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Enhancing Reading Comprehension

in Upper-Elementary English Language Learners: A Review

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Enhancing Reading Comprehension

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Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

May 2012

Abstract

Enhancing Reading Comprehension

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The University of Texas at Austin, 2012

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The effects of comprehension-strategy based and decoding/fluency-based reading interventions on the reading comprehension skills of upper-elementary English language learners (ELLs) were evaluated in this review. Nine studies assessing the efficacy of ten interventions were systematically reviewed. Findings showed that comprehension strategy-based interventions were associated with positive gains in reading comprehension, while decoding and fluency-based interventions were not. Support was shown for direct instruction with guided and independent practice, large group discussions, and small-group student-led discussions. Support was also shown for the use of the following comprehension strategies: summarizing the text, identifying the main idea, making personal connections to the text, monitoring vocabulary comprehension, making predictions, asking questions, and visualizing.

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Introduction

This report is a review of the current literature regarding reading intervention and instructional programs used within the upper elementary-school setting with English language learners (ELLs), with a focus on identifying the factors which lead to positive gains in measures of reading comprehension. The specific research question addressed is: Does the instruction of specific comprehension strategies enhance reading comprehension more than decoding and fluency-based interventions for ELLs?

English Language Learners and Literacy

Children from homes in which the primary language is not English are at risk for poor educational outcomes (Hammer, Lawrence, & Miccio, 2007). An estimated five million school-age children in the U.S. do not have the proficient English language knowledge to fully benefit from English instruction (García, Jensen, & Scribner, 2009). These students are referred to as English language learners (ELLs), and they make up approximately ten percent of American school-age children. Though ELLs in the U.S. speak hundreds of different languages, nearly 80 percent speak Spanish as their native language.

ELLs are overrepresented in special education classrooms across the United States (Huerta, 2010). Huerta postulated that many ELLs test into special education programs because an English-specific curriculum forces them to "read to learn" in their weaker language and that unlike native English-speakers, ELLs may also have cultural and experiential differences from those represented by the curriculum. According to recent national reading assessment data from the US Department of Education (USDE,

2009), only 29 percent of fourth grade ELLs were considered at or above the "basic" level in reading, compared to 69 percent of native English-speakers.

Literacy in the language of instruction is a strong predictor of academic success for school-age children. After the third-grade switch from "learning to read," to "reading to learn," children who struggle with reading fluency and comprehension begin to fall behind in all academic areas (Denton, Anthony, Parker, & Hasbrouch, 2004). Reading competency in earlier grades not only predicts future reading outcomes, but also affects high school completion rates (Huerta, 2010). Because reading success is so influential for students and because ELLs are at high risk for reading difficulties, there is a need to improve the understanding of factors that influence outcomes for ELLs and explore the various intervention programs available.

Hypothesis and Rationale

The current understanding of reading as an active and purposeful process involving the interaction of information in the text with the knowledge, experience, and ideas held by the reader is a relatively recent development in reading theory. Before Markman's (1978; 1979) seminal research in the 1970s, the comprehension of written material was thought of as a passive process reflective of receptive language abilities (National Reading Panel, 2000). Markman (1979) revealed that both developing and mature elementary-school readers weren't always aware of comprehension breakdowns while reading. He postulated that reading comprehension involves encoding and storing information, making relevant inferences, and retrieving previously stored information from working memory. Many children are capable of carrying out these processes, but do

not do so independently. It was from this point of view that researchers and educators began to develop and implement the instruction of specific strategies to monitor and enhance text comprehension.

A meta-analysis of the literature conducted by the National Reading Panel (2000) reviewed over 200 experimental and quasi-experimental studies which results supported the inclusion of comprehension strategies in reading instruction for monolingual English speakers. Findings demonstrated that comprehension is enhanced when readers relate new information to their own knowledge and experiences. Some of the strategies found to be effective were: self-monitoring comprehension, learning cooperatively, using graphic and semantic organizers, answering and generating questions, and summarizing the text. Evidence showed that gains were greatest when a combination of strategies was taught. Gains were seen in both informal measures (e.g., fact recall, summarizing texts) as well as on standardized measures of reading comprehension.

While the ability to decode written language is important to reading success, research has shown that decoding skills and reading fluency alone do not predict reading comprehension (Hoover & Gough, 1990; National Reading Panel, 2000; Proctor, Carlo, August, & Snow, 2005). Indeed, by the time students enter upper elementary school, decoding skill accounts for only 13 percent of the variance in reading ability (Hoover & Gough, 1990). In a meta-analysis of 28 relevant studies, the National Reading Panel (2000) found that for monolingual English-speakers in upper elementary grades, phonics-only instruction improved decoding and spelling skills but did not impact reading comprehension. Recent research with ELLs has shown that despite near grade-level

decoding skills, many students performed two to three grade levels below expected in measures of reading comprehension (Proctor et al., 2005). Teachers involved in a reading intervention study with ELLs reported that many of these students come into fourth grade as "fluent readers who have limited textual comprehension" (McElvain, 2010, p. 178). These previous research findings; namely that reading comprehension has shown to be improved by explicit comprehension strategies in monolinguals and that despite adequate decoding skills, ELLs lag behind in reading comprehension, support the hypothesis that reading intervention programs that incorporate direct instruction of reading comprehension strategies effect the most positive gains in measures of comprehension for ELLs.

Literacy Development and Effective Instruction for ELLs

Current understanding of reading development supposes that certain aspects of reading development are similar for monolinguals and ELLs while other factors impact ELLs alone. For all readers, meaning is created through a dynamic process including the reader, the text, and the reading context (Huerta, 2010). Research has shown that phonological processing skill, syntactic awareness, and working memory impact reading success (Lesaux & Siegel, 2003). Each reader brings individual characteristics to the reading process including past experiences with the content area and with language and reading itself along with personal traits like working memory and oral language proficiency; all of which impact comprehension (Hammer et al., 2007; Huerta). For ELLs, comprehension of grade-level texts intended for monolingual English speakers may be confounded by varying levels of English proficiency and corresponding

vocabulary knowledge, along with past experiences that vastly differ from those of their monolingual peers (McElvain, 2011).

Research has shown that reading development for ELLs differs from that of monolinguals. In a longitudinal study involving over 900 participants, ELLs performed significantly lower than monolingual kindergarten students in measures of phonological awareness (i.e. rhyme detection, pseudo-word repetition) as well as other measures related to reading success including memory of sentences, syntactic awareness, rapid naming, and real-word spelling (Lesaux & Siegel, 2003). By the end of second grade; however, some ELLs showed reading skills comparable to or higher than those of their monolingual peers. Successful ELL readers employ active strategies while reading, such as activating prior knowledge and making predictions (Lesaux, Lipka, & Siegel, 2006). There is additionally some evidence that ELLs exhibit greater cognitive flexibility and earlier metalinguistic insights than monolinguals; skills that may aid ELLs during reading tasks if encouraged (Proctor, August, Carlo, & Barr, 2011).

These results indicate that literacy acquisition in ELLs may be delayed or different, rather than disordered and that bilingualism may have cognitive benefits. Huerta (2010) suggested that it is only when the learning context does not accommodate ELLs's different reading process that bilingualism becomes a burden. By furthering our understanding of the factors that work for ELL reading instruction, we can alleviate this burden and better serve this growing population.

Research has shown that effective instruction of ELLs includes several factors not previously included in mainstream classroom instruction (McElvain, 2011). Instruction

should employ culturally relevant pedagogy and use culturally-appropriate content to avoid bias. Rich interpretive discussion is helpful during reading to relate text to past experiences and knowledge. Small-group instruction should be incorporated within the mainstream classroom to allow for one-on-one attention. While this review focuses on upper-elementary instruction, more information on reading programs that have been shown to be effective in increasing reading skills of *younger* elementary students can be found in Cheung and Slavin's (2005) review of the literature.

Definitions of Key Terms

Because some of the terms used in this report have varying definitions depending on the point of reference, key terms for the purpose of this paper are defined next. *ELL* refers to a student whose English-language abilities are not proficient enough to fully benefit from English-only instruction. *Phonological knowledge* is the awareness and understanding of the sound structure of words. *Decoding* is the ability to use phonemic (letter-sound correspondence) and phonological knowledge to accurately pronounce written words. The term *fluency* refers to the rate of accurate oral reading of written material. *Reading comprehension* will be defined as the ability to understand information conveyed through written language. *Direct instruction* is a teaching approach that stresses the use of structured, sequenced steps toward skill mastery including explanation, modeling, guided practice, and independent application. Finally, *systematic instruction* refers to a teaching approach wherein each lesson is planned in advance and builds on previously instructed material.

Search Criteria

A computer search using Academic Search Complete, Education Resources Information Center (ERIC), and Google Scholar databases was conducted to locate relevant studies for this literature review. The researcher used the following search terms: *reading intervention, reading program, literacy intervention, literacy program, reading comprehension, decoding, fluency, upper elementary, bilingual,* and *English language learner.* These searches yielded 1416 results across databases, many of which were unsuitable for this review.

Only high-quality experimental research studies were included to facilitate reliable outcomes for consideration and analysis. Studies with an experimental design include a treatment and comparison group, take measures before and after treatment, and compare results across groups (Gillam & Gillam, 2006). According to Gillam & Gillam's five-level continuum of evidence levels based on research design, randomized control trials (RCTs) provide the strongest evidence (level one). In an RCT, participants are randomly assigned to either a treatment or comparison group to control for any pre-treatment group differences. Level two evidence includes experimental studies without randomization and quasi-experimental design studies. Only studies falling into Gillam & Gillam's evidence level one or two were included in this review. The abstracts of the narrowed-down set of 300 studies were reviewed individually for consideration for inclusion in the review. Other inclusion criteria included: published in English in a peer-reviewed professional journal; examined either fluency, decoding, or reading comprehension strategy intervention; included Spanish-speaking ELLs; and included

participants from upper elementary school (i.e. fourth through eighth grades). Based on these criteria, nine studies were selected for inclusion in this review.

Intervention Studies

This review seeks to determine what factors make a reading intervention successful in increasing reading comprehension abilities in upper-elementary students who are ELLs, with the focus on decoding and fluency-based programs as opposed to comprehension strategy-based programs. Decoding and fluency-based programs will be reviewed first, followed by those focusing on reading comprehension strategy instruction.

Decoding and Fluency Intervention Studies

The three decoding and fluency-based intervention studies included in this review assessed five different interventions (i.e., PHAB/DI and PHAST, Lovett, Lacerenza, & Borden, 2000; Read Well, Sprick, Howard, & Fidanque, 1998; Fast ForWord, Scientific Learning Corporation, 1997; & Read Naturally, Inhot, 1992). Studies included a total of 713 participants from grades two through eight, approximately 310 of which were ELLs. For information on specific study participants, see Table 1. All studies (i.e. Lovett et al., 2008; Denton et al., 2004; Rouse & Krueger, 2004) were RCTs which are considered the highest level of evidence, level 1, according to Gillam & Gillam (2006). One study was conducted over a full school year; another was ten weeks long; the final study was completed in eight weeks. For more information on treatment delivery, see Table 3.

The decoding and fluency-based interventions shared the goals of increasing reading fluency and accuracy and shared many features despite differing methods of implementation. Of the five interventions examined, one was computer-delivered (Fast ForWord), two were facilitated by graduate-level tutors (Read Naturally & Read Well), and two were delivered by classroom teachers (i.e. PHAB/DI & PHAST). Four

intervention methods focused on decoding skill; one sought to increase fluency (i.e. Read Naturally). The decoding-based interventions shared many common features: each included phonemic awareness activities (e.g., letter-sound correspondence) and word-reading practice; three interventions targeted phonological awareness (e.g., phonological blending); one intervention included activities targeting auditory processing, working memory, syntax, grammar, and sequencing; one intervention specifically taught word identification strategies and sight-word reading. The fluency-based intervention instead focused mainly on repeated timed readings of grade-level passages, with some incorporated pre- and post-reading strategies (e.g., vocabulary instruction, comprehension worksheets). For complete information on intervention characteristics, see Table 3.

Studies used a variety of standardized and criterion-referenced measures to evaluate treatment outcomes. To assess reading comprehension outcomes, one study used the passage comprehension subtest of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1987), one study used the passage comprehension subtest of the WRMT-R plus the Wide Range Achievement reading test (WRA-3, Wilkinson, 1993), and the final study used state standardized readings tests and reading and writing achievement tests as a part of a district-wide reading program titled Success For All (Madden & Crenson, 2006). Decoding and phonological skills were assessed using standardized tests including subtests of the WRMT-R, a computerized assessment called Reading Edge (Scientific Learning Corporation, 1999), and the Comprehensive Test of Phonological Processing (CTOPP, Wagner, Togensen, & Rashotte, 1999).

The five reading interventions targeting decoding and reading fluency presented here showed varying levels of success remediating word-level reading deficits but were associated with no significant effects on reading comprehension for ELLs. Read Naturally showed no significant effects on any measures (Denton et al., 2004). Read Well, Fast ForWord, PHAB/DI, and PHAST evidenced significant gains in context-free decoding with some effects on word identification and phoneme blending (Denton et al., 2004; Rouse & Krueger, 2004; Lovett et al., 2008). Despite these gains in decoding and phonological skill, no improvements in reading comprehension were recorded. These results suggest that the signature components of decoding and fluency-based reading interventions (i.e. phonological awareness, phonemic awareness, word-reading practice, and repeated readings) are not effective in increasing reading comprehension in upper-level elementary ELLs.

Comprehension Strategy Intervention Studies

Six comprehension strategy-based reading intervention articles included in this review assessed the following five interventions: Collaborative Strategic Reading (CSR, (Borrero, 2011), Contextualized Vocabulary Instruction (CVI, Hitchcock et al., 2011), Improving Comprehension Online (ICON, McElvain, 2010), Transactional Literature Circles (TLC, Proctor et al., 2011), and the Young Interpreters Program (YIP, Taboada & Rutherford, 2011). Studies involved a total of 1,959 participants from grades four through eight, 1091 of which were ELLs. Spanish was the L1 for most ELL participants. See Table 2 for information on participants in each study.

These comprehension-based articles provided relatively high levels of evidence but were generally not as well-designed as the three decoding/fluency-based articles. All six articles (Borrero, 2011; Hitchcock et al., 2011; Klingner, Vaughn, & Schumm, 1998; McElvain, 2010; Proctor, et al., 2011; Toboada & Rutherford, 2011) can be classified as Level 2 evidence by Gillam & Gillam's (2006) criteria. Five studies were experimental control trials, but assignment to treatment or control group was determined by classroom or school of attendance and was therefore, not random. These studies provide a high level of evidence, but would be considered stronger if group assignment had been random to control for potential pre-treatment differences between groups. The remaining study (Borrero, 2011) was a formative experiment wherein treatment was adapted throughout the program's duration to attain best outcomes: this is considered a quasi-experimental design. The duration of the studies was variable. Three studies were conducted over a full 28-week school year, one study took place over 16 weeks, one study was eight weeks in length, and the remaining study gave no duration information but researchers conducted 11 intervention sessions. For intensity and frequency information for each study, see Table 4.

Though the structure and content of comprehension strategy-based interventions varied, they all aimed to increase reading comprehension in struggling readers with academic success as the ultimate goal. All interventions employed direct instruction except ICON which is a computer-delivered intervention that consists of reading passages with embedded vocabulary and comprehension supports (Proctor et al., 2011). One treatment was provided by the article authors (Klinger et al., 1998) while the

remaining four were delivered by trained classroom teachers. Two of the direct-instruction models (i.e. CSR & TLC) included small student-led discussion groups as well as traditional direct instruction. Though the comprehension strategies taught in each intervention were named differently, many were similar in principle. Strategies related to asking questions and clarifying were included in four interventions; activating prior knowledge about the content of passages was contained in three interventions; making predictions, identifying the main idea, and summarizing the text were included in two interventions. Several other strategies were employed by only one intervention out of the five. These included: making personal connections to the text, identifying keywords, using graphic organizers, visualization, perspective-taking, and paraphrasing. Table 4 has specific information on strategies included in each intervention.

Reading comprehension outcomes across the studies were measured using a variety of standardized, criterion-referenced, and researcher-designed assessments. Three studies incorporated researcher-designed or curriculum-based evaluations. Two studies used the Gates-MacGinitie Reading Achievement Test (MacGinitie, MacGinitie, Maria, & Dreyer, 2002). State-wide standardized criterion-referenced tests (i.e. California State Test of English and Language Arts, CST-ELA & California Achievement Test, CAT-6) were used in two studies. Other standard measures used included the Qualitative Reading Inventory (QRI-3, Leslie & Caldwell, 2001) and the Group Reading Assessment and Diagnostic Evaluation (GRADE, American Guidance Service, Inc., 2001). See Table 4 for specific study measures.

Most of the comprehension strategy-based interventions reviewed were shown to have some potential for increasing reading comprehension for ELLs. Three interventions (i.e. TLC, CVI, and YIP) were associated with gains in reading comprehension in the studies reviewed, one intervention (i.e. CSR) showed mixed results, and the remaining intervention, ICON, effected no significant gains (Borrero, 2011; Hitchcock et al., 2011; Klingner, et a., 1998; McElvain, 2010; Proctor, et a., 2011; Toboada & Rutherford, 2011). See Table 4 for complete information on treatment outcomes.

Of the potentially successful interventions, only two (i.e. TLC & YIP) showed academically-relevant gains (i.e. using state standardized reading achievement tests), which should be the ultimate goal of any school-based treatment (Borrero, 2011; McElvain, 2010). For TLC treatment group participants, gains were not considered academically significant by school officials as only one percent of the treatment group reached the "proficient" level on state tests. Researchers noted; however, that participants improved a full grade level on reading achievement measures and lower-performing students in the treatment group showed significantly larger gains than their control group counterparts. Though not as academically-relevant as a state-wide exam, standardized tests of reading achievement are often closely related to academic performance and can therefore be considered appropriate measures of treatment success. By this criterion, Klinger et al. (1998) showed some promise for CSR in remediating comprehension deficits in ELL students, though Hitchcock et al.'s (2011) later, more expansive, study did not mirror these outcomes.

Discussion

The research reviewed in this article provides some guidelines for choosing reading interventions to be used with ELLs in the upper elementary grades, though the small number of appropriate studies in the current literature is evidence that more work is needed in this field. Only nine studies met the criteria of this review, namely being of at least quasi-experimental design and including outcome data on reading comprehension.

Factors found to support reading comprehension gains for ELLs in all four potentially successful interventions (i.e. Collaborative Strategic Reaing, Contextualized Vocabulary Instruction, Transactional Literature Circles, and Young Interpreter's Program) included direct instruction with guided and independent practice, as well as large group discussions and small-group student-led discussions. Some support was shown for student autonomy support, and reciprocal teaching. The interventions employed a variety of comprehension strategies; the strongest support was shown for summarizing the text and identifying the main idea. Support was also shown for making personal connections to the text, monitoring vocabulary comprehension, making predictions, asking questions, and visualizing.

A brief discussion of each intervention follows, with a focus on factors that potentially facilitate reading comprehension success. A study assessing the effectiveness of a transactional model for reading intervention, TLC, found that direct instruction of comprehension strategies over a full school year yielded significant gains for low-performing fourth through sixth grade students, though gains were not sufficient to facilitate academic success (McElvain, 2010). The incorporation of vocabulary

instruction and a focus on supporting personal motivation into direct strategy-based instruction was effective with twenty fourth-grade ELLs (CVI; Taboarda & Rutherford, 2011). Encouraging success was shown for seventh and eighth students with a more interactive approach to increasing comprehension which uses direct instruction of comprehension strategies focusing on real-time paraphrasing and independent real-world practice over a school-year (YIP; Borrero, 2011). Mixed results were associated with CSR, a program incorporating direct instruction of comprehension strategies with reciprocal teaching in student-led groups (Hitchcock et al., 2011; Klinger et al., 1998). A computer-delivered intervention, ICON, was shown to cause no significant effects for fifth-grade ELL participants (Proctor et al., 2011).

Clinical Implications and Future Research Needs

This review has shown that while decoding and fluency-based reading interventions can be effective in increasing reading rate and decoding accuracy, these gains do not always facilitate gains in comprehension, which should be the ultimate goal of any literacy program. For all students in the upper elementary grades, academic success is dependent upon comprehension of course content. Interventions consisting of direct instruction of comprehension strategies, which have been shown to be effective for monolingual English-speakers, now have evidence to support their use with ELLs as well.

The available evidence supporting these strategy-based interventions for use with ELLs; however, is not nearly enough. Larger-scale, experimental, longitudinal studies for each of the intervention models described here are needed to allow for more than just suggestive evidence of effectiveness. Comparative trials and formative experiments are necessary to determine exactly which intervention factors and comprehension strategies facilitate success for ELLs in order to provide the best possible quality of instruction.

Appendix

Table 1: Method: Decoding and Fluency-based Intervention Articles

Citation	Intervention	Participants	Evidence Level[a]
Denton, Anthony, Parker, & Hasbrouch. (2004)	*Read Well* & *Read Naturally*	93 students; grades 2-5 all Spanish-English ELLs	1, Randomized control trial
Rouse & Krueger. (2004).	*Fast ForWord*	454 students; grades 3-5; ~140 Spanish-English ELLs	1, Randomized control trial
Lovett, De Palma, Frijters, Steinbach, Temple, Benson, & Lacerenze. (2008).	*PHABDI & PHAST*	166 students; grades 2-8; 76 ELLs	1, Randomized control trial
		Total participants = 713 **ELL participants = ~309**	

[a] According to Gillam & Gillam's (2006) EBP criteria.

Table 2: Method: Comprehension Strategy-based Intervention Articles

Citation	Intervention	Participants	Evidence Level[a]
Borrero. (2011).	*Young Interpreters Program*	53 students; grades 7-8; all Spanish-English ELLs	2, Non-randomized control trial
Hitchcock, Dimino, Kurki, Wilkins, Gersten, & National Center for Education Evaluation and Regional Assistance. (2011)	*Collaborative Strategic Reading*	1355 students; grade 5; 678 ELLs (~65% Spanish as L1)	2, Non-randomized (assigned by classroom) control trial
Klingner, Vaughn, & Schumm. (1998).	*Collaborative Strategic Reading*	141 students; grade 4; 71 Spanish-English ELLs	2, Non-randomized (assigned by classroom) control trial

McElvain. (2010).	*Transactional Literature Circles*	150 students; grades 4-6; all ELLs (Spanish and Vietnamese as L1)	2, Non-randomized (assigned by school) control trial
Proctor, Dalton, Uccelli, Biancarosa, Mo, Snow, & Neugebauer. (2011).	*ICON*	240; grade 5; 118 Spanish-English ELLs	2, Non-randomized (assigned by classroom) control trial
Toboada & Rutherford. (2011).	*Contextualized Vocabulary Instruction*	20 students; grade 4; all Spanish-English ELLs	2, Quasi-experimental
		Total participants = 1959 **ELL participants = 1091**	

[a] According to Gillam & Gillam's (2006) EBP criteria.

Table 3: Decoding and Fluency-based Intervention Characteristics and Outcomes

Intervention	**Duration**	**Structure**	**Skill Areas**	**Outcomes Measures[a]**	**RC[b] Outcomes**
Fast ForWord	100 min; 5x/wk for 6-8 wks	Computer-delivered; adapts to student skill level	phonological awareness, phonemic awareness, auditory processing, working memory, syntax, grammar, sequencing	State standardized reading tests; Success For All assessments	No significant difference between groups
PHAB/DI	60 min; 4-5x/wk for 24 wks	Direct instruction of skills moving from oral to written language	phonological awareness, phonological blending, letter-sound correspondence	WRMT-R passage comp. subtest; WRA-3	No significant difference between groups
PHAST	60 min; 4-5x/wk for 24 wks	Direct, systematic instruction of skills with added real-world practice	phonological awareness, phonological blending, letter-sound correspondence, word	WRMT-R passage comp. subtest; WRA-3	No significant difference between groups

			identification strategies, sight-word reading		
Read Naturally	40 min; 3x/wk for 10 wks	Pre-reading activities, timed readings, comprehension worksheets, discussion	fluency, pre-reading strategies (vocab. instruction, activate prior knowledge, predict)	WRMT-R passage comp. subtest	No significant difference between groups
Read Well	40 min; 3x/wk for 10 wks	Instructor-directed decoding practice, reading practice, comprehension worksheets	letter-sound correspondence, phonemic awareness, word reading	WRMT-R passage comp. subtest	No significant difference between groups

[a] WRMT-R = Woodcock Reading Mastery Test- Revised (Woodcock, 1987); WRA-3 = Wide Range Achievement reading test (Wilkinson, 1993)
[b] RC = reading comprehension

Table 4: Comprehension Strategy-based Intervention Characteristics and Outcomes

Intervention	**Duration**	**Structure**	**RC[a] Strategies**	**Outcomes Measures[b]**	**RC Outcomes**
CSR					
Klinger et al.	45 min; 11x (no freq. info.)	Researcher-delivered direct instruction (whole class instruction, small student-led group practice and discussion)	predict, activate prior knowledge, question, clarify, ID main idea, find keywords, summarize	GMRT; curriculum -based content test	Significant treatment gains on GMRT; no significant differences between groups on content test (despite treatment group self-teaching content using CSR strategies)
Hitchcock et al.	45 min; 1-5x /wk for 28 wks	Teacher-delivered direct instruction (whole class instruction, small student-led group practice and discussion)	predict, activate prior knowledge, question, clarify, ID main idea, find keywords, summarize	GRADE	No significant treatment effects

CVI	35 min; 5x/wk for 8 wks	Direct, systematic instruction (modeling, scaffolding, independent practice)	activate prior knowledge, question, clarify, use graphic organizers (plus implicit vocab instruction)	Researcher-designed assessment	Significant treatment effects on both inferential and literal RC items
ICON	50 min; 2x/wk for 16 wks	Computer-delivered; reading passages w/ embedded vocab. and comp. support, Spanish translations, human read-alouds, and bilingual avatar "coaches"	predict, question, clarify, summarize, visualize, perspective-taking	GMRT	No significant treatment effects
TLC	60 min; 5x/wk for 28 wks	Direct instruction (strategy instruction, guided practice, independent practice, teacher and student-led discussions)	activate prior knowledge, make personal connections, question, clarify	CST-ELA, CAT 6, QRI-3	Significant treatment gains for low-performing students on CST-ELA; Mod. significant treatment gains on CAT 6; no comparisons to control on QRI-3
YIP	2x/wk for 28 wks (no info. on session duration)	Direct instruction (modeling, group discussion, guided practice, independent practice, real-world experience)	ID main idea and supporting details, paraphrase, (plus vocab. and translating instruction)	Researcher-designed paraphrase instrument; CST-ELA	Significant treatment gains on paraphrasing instrument; significant treatment effects on CST-ELA

[a] RC = reading comprehension

[b] GMRT = Gates-MacGinitie Reading Achievement Test (MacGinitie, MacGinitie, Maria, & Dreyer, 2002); GRADE = Group Reading Assessment and Diagnostic Evaluation (American Guidance Service, Inc., 2001); CST-ELA = California State Test of English and Language Arts ;

CAT-6 = California Achievement Test; QRI-3 = Qualitative Reading Inventory (Leslie & Caldwell, 2001).

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