) have a short discussion: Coach: I am Sheri [introduces herself to the student]. Teacher: Michel and I, we only got started, but we are going to start back over, and today I chose words from pink 4E. Coach: OK. Teacher: Michel and I have been working with the <i>th</i> , <i>sh</i> , and <i>ch</i> , so we are just going to go on with our lesson, and then after that we can talk. Coach: Sounds great. Teacher: All right, Michel, let's regroup and start back over. OK? Umm, let's see. Have you been having a good day [asks the coach]? Coach: I have. Have you? Teacher: Good.
0:40–1:53	The teacher prepares the Change One Sound activity.
1:53–2:33	The student changes <i>chip</i> to <i>chop</i> .
2:34–3:10	The student changes <i>chop</i> to <i>chap</i> .
3:11–3:45	The student changes <i>chap</i> to <i>chat</i> .
3:46–4:12	The teacher defines the word <i>chat</i> and prepares the Read, Write, and Say activity at the same time.
4:12–4:49	The student reads, writes, and says <i>that</i> .
4:50–4:56	The teacher writes <i>mat</i> .
4:57–5:27	The student reads, writes, and says <i>mat</i> .
5:28–5:41	The teacher writes <i>mash</i> .
5:42–6:29	The student reads, writes, and says <i>mash</i> .
6:30–6:39	The teacher defines <i>mash</i> .
6:40–6:50	The teacher puts away the Word Work materials.
6:51–8:11	The student begins the Rereading for Fluency activity (<i>Note</i> : The activity is out of order; Rereading for Fluency usually occurs at the beginning of each lesson.)
8:12–9:20	The teacher defines <i>path</i> and <i>bath</i> .
9:21–9:25	The teacher prepares the Guided Oral Reading activity, using the same book as for the Rereading for Fluency activity but reading pages that the student had not read previously.
9:26–9:32	The teacher defines <i>moth</i> .
9:33–11:31	The student starts reading aloud.
11:32–11:41	The teacher defines <i>thin</i> .
11:42–12:37	The student continues reading aloud.
12:38–12:54	The teacher defines <i>worth</i> .
12:55–13:22	The student finishes the Guided Oral Reading.
13:23–14:53	The teacher does a non-TRI activity with the student.
14:54–15:07	The teacher reviews the word <i>path</i> , which she introduced to the student during the book reading.
15:08–15:44	The coach talks with the student: Coach: Michel, I am so proud of you! You are such a good reader! Wow! I am impressed! Good job, Michel! The student says goodbye to the coach and is praised by the teacher. The student exits.

(continued)

(continued)

Time (minutes and seconds)	Activity
15:45–20:30	<p>The teacher and coach debrief:</p> <p>Teacher: All right, what you think, Sheri?</p> <p>Coach: Wow! He looks great!</p> <p>Teacher: When I started working with him, I said, “Oh, OK. OK.” And you know he speaks Creole.</p> <p>Coach: Right.</p> <p>Teacher: You noticed that I wasn’t concerned about the fluency because he’s got to translate both languages, so that’s why, you know, he needs thinking time to process what he’s asked to do.</p> <p>Coach: Sure.</p> <p>Teacher: Let me hear from you.</p> <p>Coach: Well, right off the bat, I was very impressed. I mean, you didn’t give him anything that was too, too challenging. He came to the word <i>thin</i>, and I was holding my breath, and he got through that. He didn’t even know what the word <i>thin</i> meant, but he could read it. So, his decoding, his blending is great. I mean, he is really good. You did an excellent job throughout the whole lesson with vocabulary. So, if I had to pick a video to show someone how to use with a student with ESL, I can go to this video right now, and I can tell someone, “Do you see how this teacher embeds the vocabulary as she goes?” Because he did not know what a path was, so you talked to him about what a path was. He did know <i>bath</i>, but you talked to him about a lot of different words: <i>thin</i>, <i>worth</i>. You embedded the word <i>moth</i>, which I thought was really, really smart. You previewed your book. You knew what it was about. You knew he didn’t know what a moth was. You taught him really quickly, “This is a moth. It’s like a butterfly. Go.” You didn’t spend a lot of time on it. Perfect. I mean, I can’t tell you how great that was. It was great. You know what I am going to say next. He needs to be in blue. [laughs]</p> <p>Teacher: Well, you know I have been skipping around and skipping around and, um—yeah, I am in agreement with that, but I want him to get a little confident—</p> <p>Coach: Right.</p> <p>Teacher: —with what he’s doing. Now we worked with <i>th</i> and <i>sh</i>. We worked with those words the last two days, and so you know we had to do a little bit to get where we are, and every day in working one-on-one with him, he gets better and better.</p> <p>Coach: Right.</p> <p>Teacher: And I have been looking at blue, throwing some in, but I want him to feel very confident.</p> <p>Coach: What I am going to tell you, though, is that pink 4 is not very different at all from blue 1 because you have the same sounds. You are just going from three to four sounds, and he is ready for that.</p> <p>Teacher: OK.</p> <p>Coach: We want to challenge him just a little bit more. Try it and let me know how it goes. I’ll see it tomorrow, actually. Let’s try to do a blue 1 tomorrow.</p> <p>Teacher: No, the students won’t be back until Tuesday.</p> <p>Coach: Ah, that’s right. So, I am glad we got this in.</p> <p>Teacher: So, you want me to go to—oh yeah, are you talking about blue 1A?</p> <p>Coach: Yes.</p> <p>Teacher: Those words will not be a problem, and I have thrown some in there at him. But, in getting the book to coincide with the words is a little challenging. But, he will not have a problem with making the words.</p> <p>Coach: So, you know that you can go to the back of the blue 1 list, and it will tell you <i>Egg Legs</i>, <i>Elk Yelps!</i> [names of books]? It tells you some books to use.</p> <p>Teacher: Oh yeah. I am gonna pull out those books.</p> <p>Coach: OK, great. He looks fantastic! I mean, you had a perfect lesson today. I could easily use this for training. It looked great! Thank you so much.</p> <p>Teacher: You are welcome.</p> <p>Coach: I appreciate it. How is your dad?</p> <p>Teacher: Today is a bad day. Yesterday was a good day.</p> <p>Coach: Oh good. Very good.</p> <p>Teacher: It was a good day. But one thing I wanted to say about Michel is that he is a good student, and working with him, with good modeling, modeling, he catches on easily.</p> <p>Coach: Right.</p> <p>Teacher: He is a good learner. So, with modeling and repetition, he is going to do very well.</p> <p>Coach: This one-on-one, too, is going to be invaluable for him because he has you right there. And you are giving him so much vocabulary. And that’s really what he needs because English is his second language. So, you are doing a great job! I think you’re really going to see him fly. I am excited that you are working with him.</p> <p>Teacher: Yeah.</p> <p>Coach: Thanks, Keshia.</p> <p>Teacher: You are welcome.</p> <p>Coach: Have a good long weekend.</p> <p>Teacher: All right. You too. We’ll be in touch!</p> <p>Coach: OK. Bye-bye.</p> <p>Teacher: Bye-bye.</p>