THE IMPACT OF EXPLICIT, SELF-REGULATORY READING COMPREHENSION STRATEGY INSTRUCTION ON THE READING-SPECIFIC SELF-EFFICACY, ATTRIBUTIONS, AND AFFECT OF STUDENTS WITH READING DISABILITIES

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Abstract. **We compared a reading intervention that consisted of explicit, self-regulatory strategy instruction to a strategy intervention that was less explicit to determine the impact on the reading-specific self-efficacy, attributions, and affect of students with reading disabilities (RD). Participants included 20 students with RD who were entering grades 4-8. The interventions were delivered on a one-to-one basis over five weeks, four days per week, for one hour per day. Those receiving the explicit, self-regulatory strategy intervention showed greater gains in their attributions to incorrect strategy usage for reading failure than participants in the less explicit intervention. Group differences approached statistical significance on the reading self-efficacy measure, with the less explicit intervention showing higher reading self-efficacy at posttest than the explicit, self-regulatory intervention. The possibility of miscalibrated reading self-efficacy and reading skill in students with RD is discussed.**

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Older students with reading disabilities (RD), those in the upper elementary grades and beyond, are particularly at risk for developing motivational problems related to reading. In fact, a downward trend in reading motivation with age has been found in the population at large, not just specific to students with RD (McKenna, Kear, & Ellsworth, 1995). Diminishing reading motivation is particularly stark for poor readers in the post-primary grade years. An illustrative example of the extent of these declines in reading motivation is a study by Juel (1988), who found 40% of poor readers in the fourth grade would rather clean their room than read, with one student stating, "I'd rather clean the mold around the bathtub than read" (p. 442). Decreasing reading motivation is especially alarming given that motivational and attitudinal characteristics are better predictors of reading achievement as children get older than when children are in the early elementary grades (Paris & Oka, 1989).

Young children's motivation to read is typically less affected by failure than older children's. Until about the third grade, children tend to be generally unable to

measure their abilities in relation to objective criteria (Stipek, 1981). Furthermore, young children do not make a distinction between effort and ability when considering the reasons for success and failure. Therefore, in the eyes of a young child, an individual who works hard is one who has high ability (Nicholls, 1990). It is not until children are around 11 years old that they begin to clearly differentiate between ability and effort, which may lead to negative motivational outcomes for some (Nicholls, 1978). Students who have to work hard to succeed are thought to have less ability than those who expend little effort. As Pressley (1998) stated, "The older the struggling reader, the more the struggle will be interpreted as reflecting low ability with the child unmotivated to learn to read" (p. 233).

Concurrent with these developmentally appropriate changes in attributional thinking, older children also experience declines in egocentric viewpoints and increase their use of social comparison when evaluating their abilities (Piaget, 1965). Social comparison becomes particularly salient during the upper-elementary years due to an increase in classroom competition (Harter, Whitesell, & Kowalski, 1992).

Along with a natural decline in reading motivation, students are challenged with a more rigorous curriculum once they exit the early elementary years. No longer is instruction focused on learning to read; emphasis is now placed on reading to learn (Allington & Johnston, 2002). Once students enter the fourth grade, they are predominantly expected to work with expository text rather than the narrative text of their earlier school years (Wilson & Rupley, 1997).

Despite this increase in complexity of text, conventional instruction does not involve the use of comprehension instruction to meet the demands of expository material. Over 20 years ago, Durkin (1978-79) investigated the use of reading comprehension strategy instruction in classrooms and in over 4,400 minutes of observation only observed 20 minutes of comprehension instruction. Twenty years after Durkin's study, Pressley, Wharton-McDonald, Mistretta-Hampston, and Echevarria (1998) reported rarely observing explicit comprehension strategy instruction in fourth- and fifth-grade classrooms.

What do these circumstances mean for students with RD? As they begin the post-primary grades, these students carry with them a history of academic failure. Additionally, they possess a newly acquired manner of thinking about their academic performance that is more realistic and therefore less self-protective, only to be met with a curriculum that requires basic academic skill mastery as a prerequisite despite their lack of these skills. Not surprisingly, then, students with learning disabilities (LD) have been described as experiencing learned helplessness in academic settings (Grimes, 1981). Those who are thought to be learned helpless believe they possess little control over academic outcomes even if they put forth effort. In the social cognitive literature, this loss of personal agency over academic outcomes has been portrayed as being cognitively mediated through the control-related concepts of attributional style (Weiner, 1974) and self-efficacy (Bandura, 1997). Maladaptive control-related beliefs not only impede academic motivation, they also play a causal role in the development of negative affect (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999).

Students with LD tend to have significantly less adaptive attributional styles than their typically achieving peers. When thinking about the reasons why they fail, students with LD are more likely than their typically achieving peers to make attributions to internal and stable causes (e.g., ability; Ayres, Cooley, & Dunn, 1990; Kistner, White, Haskins, & Robbins, 1985). In response to success, students with LD are more likely than typically achieving students to perceive little personal responsibility for these outcomes, and, instead, believe their success is due to external and unstable factors (e.g., luck; Pearl, 1982; Short, 1992). Attributions are important to consider in instructional planning for students with LD because even the most proven instructional technologies may be ineffective with students who do not believe they possess control over their learning.

According to Bandura (1986), self-efficacy refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Applying the concept of self-efficacy to academic settings, Schunk (1991) stated that students with low self-efficacy in specific academic areas are likely to avoid tasks within those areas, put forth minimal effort, and tend to give up when encountering difficulty. Self-efficacy is also positively related to students' academic achievement, cognitive engagement, and willingness to employ learning strategies (Linnenbrink & Pintrich, 2003; Pintrich & DeGroot, 1990).

Given the importance of behaviors such as effort and persistence to the academic success of students with LD, it is surprising that only two studies have investigated reading-specific self-efficacy in this population. Whereas Tabassam and Grainger (2002) found students with LD to have lower reading self-efficacy than typically achieving students, Pintrich, Anderman, and Klobucar (1994) noted that the reading self-efficacy of students with LD was comparable to that of typically achieving students despite significantly lower reading skills. When *general* academic self-efficacy has been investigated in students with LD, they have been found

to have lower self-efficacy than typically achieving students (Hampton, 1998; Hampton & Mason, 2003).

Poor self-efficacy is often causal in the pathway to depression (Bandura et al., 1999). Likewise, maladaptive attributions are associated with negative emotions such as guilt and shame (Weiner, 1974) as well as negative affective states such as depression (Gladstone & Kaslow, 1995). Both depression and anxiety have been found to be more pervasive in students with LD than in the population at large (Hall & Haws, 1989; Stein & Hoover, 1989). In relation to the development of instructional planning for students with RD, negative affect is an important variable to consider because it impacts not only students' emotional well-being but also their academic performance.

According to Pekrun (1992), at least two routes potentially explain how affect impacts learning. One route is the impact on working memory. For example, Linnenbrink, Ryan, and Pintrich (1999) found negative affect to be related to poor working memory functioning. These researchers hypothesized that individuals who experience negative affect tend to engage in a multitude of task-irrelevant thoughts, causing the capacity of working memory to be overworked. Another route suggested by Pekrun is through the impact of affect on cognitive and self-regulatory strategies. Support for this route was provided by Turner, Thorpe, and Meyer (1998), who found elementary students with high levels of negative affect engaged in less sophisticated and less complex self-regulatory strategy usage than students with lower levels of negative affect. Positive emotions have been found to aid in the use of flexible learning strategies and sophisticated metacognitive monitoring (Pekrun et al., 2002).

The difficulties of students with RD cannot be explained through a "cold cognitive" model given the impact of motivational and affective characteristics on academic performance (Pintrich, Marx, & Boyle, 1993). Consequently, interventions designed to improve the reading skills of these students should be evaluated based not only on their impact on reading performance but also their influence on motivational and affective characteristics. Interventions that improve reading skills while concurrently restoring students' belief in their control over learning are more valuable than interventions that only indicate reading improvement. An unanswered question in the literature is how best to develop the control-related beliefs and motivation of students with RD.

Two lines of thinking appear to exist in the literature regarding the answer to this question. They are analogous to Calsyn and Kenny's (1977) categorization of the self-concept intervention research into the self-enhancement and skill development models. The line of thinking akin to the self-enhancement model rests upon the assumption that students' motivational and affective characteristics must be addressed directly and separately from their academic skills. The intended goal within this model is to improve academic achievement by first improving the self. Arguing that interventions based on this model have not realized their intended results, Chapman and Tunmer (2003) stated, "There is little evidence to support the idea that improving self-perceptions independently of academic tasks will directly lead to improved academic performance" (p. 17).

The line of thinking consistent with the skill development model assumes that motivational and affective characteristics will improve in concert with academic skills. A considerable body of studies indicates that reading comprehension strategy instruction is effective in improving the reading comprehension skills of students with RD (Gersten, Fuchs, Williams, & Baker, 2001); however, to date no studies have examined how these instructional procedures impact the reading self-efficacy, attributions, and affect of students with RD. Moreover, the debate regarding the degree of explicitness required for strategy instruction to be optimally effective is relevant not only in relation to improved reading skill but also reading-related motivational and affective characteristics.

Currently, there is a departure from more explicit forms of strategy instruction to instruction in which students with RD are exposed to "more natural, constructionist, and less transparent modeling of strategies" (Gersten et al., 2001, p. 308). Which level of explicitness is most beneficial relative to the motivational and affective characteristics of students with RD? No researcher has investigated this question.

At least two feasible hypotheses may be advanced regarding the impact of explicit strategy instruction on the motivational and affective characteristics of students with RD. From a constructivist perspective, one could hypothesize that explicit strategy instruction may damage students' motivation to read. Instead of allowing students to naturally develop and use strategies upon broad exposure to connected text, explicit strategy instruction involves directly teaching strategies. Consequently, students could become passive recipients of knowledge and have their innate tendencies toward active learning diminished. However, an extreme constructivist position is contraindicated for students with LD because research has shown they do not naturally own, access, and apply as many strategies as typically achieving students (Wong, 1996).

A second feasible hypothesis is that explicit strategy instruction may lead to enhanced self-regulation of reading strategy usage. A student who has strong self-

regulation when reading is able to select, use, and monitor reading strategies independently as a means to improve comprehension (Horner & Schwery, 2002). Through better self-regulation in reading, an increased sense of personal control over reading through the mechanisms of improved reading self-efficacy and more adaptive reading attributions is likely to develop, which, in turn, could result in greater positive affect for reading. In general, "adaptive" attributions have been defined in the LD literature as those in which success and failure are attributed to effort (e.g., Shelton, Anastopoulos, & Linden, 1985).

Influencing older students with RD to make attributions to effort for their reading successes and failures is flawed in two ways. First, many students with RD put forth great amounts of effort and still fail. It is inaccurate to make attributions to insufficient effort for failure in these situations. Second, attributions to effort are broad and unfocused. Often what is important in determining success or failure is the specific focus of one's effort. For struggling readers, directing their effort toward strategy usage results in improved reading outcomes (Gersten et al., 2001). Therefore, for this population of students, it is potentially more adaptive to make attributions to strategy use for reading success and failure than generalized effort (Licht, 1983). The validity of making attributions to strategy use is strengthened by the fact that teachers view strategy use as the most important predictor of student achievement (Meltzer, Miller, Katzir-Cohen, & Roditi, 2000, as cited in Meltzer, Katzir-Cohen, Miller, & Roditi, 2001).

This study investigated the impact of two reading interventions on the reading self-efficacy, attributions to strategy use for reading success and failure, and affect for reading of upper-elementary and middle school students with RD. Both interventions included reading comprehension strategy instruction but varied with regard to how explicitly strategies were taught, with one intervention group receiving explicit, self-regulatory comprehension strategy instruction and the other less explicit strategy instruction.

It was hypothesized that the intervention group receiving explicit, self-regulatory strategy instruction would possess greater reading self-efficacy, more adaptive reading attributions, and more positive affect for reading than the group receiving less explicit strategy instruction. This hypothesis was founded on the belief that those who received explicit instruction in comprehension strategies and self-regulatory behavior when using strategies would perceive themselves to have more control over their reading outcomes than the less explicit group.

METHOD

The current study was part of another investigation conducted by Manset-Williamson and Nelson (2005), which examined reading skills outcomes as a result of the two interventions. The reader is referred to this study for information regarding the reading measures used and more specific information about the participants and interventions.

Participants

To participate in the study, students were required to be entering grades 4 to 8 after receiving the intervention over the summer. Participants had to achieve grade-equivalent scores on measures of reading fluency and/or reading comprehension (Reading Fluency and Passage Comprehension subtests from the Woodcock-Johnson Tests of Achievement, Third Edition [WJ III]; Woodcock, McGrew, & Mather, 2001) that were at least two years below their expected grade-level achievement (based on age), with no reading fluency above a 3.5 grade level. The rationale for this inclusion criterion was to ensure that participants had significant skill deficits and that their skills were at a reading level addressed by the selected interventions. Additionally, participants were required to achieve a standard score on at least one of the three composites (Phonological Awareness, Phonological Memory, or Rapid Naming) of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) that was at least one standard deviation (*SD*) below the mean and a standard score on a brief measure of intellectual functioning (Reynolds Intellectual Screening Test [RIST]; Reynolds & Kamphaus, 2002) above 75. An IQ cutoff of 75 was chosen because intellectual functioning below this level is a criterion for determining mental retardation (American Psychiatric Association, 2000).

The final sample consisted of 21 participants ranging in age from 9 to 14 years (M = 11 years, 6 months; SD = 1 year, 5 months). One participant dropped out of the study after two weeks. No explanation was given for the student's failure to complete the intervention. The sample consisted of 15 boys and 5 girls; 17 subjects were white and three were African American. Participants were randomly assigned to the two interventions.

Testing Materials

Reading self-efficacy. An instrument developed by Schunk and Rice (1987) was used to measure reading self-efficacy. This instrument measures children's perceptions of their abilities to correctly answer a variety of questions that investigate comprehension of main ideas. The reading self-efficacy measure consists of reading passages at various grade levels. Each passage is followed by 1-4 questions (e.g., "What's the first paragraph mainly about?"). On 20 items using a scale with 10

intervals ranging from not sure (10) to really sure (100), children score their perceived ability to answer the questions correctly. The reading self-efficacy measure yields one average score, ranging from 10 to 100.

The test-retest stability coefficient of the reading self-efficacy measure was .82 (Schunk & Rice, 1993). Within the current study, Cronbach's alpha was calculated and indicated an internal consistency reliability of .93 for Form A and .92 for Form B.

Reading attributions to strategy use. The first author developed this measure to examine reading attributions to strategy use. Four scenarios were created (You get an A+ on your reading test; You read a book and can't figure out most of the words; You get an F on your reading test; and You are reading a book and you know all the words). For the two failure situations, students were asked how important the incorrect use of strategies was in explaining their failure on a 0 (not important) to 10 (very important) scale. For the success scenarios, participants were asked how important correct strategy usage was in explaining their success. These scales were termed the Attribution Strategy Success and Attribution Strategy Failure Scales, respectively. For each scale, the range of possible scores was 0 to 20. The Attribution Strategy Success and Attribution Strategy Failure Scales yielded Cronbach alphas of .53 and .54, respectively.

Reading affect. A modified version of the Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) was developed to measure affect for reading. The PANAS-C measures both general positive and negative affect in children. For the purpose of the current study, only participants' affect related to reading experiences was of interest. Therefore, the PANAS-C was modified in three ways. First, a stem was provided ("When I'm reading, I generally feel …"), followed by the various items (e.g., interested and happy). This is different from the original version, which lists 30 emotions and asks respondents to rate on a 5-point Likert scale the extent to which they have felt that way over the past few weeks. Second, six of the items (frightened, active, afraid, lonely, fearless, and daring) were excluded because they appear to have little relation to feelings one may have when reading. Third, eight items were added from a scale created by Linnenbrink (2002). The range of possible scores for both the Positive Affect for Reading Scale and the Negative Affect for Reading Scale was 16 to 80. Results indicated Cronbach alphas of .95 and .86 for the Positive Affect for Reading Scale and Negative Affect for Reading Scale, respectively.

Testing Procedures

The instructors who implemented the interventions administered the instruments measuring reading self-efficacy and affect. Instructors received one hour of training in the administration of the instruments, including direct instruction and practice administering the measures to each other. All instructors were blind to the research questions. Three doctoral students (two in school psychology and one in educational psychology) administered the Attribution Strategy Success and Failure Scales.

Intervention Procedures

Instructors were paid an hourly wage to implement the interventions. Eight of the instructors were graduate students in various fields of education (six master's students and two doctoral students); the remaining two instructors were a recently graduated baccalaureate student and an advanced undergraduate student in special education. Eight of the 10 instructors completed a graduate-level course on curricular approaches for students with RD. The course totaled 30 hours of instruction. The remaining two instructors attended those sessions of the course in which instruction was given on specific procedures used in the experimental interventions. These sessions consisted of eight hours of instruction. Additionally, all instructors were required to attend 14 hours of direct training on implementation of the interventions.

The study was conducted at the beginning of the participants' summer break and lasted six weeks, with four days used for pre- and posttesting. The interventions were delivered on a one-to-one basis. Participants received five weeks of one-to-one instruction, four days per week, for one hour per day. It is unknown whether participants were involved in additional reading instruction during the summer break; however, none of them attended summer school during the interventions.

Both interventions were comprehensive instructional packages consisting of phonological awareness, decoding, fluency, and comprehension components. All participants received the same training in phonological awareness, decoding, and fluency; only the reading comprehension component was manipulated. Participants received 15 minutes of phonological awareness training, 35 minutes of comprehension instruction, and 10 minutes of fluency training per session. The decoding training was embedded in the comprehension instruction.

During the comprehension component of both intervention groups, high-interest/low-readability expository texts written at or near each participant's instructional level were used. Participants were free to choose books on topics that were interesting to them. The two intervention groups were named the Guided Reading group (n = 11) and the Explicit Comprehension

Table 1
Description of Reading Comprehension Interventions

Explicit Comprehension		Guided Reading	
Component	**Description**	**Component**	**Description**
Goal setting	Used prior to reading; emphasis on process goals; goals set to improve learning rather than performance	**Prediction**	Used prior to and during reading; use of textual cues to predict content to be read in text; predictions monitored while reading text and re-predictions made
Prior knowledge activation	Used prior to reading; general recall of existing personal knowledge of the topic of text to be read	**Summarization**	Used after reading; brief retelling of most important parts of text along with supporting ideas
Prediction	Used prior to and during reading; use of textual cues to predict content to be read in text; predictions monitored while reading text and re-predictions made	**Question generation**	Used after reading; generation of two questions that could be answered if reader understood most important parts of the text
Main idea identification	Used after reading; stating main idea of the text in own words using 10 or fewer words		
Summarization	Used after reading; brief retelling of most important parts of text along with supporting ideas		
Self-monitoring and evaluation	Used after reading; monitoring use of comprehension strategies and comprehension of text		
Strategy-value feedback	Provided by instructor during and after reading; explicit feedback on the connection between strategy usage and comprehension of text		

group (n = 9). The following describes the procedures for each group (also see Table 1).

Guided reading procedures. The reading comprehension strategy instruction designed for this intervention was based in part on techniques used in guided reading (Cunningham & Allington, 1999), with a more specific strategy focus drawn from work in reciprocal teaching (Palinscar & Brown, 1984). Instructors modeled specific comprehension strategies, including prediction, summarization, and question generation, to enhance active and strategic reading. Instructors used modeling heavily during the first sessions, followed by guided practice

predominantly during the middle and final sessions. Within this type of instructional approach, the assumption is that students will naturally pick up on the purpose of the strategies and begin to use them independently (Duffy, 2002).

Strategies were presented simultaneously; that is, from the first day of the intervention, participants were exposed to all the reading comprehension strategies. Before reading, instructors and participants made predictions about the content that would be included in the day's text. They then read the text in an intermittent fashion, with the instructor reading a paragraph and then the participant reading a paragraph. During at least two points while reading, the instructor and participant checked their original predictions and made re-predictions if necessary. After reading, the participant summarized the most important parts of the text and asked two important questions related to the content of the text.

Explicit comprehension procedures. The Explicit Comprehension intervention consisted of direct instruction of each strategy along with the purpose behind using it and the value of each for comprehending text. Additionally, the Explicit Comprehension intervention made training in self-regulation explicit by directly teaching participants the self-regulatory procedures of goal setting and self-monitoring. The Explicit Comprehension intervention differed from the Guided Reading intervention in that no assumption was made that students would naturally begin to use the strategies independently if given repeated exposure. Instead, transfer of control of the strategies was explicitly moved from instructor to participant. The procedures of this treatment condition were founded largely on the self-regulated strategy development model (Harris & Graham, 1999).

A mnemonic was developed to represent the strategies used during reading comprehension instruction. The mnemonic, "SUPER-G," stood for the following: set goals, use prior knowledge, predict what you think will be in the text, explain the main idea in your own words, retell the most important parts of the text, and give yourself feedback. Instructors presented the strategies one at a time and allowed students as much time as they needed to master a strategy before introducing a new one. Once a strategy was mastered, students practiced it in conjunction with the introduction of the new strategy.

Newly introduced strategies were taught using the following sequence of procedures: direct explanation, modeling, collaborative practice, and independent practice. A mnemonic worksheet was created to use during each session. When first explaining a new strategy, instructors wrote it out on the worksheet for

Table 2
Pretest and Posttest Means and Standard Deviations

	Group			
	Guided Reading		Explicit Comprehension	
Variable	**Pretest**	**Posttest**	**Pretest**	**Posttest**
Reading self-efficacy	60.15	69.15	61.17	60.94
SD	23.54	15.55	15.35	18.80
Attribution strategy usage failure	11.18	8.82	12.67	15.22
SD	6.52	5.74	4.53	2.99
Attribution strategy usage success	16.64	13.64	14.89	16.67
SD	4.32	6.36	3.98	2.29
Positive affect for reading	47.55	55.55	45.00	53.44
SD	19.21	19.52	7.65	12.54
Negative affect for reading	32.00	25.82	24.33	22.56
SD	13.05	7.94	4.87	5.43

Table 3
Correlations Between Posttest Measures

	RSE	PA	NA	SA-RF	SA-RS	RC-SQ	RC-MI
Reading Self-Efficacy	1						
Positive Affect for Reading	.00	1					
Negative Affect for Reading	-.17	-.50**	1				
Strategy Attrib. – Reading Failure	.03	-.21	-.09	1			
Strategy Attrib. – Reading Success	-.12	.13	.05	.02	1		
Reading Comp. – Summary Quality	.00	-.04	-.23	.42	-.34	1	
Reading Comp. – Main Idea Ident.	.00	.02	-.23	.48*	-.26	.96**	1

*$p<.05$. **$p<.01$.

participants to see. They explained the purpose of using the strategy, how it would likely be beneficial to students, and the situations in which it could be used. Next, the instructors explicitly modeled use of the strategy. During modeling, instructors "thought aloud" the cognitive statements they made to themselves internally when using the strategy. Modeling was followed by collaborative practice in which the instructor and participant worked together in using the strategy. Finally, participants independently practiced the strategy and thus completed the strategy control transfer from teacher to student.

For the goal setting strategy, process goals were emphasized over product goals. Instructors taught participants to set goals to understand the text and to use the strategies to better understand the text. When using the prior knowledge strategy, participants thought about what they already knew about the topic of the text. While the use of prediction is influenced by prior knowledge, prediction is a more specific strategy that uses cues from the text, such as titles, pictures, bold words, and subheadings, to hypothesize what the text will be about. The main idea strategy was based on the work of Vaughn and Klingner (1999). Here participants were taught to "get the gist" of the text and to state the main idea in their own words using 10 or fewer words. Instructors also taught participants the difference between main idea thinking and retelling (or summarization) by explaining that the former is a search for the single most important idea conveyed, whereas the latter is creating a brief retelling of several important points in the text. Finally, participants were taught to give themselves feedback regarding use of the strategies and their value in understanding the text. The mnemonic sheet served as a self-monitoring form for participants to check off whether they had used each strategy. Additionally, instructors used strategy-value feedback, based on the work of Schunk and Rice (1992), to explicitly show participants the link between using the strategies and improved comprehension of the text. Examples of strategy-value feedback statements include "Since you have been using the strategies, you are better able to find the main idea" and "Now that you are using the strategies, you really understand what you are reading."

Treatment Fidelity

During implementation of the interventions, instructors received frequent supervision and feedback. On at least two occasions, one of the principal investigators observed each instructor during live instructional sessions to monitor fidelity of treatment. Corrective feedback was given after these observations. In addition, weekly staff meetings were held in which instructors

were provided group supervision by one of the principal investigators. Further, treatment fidelity checklists created to monitor whether the interventions were implemented as designed were completed daily by instructors and during observation sessions by investigators. Instructors perceived themselves as adhering to intervention procedures approximately 97% of the time. The principal investigators observed the instructors as adhering to the intervention procedures approximately 93% of the time in both conditions. No significant differences between intervention groups with regard to treatment fidelity were found.

RESULTS

Results from Manset-Williamson and Nelson (2005), the study that was the source for this study's sample, will be used to provide a backdrop for considering the results of the current study. The dependent measures of reading comprehension included an oral retell measure, which was scored based on overall quality and number of main ideas identified; a 12-item multiple-choice test based on expository reading material; and the Passage Comprehension subtest of the WJ III. Between-group comparisons indicated the Explicit Comprehension group outperformed the Guided Reading group on two of the reading comprehension measures at posttest: oral retell quality and main idea identification. The effect sizes were large. Group differences approached statistical significance (p = .08) on the WJ III Passage Comprehension subtest, and the effect size was large (d = .84) in favor of the Explicit Comprehension group.

Preliminary Analyses of the Current Study

Preliminary analysis of variance (ANOVA) for continuous variables and chi-square analysis for categorical variables were used to test if the intervention groups were comparable at the outset. With alpha set at .05, these analyses indicated no statistically significant differences between the two groups on gender, ethnicity, age, intellectual functioning, reading skills, phonological processing, and the dependent measures. Pretest and posttest means and standard deviations for all dependent variables by intervention group are presented in Table 2. Correlations between the dependent variables are presented in Table 3.

Within-Group Pretest-Posttest Comparisons

Paired sample t-tests were used to explore whether participants in each intervention made significant gains on the dependent measures. Effect sizes are interpreted according to Cohen (1988), with effect sizes of .20 to .49, .50 to .79, and .80 and above considered small, medium, and large, respectively. Furthermore, the presentation of results reflects the practice of null hypothesis significance testing argued by Tukey (1991, as cited in Wainer & Robinson, 2003). Instead of stating only that a result is either statistically significant or nonsignificant, Tukey suggested that p-values greater than .05 but less than .15 could be described as leaning in a certain direction. Given Tukey's proposal, results with p-values in this range and concomitant effect sizes of .5 or greater were considered to be indicative of meaningful effects.

Reading self-efficacy. Participants in the Explicit Comprehension intervention did not make statistically significant gains in reading self-efficacy, t (8) = .07, $p > .05$. Gains in the Guided Reading group's reading self-efficacy approached statistical significance, t (9) = 2.09, p = .07, d = .66.

Reading attributions to strategy usage. Students in the Explicit Comprehension intervention did not exhibit statistically significant differences on the scales measuring their tendency to attribute reading success to correct strategy usage, t (8) = 1.21, and reading failure to incorrect strategy usage, t (8) = 1.23. Participants in the Guided Reading intervention showed a decline in attributions to incorrect strategy usage for reading failure that approached statistical significance, t (10) = 2.06, p = .07, d = -.62. The Guided Reading group did not show significant gains on the instrument measuring attributions to correct strategy usage for reading success, t (10) = 1.36.

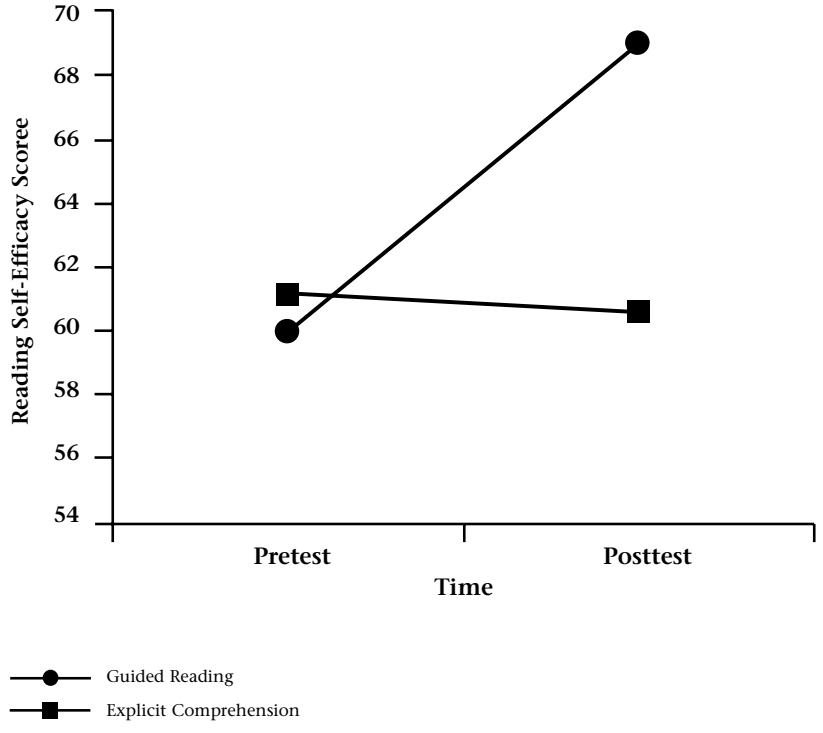
Reading affect. Participants in the Explicit Comprehension intervention reported a statistically significant increase in positive affect for reading, t (8) = 2.25, p = .05, d = .75. The effect size was medium. However, they did not exhibit a statistically significant decrease in negative affect for reading, t (8) = .35. The Guided Reading group's decrease in negative affect for reading approached statistical significance, t (10) = 1.86, p = .09, d = .56. They did not show a statistically significant increase in positive affect for reading, t (10) = 1.33.

Between-Group Comparisons

To examine potential differences between the two interventions on the dependent measures, a one-way analysis of covariance (ANCOVA) with pretest scores as covariates was the primary statistical technique used. If the assumptions required to use ANCOVA were violated, a two-way analysis of variance (ANOVA) was used instead.

Reading self-efficacy. A one-way ANCOVA with the pretest reading self-efficacy score as the covariate indicated that the differences between the intervention groups approached statistical significance, F (1, 17) = -3.39, p = .09. A comparison of the adjusted means showed that those in the Guided Reading intervention had a higher mean posttest reading self-efficacy score

Figure 1. Group comparisons for reading self-efficacy.



than participants in the Explicit Comprehension intervention (see Figure 1). A medium effect size (d = - .52) was found for the difference between intervention groups.

Reading attributions to strategy usage. A violation of the homogeneity of regression slopes assumption for ANCOVA occurred for the data representing attribution to incorrect strategy usage for reading failure situations. Additionally, the assumption of linearity was violated for the data representing attribution to correct strategy usage for reading successes. Therefore, the use of ANCOVA was inappropriate. Because both the assumptions of normality and equality of variance were met, two-way (intervention x pre-/post-) ANOVAs were used to analyze these data.

The analysis indicated a significant interaction effect for participants' attributions to incorrect strategy usage for reading failures, F (1, 18) = 5.03, $p < .05$. The interaction effect indicated those in the Explicit Comprehension intervention made greater gains in attributions to incorrect strategy usage when presented with reading failure scenarios than did participants in the Guided Reading intervention (see Figure 2). The effect size was medium (.74).

The two-way ANOVA for attributions to correct strategy usage for reading success indicated an interaction effect that approached statistical significance, F (1, 18) = 2.96, p = .10. Those in the Explicit Comprehension intervention showed greater gains in their attributions to correct strategy usage when presented with reading success scenarios than did the Guided Reading group. A medium effect size of .61 was calculated for the difference between groups.

Reading affect. ANCOVA applied to posttest scores for positive and negative affect for reading did not yield treatment effects, F (1, 18) = .01 and F (1, 18) = .04, respectively.

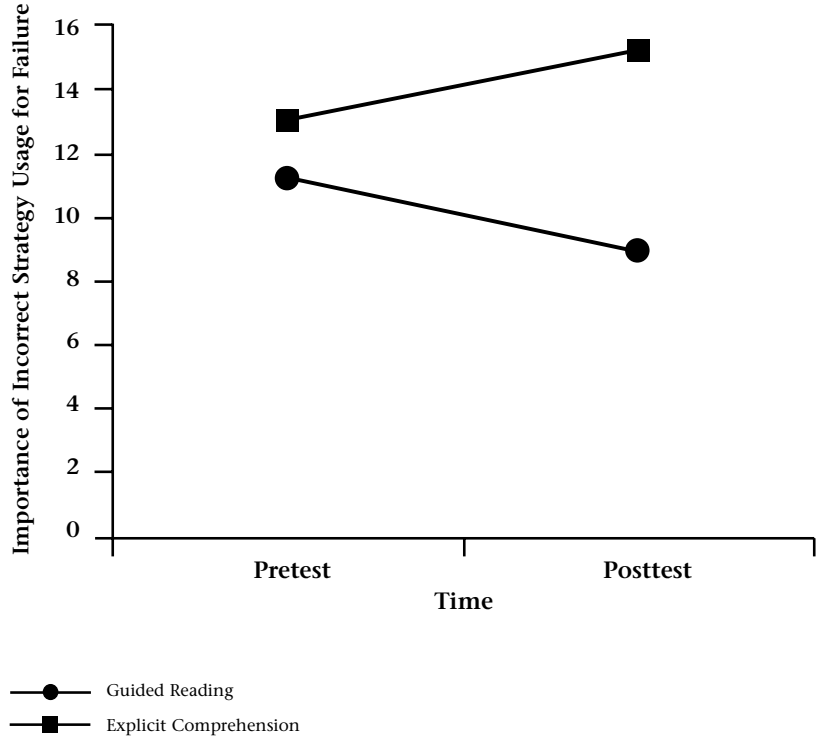
DISCUSSION

The impact of two reading interventions on the motivational and affective characteristics of upper-elementary and middle school students with RD was examined. The two interventions were compared to determine whether a comprehension strategy intervention that was explicit and self-regulatory would produce larger increases in reading-specific self-efficacy, attributions, and positive affect, along with decreases in negative affect, than a comprehension strategy intervention that was less explicit in nature. The study was conducted in conjunction with a study by Manset-Williamson and Nelson (2005) that investigated the impact of these two interventions on participants' reading skills. The Manset-Williamson and Nelson study showed that students in the Explicit Comprehension intervention made significantly larger gains in their reading comprehension skills than did participants in the Guided Reading intervention.

Did the Explicit Comprehension Intervention Outperform the Guided Reading Intervention on the Motivational/Affective Measures?

Reading attributions. For reading failure, a significant interaction effect emerged, indicating participants in the Explicit Comprehension intervention made greater gains in their attributions to incorrect strategy usage than students in the Guided Reading intervention. Whereas participants in the Explicit Comprehension intervention tended to increase their attributions to incorrect strategy usage for reading failure situations, those in the Guided Reading intervention tended to decrease these attributions. Making attributions for failure to incorrect strategy usage is particularly adaptive in that they represent an unstable and controllable cause for failure. For attributions to correct strategy usage for reading success, the interaction effect approached statistical significance. This interaction effect indicated those in the Explicit

Figure 2. Interaction for attribution to incorrect strategy usage for reading failure.



Comprehension intervention made greater gains than participants in the Guided Reading intervention. There was a trend for those in the Explicit Comprehension intervention to increase their attributions to correct strategy usage for reading success, whereas participants in the Guided Reading intervention tended to decrease these attributions.

Perhaps the most likely explanation for the Explicit Comprehension group's increased tendency, compared to those in the Guided Reading intervention, to attribute reading failure to incorrect strategy usage is the provision of strategy-value feedback. That is, when participants in the Explicit Comprehension intervention failed at comprehension tasks during the treatment sessions, their instructors provided feedback such as, "You didn't understand that part because you didn't apply the strategies correctly. Next time, be sure to use the strategy of getting rid of trivial information when you're trying to find the main idea. If you use the strategies, they will help you better understand what you're reading and you'll get it right next time."

What is the significance of participants in the Explicit Comprehension intervention showing greater gains in attributions to incorrect strategy usage for reading failure than those in the Guided Reading intervention? Students with LD have greater tendencies to make attributions for failure to lack of ability than do typically achieving students (Kistner et al., 1985). One might argue that it is correct for students with LD to make more attributions for failure to ability deficits; however, there are clearly negative consequences to making such attributions given that ability is perceived as a stable and uncontrollable trait. According to Licht (1983), the most adaptive and accurate attribution for academic failure might be to incorrect strategy usage. This attribution is realistic in that a large body of research indicates that strategies can help students overcome their reading difficulties, and it is positive in that strategy usage is under the control of the individual.

At least one study has investigated the impact of making attributions for failure to ineffective strategies. Anderson and Jennings (1980) found that when participants were induced to make such attributions after initially failing a task, they expected more success in the future than did participants who were directed to make ability attributions. Those who received strategy attributional feedback also were more likely than those who received ability attributional feedback to believe in the importance of practice in successfully completing the task. Although future expectations for success were not measured in the current study, the results of Anderson and Jennings' study suggest those in the Explicit Comprehension intervention may have been more likely than participants in the Guided Reading intervention to have heightened optimism for future reading success given their increased tendency to make attributions for reading failure to incorrect strategy usage.

Reading affect. Affect is an important variable to consider, particularly in the context of strategy instruction, because it is related to flexibility in strategy usage and increased sophistication in metacognitive monitoring (Pekrun et al., 2002). Although one intervention group did not outperform the other on the positive affect for reading measure, both groups showed trends toward increases on this measure. Because instruction in the Explicit Comprehension intervention was explicit in both reading comprehension and self-regulatory strategies, it is possible that the students perceived it as mechanical and unpleasant. The Explicit Comprehension intervention was more demanding than the Guided Reading intervention, placing explicit responsibility on the participants to know, use, and monitor the strategies. Despite the rigor of the Explicit Comprehension intervention, participants increased their positive affect toward reading from pre to posttest.

Reading self-efficacy. The most surprising result of the study is that participants in the Guided Reading intervention reported higher levels of reading self-efficacy during the posttest than did those in the Explicit Comprehension intervention. Although this finding only approached statistical significance, the effect size was medium (d = -.52). Given that the Explicit Comprehension intervention incorporated the self-regulatory components of goal setting and strategy-value feedback, both of which have been found to improve the reading self-efficacy of non-LD struggling readers (Schunk & Rice, 1987, 1991, 1992, 1993), it was hypothesized that participants would show a marked increase in reading self-efficacy over those in the Guided Reading intervention. Furthermore, Manset-Williamson and Nelson (2005) found that students in the Explicit Comprehension intervention had better reading comprehension skills at posttest than those in the Guided Reading intervention. Therefore, of the two intervention groups, those in the Explicit Comprehension intervention appear more justified in increasing their reading self-efficacy beliefs.

Results indicated that participants in both groups showed relatively high levels of reading self-efficacy prior to receiving the interventions. Thus, both groups had scores of approximately 60 on the pretest reading self-efficacy measure, indicating that they were "pretty sure" of their ability to answer reading comprehension questions based on the passages. The accuracy of these estimates may be called into question given the participants' performance on the pretest measures of reading

comprehension skills, which were far below average on the various reading comprehension instruments (see Manset-Williamson & Nelson, 2005). Thus, it appears that the participants miscalibrated their estimates of their abilities to comprehend text by expressing belief in their reading skills that was much higher than their actual performance

Although participants in both interventions showed gains on some of the reading comprehension measures, neither group scored extremely high on any of the measures at posttest. Since the pretest self-efficacy scores of both groups appear to have been inflated, perhaps it was more accurate of the Explicit Comprehension intervention participants not to rate their self-efficacy higher at posttest than it was for those in the Guided Reading intervention to continue to inflate an already inflated score.

Given the nature of their disabilities, one might expect that the students with RD would have lower self-efficacy than their typically achieving peers. Several studies investigating general academic self-efficacy in students with LD have shown this to be the case (e.g., Hampton, 1998; Hampton & Mason, 2003). Reading-specific self-efficacy in students with LD has received little attention from researchers. Only two studies were located that measured reading self-efficacy in this population, with contrasting results (Pintrich et al., 1994; Tabassam & Grainger, 2002).

Although research of reading self-efficacy in students with RD has generally been neglected, some investigations have studied self-efficacy in other academic areas, particularly in writing. These studies have indicated a tendency for students with LD to overestimate their writing skills (Graham & Harris, 1989; Graham, MacArthur, Schwartz, & Page-Voth, 1992; Graham, Schwartz, & MacArthur, 1993; Sawyer, Graham, & Harris, 1992). The participants in these studies ranged in grade placement from fourth to sixth grade, which is generally consistent with the sample of the current study.

The Benefits and Consequences of Overestimation

Bandura (1986) argued that self-efficacy that slightly exceeds actual performance is adaptive in that it enhances effort and persistence. Consequently, individuals with high self-efficacy despite modest accomplishment continue to strive toward greatness. Were it not for such individuals, the world, according to Bandura (1997), would be one of far less accomplishment and advancement. He cites the cases of James Joyce, whose eminent novel *Dubliners* was rejected by 22 publishers; Gertrude Stein, who did not have a poem published for the first 20 years of her career; and Vincent Van Gogh, who sold only one painting during his life.

However, is it always good to have high self-efficacy even if it is inaccurate? According to Pajares (1996), "the higher the sense of efficacy, the greater the effort, persistence and resilience" (p. 544). As a general rule, this statement appears to be empirically supported. For example, in their meta-analytic review, Multon, Brown, and Lent (1991) found a significant, positive relationship between self-efficacy and academic performance and persistence outcomes.

Nonetheless, holding inaccurately high self-efficacy can have negative consequences. Individuals who grossly overestimate their abilities often suffer severe failures (Bandura, 1997). Additionally, when students' self-efficacy is overly high, they tend to put forth less effort toward learning (Schunk, 1991), may be less engaged in learning tasks (Linnenbrink & Pintrich, 2003), and may be unaware of the need to change ineffective study methods (Schraw, Potenza, & Nebelsick-Gullet, 1993). In his re-view of the literature on the self-efficacy beliefs of students with LD, Klassen (2002) concluded that these students' tendency to hold optimistic but inaccurate self-efficacy beliefs may result in poor academic performance. Thus, Klassen questioned the applicability to students with LD of social learning theory's notion that high self-efficacy leads to improved persistence and effort by stating, "In this review, it is suggested that for students with learning problems, positive self-efficacy beliefs – especially in the face of specific academic weaknesses – might not operate in the same way as for normally achieving students" (p. 98).

Why Do Students with LD Overestimate Their Abilities?

At least two reasons have been postulated for the overestimation tendencies of students with LD, including self-protectiveness (Alvarez & Adelman, 1986) and deficits in metacognition (Stone & May, 2002). The notion that students with LD overestimate their abilities to protect their self-worth was articulated conceptually by Covington and Omelich (1979), but has received little empirical attention. Alvarez and Adelman (1986) found some support for the use of overestimation by students with LD to serve a self-protective function.

Most researchers examining this line of study have focused on the relationship between metacognitive deficits and overestimation. For example, Kruger and Dunning (1999) argued that individuals who are unskilled in a particular domain often inflate their skills within that domain because being skilled is a prerequisite for accurate self-assessment. That is, they are unskilled, which not only causes poor performance but also an inability to perceive their performance as poor. The researchers found that the least skilled students in their study, those in the bottom quartile, rated

themselves as being in the above-average range. These students also showed large deficits on a test of metacognition. Kruger and Dunning concluded that the unskilled students' inflated self-assessments largely resulted from deficits in metacognition. Other researchers have found similar results regarding metacognitive deficits and inaccurate self-efficacy or self-perception judgments in low-achieving students (Bandura & Schunk, 1981) and students with LD (Pintrich et al., 1994; Stone & May, 2002).

These data are not particularly surprising given the similarities between metacognition and self-efficacy. As Sawyer and colleagues (1992) stated,

> For example, although self-efficacy and the metacognitive ability to assess one's own capabilities differ conceptually, operational assessment of the two is uncomfortably similar. The distinction between asking children to predict whether they can solve a problem or perform a task (metacognition) and asking children how sure they are, on a 100-point scale, that they can work problems or perform a task similarly to an accepted standard (self-efficacy) is a fine one. (p. 17)

Therefore, during the current study when participants were asked to rate how sure they were that they could answer comprehension questions after reading passages, they likely called not only upon their self-efficacy but also on their metacognitive abilities.

The Influence of Metacognitively Based Strategy Instruction on Self-Efficacy

Some data indicate that providing metacognitively based interventions may lead to more accurate self-appraisals. Kruger and Dunning (1999) provided metacognitive training to a group of students who had inaccurately confident self-efficacy beliefs regarding their logical reasoning skills. After training, participants reported lower self-efficacy beliefs, but these beliefs were more calibrated with their actual performance than their pretest self-efficacy beliefs.

Schunk (1981) found that a treatment that used explicit cognitive modeling of an arithmetic strategy outperformed a less explicit didactic condition on arithmetic outcome measures. He also noted that participants in the more explicit teaching condition had more accurate math self-efficacy beliefs at posttest than those in the less explicit condition. Schunk interpreted this difference in accuracy of self-appraisal as being due to the cognitive modeling condition showing its participants the complexity of arithmetic and providing more overt information about the source of arithmetic problems and the solution to these problems. He proposed those in the less explicit training condition "may have been swayed by their modest training successes while remaining largely uninformed of the extent of their deficiencies" (p. 104).

Using a strategy-based, self-regulatory writing intervention, Graham and colleagues (1992) studied its impact on the writing self-efficacy beliefs of fourth- and fifth-grade students with LD. Pretesting indicated the students had inflated writing self-efficacy beliefs. After receiving the intervention, some of the students rated their self-efficacy beliefs lower than at the pretest. The researchers concluded that these students, who were overconfident in their writing abilities, became more realistic as a result of the intervention. Other research has shown that students with LD who have inaccurate writing self-efficacy beliefs increase their self-efficacy as a result of strategy-based, self-regulatory writing interventions (Graham & Harris, 1989; Sawyer et al., 1992).

The Metacognitive Demands of the Two Interventions

Differences between the two interventions may explain why the participants in the Explicit Comprehension intervention may have demonstrated a more accurate calibration between self-efficacy and reading skills than those in the Guided Reading intervention after the intervention. Compared to the more fluid and teacher-controlled instruction of the Guided Reading intervention, the Explicit Comprehension intervention was more rigorous, explicitly calling upon students – after explicit instruction, modeling, and practice – to take control of their strategy usage, set their own goals for reading, and monitor their strategy usage and understanding. As stated by Baker (2002), metacognition not only involves cognitive strategies, but also self-regulation of these strategies. Additionally, making the link between strategy usage and reading outcomes is a metacognitive task (Paris & Oka, 1989). Instructors in the Explicit Comprehension intervention gave their students explicit attributional feedback about the connection between correct/incorrect strategy usage and reading success/failure, whereas instructors in the Guided Reading intervention did not provide this sort of feedback.

The use of feedback that attributed reading failure to incorrect strategy usage may be particularly informative in understanding the differences between groups on posttest reading self-efficacy scores. Thus, such feedback may have influenced participants in the Explicit Comprehension intervention to more accurately appraise their reading skills than those in the Guided Reading intervention. It should be noted, however, that strategy-value feedback did not lower participants' reading self-efficacy since their pre- and posttest reading self-efficacy scores were equivalent (see Table 2).

Based on the more metacognitively oriented components of the Explicit Comprehension intervention, it can be argued that students in this intervention were required to call upon their metacognitive abilities more than those in the Guided Reading intervention. One interpretation of these results is that because the Explicit Comprehension intervention was more explicitly metacognitive in nature, its participants became more aware that successful reading requires one to be planful and strategic. That is, it is possible that they came to view reading as more complex than originally thought once they were explicitly exposed to the cognitive, metacognitive, and self-regulatory processes that good readers use when reading. As they became more aware of the complexity of reading, perhaps they became more accurate in judging their capabilities to meet the demands of the task. As Chen (2003) stated, "If the students' inaccuracy in appraising their self-efficacy results from being unable to understand the task requirements or their performance capability, their accuracy should improve as they gain experience with the task" (p. 80).

Admittedly, this interpretation is more theoretical than data-based. The research design of the current study does not allow a conclusive claim that those in the Explicit Comprehension intervention became more metacognitively aware and, therefore, more accurate in judging their self-efficacy beliefs. Future research would need to be conducted to make such a claim.

Limitations

Several limitations must be kept in mind when considering the results of the current study. The small sample size (N = 20) provided limited statistical power to detect changes resulting from the interventions. It was thought that the differences in the two interventions were significant enough to produce large effects. Only one of the between-group comparisons resulted in a statistically significant finding. Two others approached statistical significance. The inclusion of a larger sample would have increased the study's power to detect smaller between-group differences.

Data were collected only from self-report measures. Gathering data regarding instructor and parent perceptions of the participants' characteristics would have enhanced the validity of the findings. As discussed above, students with RD are not always the most accurate and reliable reporters of their skills and characteristics. However, measures of teacher and parent perceptions of students' reading-specific motivational/affective characteristics would have to be developed.

The attribution measures used in this study are limited due to moderate internal consistency reliabilities (.53 and .54). However, most (if not all) attribution measures developed for children appear to be limited by moderate internal consistency reliability. For example, the Children's Attributional Style Questionnaire (Seligman et al., 1984) is the main measure of attributional style for children, but only moderate internal consistency reliabilities have been found for its composite (.62), positive events (.47-.73), and negative events (.42-.67) scales (Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998). In the future, researchers wishing to use the reading attribution instrument should increase the number of reading success and failure scenarios, which would likely improve the instrument's internal consistency reliability.

Fifteen out of 20 participants in the current study were male. Therefore, generalization of the results to female students with RD must be regarded with caution.

Implications for Practice

Because motivational/affective factors impact academic behaviors and outcomes, individuals working with students with RD should be cognizant of the potential impact of these factors in the classroom. Most studies of instructional methods with students with RD have focused narrowly on changes in reading skill. Little is known about how different instructional methods impact the motivational and affective characteristics of students with RD. This study sheds some light on how the motivational and affective characteristics of students with RD are affected by an empirically supported instructional procedure, comprehension strategy instruction.

First, although some who adhere to a radical constructivist perspective argue that explicit strategy instruction may damage students' reading motivation, the results of this study provide no support for such a notion. Thus, explicit, self-regulatory strategy instruction does not appear to be harmful to the reading-specific motivational and affective characteristics of students with RD. Teachers implementing similar instructional procedures should feel comfortable that they are unlikely to produce negative consequences related to reading motivation.

Second, teachers who want their students to make attributions for failure to incorrect strategy usage will likely need to be explicit in their instruction of strategies, explicit in their transfer of strategy use from teacher-directed to independent student use, and explicit in making the connection between reading comprehension and strategy use for students with RD. Without explicit procedures, these students may not perceive the control they have over reading outcomes, instead making attributions for failure to stable and uncontrollable traits such as ability.

Finally, those working with students with RD should be aware that these students may possess inflated reading self-efficacy beliefs that could hinder their reading development. Students with RD who hold grossly inflated reading self-efficacy beliefs potentially provide a more difficult challenge for teachers than those who experience low self-efficacy (Klassen, 2002). Teachers should be discouraged from making overt attempts to lower students' self-efficacy, but instead should work to help students understand what they know and what they do not know (Pajares, 1996). The goal of the teacher with regard to students' reading self-efficacy should be to help students maintain sufficiently high but generally accurate self-efficacy beliefs.

The task ahead for researchers is to define what it means for students with RD to have sufficiently high reading self-efficacy by answering Pajares' (1996) question, "But how much confidence is too much confidence, when can confidence be characterized as excessive and maladaptive in an academic enterprise, and what factors help create inaccurate self-perceptions?" (p. 565).

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