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Reading Strategy Instruction, Metacognitive Awareness, and Self-perception of Striving College Developmental Readers

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This study investigated metacognitive awareness, use of reading strategies, and self-perceptions of striving developmental college readers at a large Southwestern university. During one semester, the students received explicit research-based reading strategy instruction emphasizing building metacognitive awareness. Strategy acquisition was measured in three areas before and after the intervention using the MARSI (Metacognitive Awareness of Reading Strategies Inventory; Mokhtari & Reichard, 2002): Global Reading (metacognitive) Strategies, Problem-Solving (cognitive) Strategies, and Support Strategies. Affective factors influencing learning and reading, such as confidence and learner self-efficacy were measured using the PASCI (Personal and Academic Self-Concept Inventory; Fleming & Whalen, 1990).The study found the reading strategy instruction made positive effects on students' metacognitive strategic reading and led to significant increase in use of Global Reading Strategies. Although the overall correlation between strategic thinking and learner self-perception showed no statistical significance, correlations between Support Strategies and social anxiety and Global Reading Strategies and mathematical self-efficacy revealed statistical significance.

Making the transition from high school to college is inarguably a major milestone in a learner's life, both personally and academically. Navigating the cultural differences between secondary and postsecondary life necessitates a social, emotional, and, of course, academic reorientation to a new and different context. For all students, these changes are met with some mixture of excitement and trepidation, and depending on an individual's previous experience, greater or lesser degrees of preparation for effectively addressing these changes in order to become a successful college student.

Academic Characteristics of Developmental Readers

For underprepared college students, the academic challenges associated with college can be the most daunting. Transitioning from the relatively sheltered teacher-directed academic environment found in many high schools to the independent and self-initiated academic existence required for success in college requires a new skill set that these students may not entirely possess. Without the ability to steer their own academic course, such students can be in danger of floundering in college or failing out of college altogether (National Center for Educational Studies [NCES], 2003).

The struggle underprepared students experience to attain the skills needed to succeed in college is not a new phenomenon, and has not gone unaddressed by institutions of higher learning. According to the most recent data available from NCES (2003), in 2000 67% percent of degree-granting institutions offered at

least one developmental learning course for underprepared college students. NCES reported that 28% of freshmen entering college in the fall of 2000 enrolled in at least one developmental reading, writing, or mathematics course. And although the percentage of entering freshmen enrolled in developmental courses remained static between 1995 and 2000, the actual number of college students enrolled in developmental courses increased during that same time period as the total enrollment of postsecondary institutions escalated (NCES, 2003). The number of students unable to meet the basic entrance requirements or academic performance standards required to succeed as freshmen has continued to increase (ACT, 2007).

Postsecondary institutions offer an assortment of developmental learning programs designed to help students become self-regulated, active learners able to employ a variety of strategies for comprehending academic materials used in college courses (Blerkom & Blerkom, 2004; Nist & Simpson, 2000; Simpson, Hynd, Nist, & Burrell, 1997; Young & Ley, 2002). Such developmental learning courses serve as "gatekeeper" courses in that students must either pass the placement test they failed, pass the developmental learning course, or pass both to gain unconditional admission to the institutions. For students lacking a history of strong academic performance, the high-stakes nature of such courses may result in added pressure to perform well (Mazzeo, 2002; O'Hear & MacDonald, 1995).

Affective Characteristics of Developmental Readers

Underprepared college learners in developmental programs are identifiable the moment they display academic difficulties (e.g., lacking academic skills for college coursework), yet researchers have linked these academic difficulties to non-cognitive factors (Bettinger & Long, 2009; Blerkom & Blerkom, 2004; Cukras, 2006). Affective factors are also tied to students being able to demonstrate mature strategic thinking, which includes believing in their ability to control their success (Risko, Fairbanks, & Alvarez, 1991) and finding the motivation to read actively (Alexander & Murphy, 1999; Simpson & Nist, 2000). Self-perception and learner identity issues add a further dimension and can impact learners' academic performance. Alvarez and Risko (2009) state that "Motivation for learning is highly dependent on students' knowledge of study strategies that include self-monitoring…and on their belief that they can succeed on tasks assigned to them in their courses" (p. 201).

Theoretical Background

The term 'striving readers' is being more frequently used to refer to readers in need of assistance with their reading skills (Fink, 2006). This term has replaced many previous references to these individuals as "remedial readers," and serves to emphasize the initiative required by these students to actively engage in improving their comprehension skills. Improving these skills is critical because on a weekly basis, freshmen college students are expected to process vast amounts of written text (Nist & Simpson, 2000). College-level reading requires navigating text written in a variety of expository text structures for both comprehension and retention, frequently on topics about which students have varying levels of prior knowledge upon which to build. The reading processes required for managing these information-getting tasks are typically highly complex and require both cognitive and metacognitive processing (Magliano & Trabasso, 1999; Wade & Reynolds, 1989).

Poor comprehension is a composite construct resulting from various combinations of problems within which one or many learner characteristics or learning strategies play critical roles in impacting active, strategic reading (Nist & Simpson, 2000; Thomas & Rohwer, 1986). Cognitively, striving readers may struggle with a variety of tasks, such as distinguishing critical from insignificant information; choosing, prioritizing, and interpreting across multiple texts; spontaneous retrieval of the most effective reading strategies to match the learning task; managing executive processes that orchestrate the cognitive processing of text; and utilizing metacognitive thinking (Kiewra, 2002). Other problems striving readers face include the degree and accuracy of prior knowledge relevant to the learning task, metacognitive awareness necessary to monitor and solve comprehension problems, motivation to read, and self-perception as readers (Pressley, 1995; Weinstein, 1994).

Self-perception and Strategic Reading

Although striving readers are identified by colleges based on poor reading performance, other potential causes of low performance for these learners may include dysfunctional beliefs about reading, low strategy use, and motivational barriers including poor learner self-concept and self-efficacy (Pressley, 2000). Guthrie and Wigfield (2000), who emphasize the complex interaction of a number of cognitive and affective factors that either enable or inhibit students' abilities to engage and persevere with academic tasks, have explored this relationship between self-concept and learning.

One attribute shared by many striving readers in college

developmental courses includes low self-concept or low self-efficacy (Young & Ley, 2002). Self-efficacy "expressed as a situation and subject-specific personal confidence in one's ability to successfully perform tasks at a given level" (Alvarez & Risko, 2009, p. 250) has been identified as an important catalyst for effecting student behavior resulting in effective learning (Jakubowski & Dembo, 2004), including the self-regulatory behaviors related to metacognitive thinking (Lane & Lane, 2004; Linnenbrink & Pintrich, 2003; Schunk, 1991). Students' perceptions of learner competence and efficacy are considered good indicators of performance. Students with high self-efficacy tend to persevere with difficult reading tasks and to master the tasks by actively using cognitive strategies (McCabe, Kraemer, Miller, & Ruscica, 2006).

Reading Strategy Instruction

To become successful independent learners, striving readers must develop a repertoire of reading strategies that can be selectively activated by the learner to meet the particular demands of differing text materials and assignments. Researchers have shown that improving college developmental readers' comprehension is possible as long as an appropriate variety of research-based strategies is taught, the instruction in these strategies is of high quality, and the focus of the strategies is on cognitive and metacognitive processing (Carson, Chase, & Gibson, 1993; Simpson & Nist, 2000).

Better readers use more metacognitive strategies (Paris & Myers, 1981). Metacognitive strategies require readers to monitor their comprehension and manage the reading task. One's ability to apply reading strategies effectively suggests heightened metacognitive awareness and self-monitoring (Gettinger & Seibert, 2002; Hong-Nam & Leavell, 2007; Pintrich, 2004). Metacognition helps learners focus and engage, allowing them to activate their prior knowledge to process text more interactively by employing appropriate strategies indicating they understand the "when, how, what, and why" of strategic reading (Nist & Simpson, 2000, p. 647). Learners increase their potential for successful, independently managed learning outcomes by developing their metacognitive awareness across learning contexts (Kiewra, 2002).

Research supports the effectiveness of research-based strategy instruction as a tool for increasing metacognitive awareness (Applegate, Quinn, & Applegate, 1994; Caverly, Nicholson, & Radcliffe, 2004; El-Hindi, 1996; Shenkman & Cukras, 1986; Thiede & Dunlosky, 1994). Caverly, et al. (2004) measured metacognitive awareness of 36 first-year college students enrolled in reading developmental course before and after a strategic reading instruction intervention called PLAN (Predict Step, Locate Step, Add Step, and Note Step). These researchers found students not only increased their metacognitive awareness (as measured by a checklist) after the instructional intervention, but also effectively applied the reading strategies in the correct context. In an experimental study, Donley and Spires (1999) compared students' reading strategy usage after implementing a reading instruction intervention called PROR (Preread, Read, Organize, and Review). The students were enrolled in two different types of developmental courses: 1) a content-based developmental reading class (that is, strategies taught and applied within the context of texts provided in the developmental reading class) and 2) a course-based developmental reading class (that is, strategies taught and applied within the context of materials students use in their other courses, such as history). Donley and Spires found that students in both types of classes reported "using all strategies to prepare for final exams" (p. 28), although students in the course-based context reported using the PROR strategy more frequently in their classes than students in the content-based context.

Strategy instruction can help students make progress toward becoming more purposeful, active readers who use their increased metacognitive awareness to control their own reading comprehension (Caverly, et al., 2004; Cox, Frisner, & Khayum, 2003; Cukras, 2006; Donley & Spires, 1999); however, research on how strategy instruction relates to college students' self-efficacy or self-concept has yielded mixed results. Stone (1994) interviewed 11 striving community college students in a developmental reading course and measured their' self-perceptions after reading instruction. Participants reported improvements in reading skills, self-efficacy, and self-motivation. Although Stone found that the students demonstrated increased confidence in using strategies and learning tasks, Caverly, et al. (2004) found no improvement in the self-efficacy of college students enrolled in a developmental reading course following exposure to a strategic reading instruction intervention.

The majority of research on the effectiveness of reading strategy instruction intervention with developmental college readers focuses on academic and/or cognitive outcomes. Less attention has been given to investigations regarding the relationship among metacognitive awareness, reading strategy use, and self-perception in striving developmental college readers. This study was conducted to add to that

knowledge base. Therefore, the purpose of the current study was to answer the following questions:

1. Does explicit instruction in reading strategies increase striving developmental readers' reported cognitive and metacognitive strategy use following instruction?

2. Do striving readers enrolled in a developmental reading course report a difference in the degree or nature of their cognitive and metacognitive strategy use at the end of the 16-week course?

3. Is there a positive correlation between reading strategy use and self-perception? What is the nature of striving developmental readers' self-perception?

Method

The participants in the current study were 32 college students enrolled in two developmental reading classes at a large university in Texas. The participants were 23 males and 9 females. The mean age was 19 years old. The students were freshmen (*n*=24) and sophomores (*n*=8) majoring in various disciplines (including social sciences, humanities, engineering sciences, and undecided). Students in the developmental reading class were, for the purposes of this study, classified as "striving readers" for failing to achieve a passing score on the reading portion of one of the following four standardized screening tests used by the university to measure reading, writing, and math achievement of incoming freshmen. The screening tests (and required passing scores) used to determine students' college readiness included the Texas Higher Education Assessment or THEA (230), the COMPASS (81), the ACCUPLACER (78), and the ASSET (41). The state requires students who fail a screening test for reading to enroll in the developmental reading class to improve their reading skills. Before being unconditionally admitted to the university, students must either pass the course or one of the tests listed above.

The Developmental Reading Course

The general goals of the reading class are to improve students' literacy skills, with more specific emphases on reading comprehension strategy use and metacognitive awareness, both of which are core abilities for success in academic reading at the college level. The *Test Preparation Quick Reference Guide for THEA* (National Evaluation Systems [NES], 2005) was adopted as the main textbook for the reading class. This text consists of passages and readings similar in structure and topic to those in freshmen-level textbooks. Follow-up questions parallel the types of questions asked on the admissions screening tests and tasks required of students on the THEA itself. The developmental reading class is a semester-long, stand-alone, non-credit, pass-or-fail, course.

Instruction in the course emphasized the following literacy skills: determining word meaning (e.g., use of context clues to determine the meaning of unfamiliar words or phrases), understanding the main ideas and supporting details (e.g., differentiating important from unimportant information), identifying writer's purpose and intention (e.g., recognizing writer's point of view), analyzing organization of reading selection (e.g., finding relationships among ideas in the text), using strategies for critical analyses of passages (e.g., analyzing and evaluating information), and applying other study strategies (e.g., paraphrasing, organizing, and summarizing information; using charts, graphs, or tables to increase comprehension). Other authentic reading materials, such as articles from newspapers or magazines, were also used to develop students' literacy skills.

The class met face to face once a week for 16 weeks and once a week online; on the second class day each week, students practiced their comprehension and vocabulary skills in the computer lab. During the web-based work, students used a self-directed learning website (*SkillsTutor* by Houghton Mifflin, 2010) to complete vocabulary-development exercises and comprehension practice tests. The participants took a reading comprehension test every other week to monitor their reading achievement.

Strategy instruction. Explicit strategy instruction in the five core areas above was incorporated to improve students' cognitive and metacognitive knowledge and awareness of effective strategy use to optimize constructing meaning with varying text structures and for various purposes. The strategy instruction model utilized to teach strategies was based on best practice for strategy instruction (Nist & Holschuh, 2000; Pressley, 2000) and included 1) establishing a purpose for learning the strategy, 2) modeling of the strategy by the instructor using think alouds, talks alouds (Lapp, Fisher, & Grant, 2008), and demonstration, 3) guided practice with instructor leading students through examples of strategy application, 4) independent practice with instructor monitoring, 5) reflection/feedback on strategy use by students and instructor, and 6) multiple opportunities for strategy application. The explicit modeling events were followed by opportunities for guided and independent practice during class and computer lab time. The explicit strategy instruction emphasized metacognitive awareness in that there was an intentional focus during modeling and reflection on

scaffolding students to make the connection between the learning task and the choice of the best strategy to accomplish that task. For example, when teaching students how to analyze text to determine text structure, students had to explain which type of graphic organization of ideas would be most effective and why it was best suited to the task. By providing a rationale for strategy choice, learners were engaged in the kind of reflective decision-making used by more mature, effective readers.

Instruments and Data Collection

Data were collected using three questionnaires: the Metacognitive Awareness of Reading Strategies Inventory (MARSI; Mokhtari & Reichard, 2002), Personal and Academic Self-Concept Inventory (PASCI; Fleming & Whalen, 1990), and the Individual Background Questionnaire (IBQ) created by the authors. Instruments were administered by instructors during class time, and the collected data were returned to the researchers for data analysis. In advance, the researchers trained instructors of the classes regarding survey-administration procedures.

MARSI. The MARSI (Mokhtari & Reichard, 2002) was administered to assess students' knowledge of reading strategies. This instrument was chosen because it was created for the target population of college readers and has shown excellent reliability (.89). The MARSI contains 30 questions about what behaviors and strategies readers employ when they read academic or school-related materials (e.g., textbooks or library books). The MARSI's questions fall into three categories: Global Reading Strategies (metacognitive), Problem-Solving Strategies (cognitive), and Support Strategies (for example, use of text aids such as the glossary or footnotes, asking for help from others). Students were asked to select one number from 1 to 5 on a five-point Likert scale (1="I never or almost never do this," 2="I do this only occasionally," 3="I sometimes do this," 4="I usually do this," and 5="I always or almost always do this") indicating the degree to which they engage in a behavior when reading academic materials. At the beginning and the end of the semester, the MARSI was distributed to participants as a pretest and posttest measure to ascertain any changes in strategy use and reading behaviors over the course of the semester. "This class helped me learn reading strategies and improve my reading comprehension skills" was the one statement added to the posttest version of the MARSI to determine students' impressions as to whether they found the strategy instruction useful.

PASCI. The PASCI (Fleming & Whalen, 1990) was originally designed as a measure of self-perception for high school and college students. The PASCI was specifically chosen over other potential instruments which focused mainly on feelings of general self-worth, because it was designed to also measure self-efficacy, a construct reflecting one's sense of ability to accomplish tasks. Additionally, the PASCI has sub areas that relate directly to academic self-perception. The original measure has 46 questions about students' self-esteem, social anxiety, physical self-acceptance, perceptions of verbal ability, math ability, and physical ability. Each subscale on the PASCI has shown good internal consistency (.72-.94) and test-retest reliability (.81-.98). From the original 46 questions the five items related to physical ability were not included in the administration of the PASCI because perceptions of physical prowess were not considered relevant to this investigation. The deletion of the five physical ability items resulted in the use of 41 items related to self-esteem (5 items), social anxiety (8 items), physical appearance (5 items), perception of self by others (7 items), overall self-efficacy (general sense of ability, 4 items), mathematical self-efficacy (5 items) and verbal self-efficacy (7 items). The students were asked to rate each item on a scale of 1 (not at all) to 7 (always). At the end of the semester, the PASCI was administered to students along with the MARSI to obtain participants' self-perception of academic ability and self-esteem as college readers.

IBQ. The IBQ was developed by the researchers to obtain basic demographic information about the participating students. The IBQ was used to collect information about students' age, gender, major, and academic classification.

Data Analysis

The Statistical Package for the Social Sciences (SPSS, 2007) was used to analyze all data. Descriptive statistics (frequencies, means, and standard deviations) were calculated for summarizing demographic information and describing students' reading strategy use and their self-perceptions as college students. Paired *t*-tests were used for determining the differences in overall strategy use, Global Reading Strategies, Problem-Solving Strategies, and Support Strategies as measured by the MARSI between the pretest and posttest. Pearson *r* correlation coefficients were calculated to determine both the degree and direction of the relationship between reading strategy use (MARSI) and self-perception, confidence, and self-efficacy as measured by the PASCI. Even though the original PASCI uses a non-numbered 7-point Likert-type

scale, a decision was made to collapse participant PASCI responses into three categories to improve the explanatory power of the data analysis: (A) Always/very often (1, 2, & 3), (B) Neither very often nor never (4), and (C) Never/practically never (5, 6, & 7).

Results

The results will be reported as they relate to each of the three research questions. Question one was *Does explicit instruction in reading strategies increase striving developmental readers' reported cognitive and metacognitive strategy use following instruction?*

Descriptive statistics for overall use of reading strategies as measured by the MARSI and paired *t*-test results are presented in Table 1. As shown in Table 1, the results of the paired *t*-test showed a statistically significant difference in learners' overall use of reading strategies (i.e., total score for all three categories) after strategy instruction (t=-2.06, p=0.048). Students reported more frequent use of reading strategies on the posttest when compared to the pretest. When students were asked whether the strategy instruction helped them learn and use more reading strategies to improve their reading comprehension skills, they reported the strategy instruction was very helpful (M=3.7).

Research question two was *Do striving readers enrolled in a developmental reading course report a difference in the degree or nature of their cognitive and metacognitive strategy use at the end of the 16-week course?*

Table 1 shows that both before and after the strategy instruction, students reported using (in order of degree of use from most to least used) Problem-solving Strategies (pretest: M=3.45; posttest: M=3.65), followed by Global Reading Strategies (pretest: M=3.05; posttest: M=3.33), followed by Support Strategies (pretest: M=2.87; posttest: M=3.09). When comparing posttest to pretest, reported strategy use increased in all three areas; however, that increase was statistically significant only for Global Reading Strategies (t=-2.23, p=0.033). Participants reported the greatest increase in use of metacognitive Global Reading Strategies following strategy instruction, indicating that the nature of their strategy use had become more metacognitive. The appendix presents the means and standard deviations of the 30 MARSI items.

The third research question was *Is there a positive correlation between reading strategy use and self-perception? What is the nature of striving developmental readers' self-perceptions?* Pearson r correlation testing revealed no statistically significant relationship between strategy use and self-perception (r=.13) overall. Results are presented in Table 2. When looking at the relationships among the subcategories on the MARSI and PASCI, a statistically significant correlation (r=.39) was found between use of Support Strategies (on the MARSI) and Social Anxiety (on the PASCI). A statistically significant correlation (r=.43) was also found between Global Reading Strategies (MARSI) and Mathematical Self-efficacy (PASCI).

Tables 3 through 5 present the descriptive statistics of the PASCI items by categories: frequencies of responses, means, and standard deviations.

Table 1

Summary of Overall Strategy Use and Paired t-test of the MARSI

Variable	Test	*M*	*SD*	*t*	*df*	*P**
Global Reading Strategies	Pre	3.05	0.30	-2.23	31	0.033*
	Post	3.33	0.32			
Problem-solving Strategies	Pre	3.45	0.29	-1.78	31	0.086
	Post	3.65	0.35			
Support Strategies	Pre	2.87	0.46	-1.48	31	0.148
	Post	3.09	0.51			
Total	Pre	3.10	0.29	-2.06	31	0.048*
	Post	3.34	0.31			

Note. *p<.05 (2-tailed test).

Overall Self-esteem

Table 3 presents the frequencies and descriptive results for the PASCI's overall self-esteem and overall self-efficacy items. Items 7, 13, 16, 41, and 44 measure participants' overall self-esteem and feelings of general self-worth. Although more participants reported having a high sense of self-respect and general self-worth (items 41 & 7), 81% of participants reported being more likely than not to dislike themselves, (item 13); 69% frequently doubted their worthiness (item 16). A large percentage (75%) of the participants reported often feeling discouraged about whether they are a worthwhile person (item 44).

Self-efficacy

Participants' sense of overall self-efficacy was measured by items 8, 17, 23, and 40. Participants reported a general sense of self-competence (53%) (item 17).

Table 2

Pearson r Correlation Coefficients between Constructs Measured by the MARSI and PASCI

Scale	MARSI	Global Reading Strategies	Problem-solving Strategies	Support Strategies
MARSI	1			
PASCI	.13			
Global Strategies		1		
Problem-solving Strategies			1	
Support Strategies				1
Self-efficacy		.07	-.20	.02
Social Anxiety		-.17	-.13	.39**
Physical Appearance		.14	.20	.31
Perceptions by others		.06	.01	.03
Self-esteem		.33	.09	.27
Mathematical Self-Efficacy		.43**	.21	.30
Verbal Self-Efficacy		.18	-.18	.16

Note. **Correlation is significant at the 0.05 level (2-tailed test).

However, a striking number (81%) reported very low confidence in their specific abilities (item 8). They were also more likely (56%) to feel inferior to others in a general sense (item 23).

Table 4 presents the frequencies and descriptive results for the PASCI's social anxiety, physical appearance, and perception of self by others subcategories.

Social Anxiety

Items 2, 22, 25, 28, 33, 35, 37, and 45 were used to measure social anxiety. Regarding social self, 53% of participants were more likely than not to be concerned about whether they were liked by others (item 45), and 41 % reported being more likely to worry about getting along with others (item 22). Shyness was troubling for 44% of the participants (item 2). For 41% of the participants, thinking of the right thing to say in a group of people was an issue (item 33). Participants' sense of anxiety appeared to be higher if any kind of "performance" was required; for example, 56% felt self-conscious about being called upon to speak (rather than volunteering to do so) in front of others (item 35), and 44% did not feel at ease about their effectiveness at joining an existing conversation (item 28).

Physical Appearance

As seen in Table 4, items 4, 9, 24, 27, and 30 were used to measure participants' responses regarding physical appearance. Fifty-six percent were not likely to consider themselves better looking than their peers (item 9); 59% were more concerned than not about their physical attractiveness in their own estimation (item 27), and 31% were concerned about being inferior to others (item 24). Corroborating these results, 78% of the students reported they "sometimes, infrequently, or never" felt especially pleased or proud of their looks (item 30), and 63% "always, frequently, or often" fantasized or wished to be better looking (item 4).

Perception of Self by Others

The perception of self (non-physical factors) by others was measured by items 1, 5, 12, 14, 20, 26, and 46. Only three participants (9%) reported thinking that others always or often held them in high regard (item 5). Fifty-six percent of the students reported feeling concerned about what others think of them (item 20), and 53% reported feeling worried or bothered about what others think of them (item 46). Fifty percent did not worry that others might criticize them (item 26). However, responses to item 14, which assessed students' likelihood of dwelling on embarrassing mistakes, indicated that 44% preferred to move on as quickly as possible, perhaps, in order to spend less time focusing on their shortcomings. Overall, as indicated by responses to item 1, 63% of the participants reported being less than more likely to worry that they would ultimately be perceived as a failure in their jobs or school.

Table 5 illustrates the frequencies and descriptive results for the PASCI's academic self-efficacy

Table 3

PASCI Results Related to Overall Self-esteem and Overall Self-efficacy

Items	Percent Always/Very Often	Percent Neither Very Often Nor Never	Percent Never/ Practically Never	*M*	SD
Overall Self-esteem				3.65	0.99
7. Do you think of yourself as a worthwhile person?	53.13	12.50	34.38	3.56	2.03
13. Most of the time, do you genuinely like yourself?	12.50	6.25	81.25	5.69	1.69
16. Do you ever doubt whether you are a worthy person?	68.75	12.50	18.75	2.35	1.88
41. How often do you feel that you have a strong sense of self-respect?	56.25	12.50	31.25	3.63	2.20
44. Do you ever feel so discouraged with yourself that you wonder whether you are a worthwhile person?	75.00	9.38	15.63	2.63	1.52
Overall Self-efficacy				4.42	0.94
8. In general, how confident are you about your abilities?	9.38	9.38	81.25	5.81	1.42
17. Do you think of yourself as a generally competent person who can do most things well?	53.13	9.38	37.50	3.84	2.10
23. How often do you feel inferior to others?	56.25	21.88	21.88	3.25	1.74
40. Do you usually feel very comfortable about the prospect of expressing your views on a subject in front of a large group of people?	34.38	12.50	53.13	4.72	1.95

related items such as mathematical and verbal self-efficacy.

Mathematical Self-efficacy

Mathematical self-efficacy refers to students' perceptions of their ability to perform effectively tasks related to mathematical tasks and was measured by items 3, 15, 18, 39, and 43. In general, 53% of the participants thought of themselves as having less ability to solve math problems (item 15). Fifty-six percent of the participants thought they had less math ability than their peers (item 3), and equal percentages of students felt that their math ability was "always/very often" far below that of their peers and "never/practically never" (item 39). Fifty-six percent reported feeling less confident about their math ability than their peers (item 18). However, in a contradictory result, 53% of the respondents reported confidence in their ability to do well on the mathematics portion of a standardized test (item 43).

Verbal Self-efficacy

Verbal self-efficacy refers to students' perceptions of their ability to perform effectively on tasks related to language arts. Verbal self-efficacy for reading was measured by items 10, 32, 34, and 42; and for writing by 11, 36, and 38. Only six participants (19%) reported thinking their ability to read and absorb articles and textbooks was higher than others' ability to do the same (item 10), although many (43%) took a neutral stance on the statement. Forty-one percent of the participants reported being less likely to worry about reading and comprehending an essay for a class assignment (item 32), but 44% worried about mastering written material for a test (item 34). Corroborating this was increased concern when testing or performance was involved; 50% of the students rarely or never felt confident about their ability to do well on the verbal portion of a standardized test (item 42). The writing-related self-efficacy items showed a similar trend. When

Table 4

PASCI Results Related to Social Anxiety, Physical Appearance, Perception of Self by Others

Items	Percent Always/Very Often	Percent Neither Very Often Nor Never	Percent Never/ Practically Never	*M*	SD
Social Anxiety				3.72	0.71
2. How often are you troubled by shyness?	43.75	3.13	53.13	4.22	1.98
22. How much do you worry about how well you get along with other people?	40.63	18.75	40.63	3.94	2.02
25. Do you usually feel comfortable and at ease meeting new people?	53.13	15.63	31.25	3.53	1.98
28. Do you feel comfortable and at ease when entering a conversation at a gathering where people are already talking?	37.50	18.75	43.75	4.22	1.60
33. When in a group of people, do you have trouble thinking of the right things to talk about?	40.63	15.63	43.75	4.09	1.94
35. Do you often feel nervous or self-conscious when called upon to speak in from of others	56.25	15.63	28.13	3.59	1.79
37. Do you tend to feel anxious or tense in being introduced to new people?	71.88	12.50	15.63	2.69	1.90
45. How often do you worry about whether other people like to be with you?	53.13	21.88	25.00	3.38	1.78
Physical Appearance				4.16	0.65
4. Do you often wish or fantasize that you were better looking?	62.50	12.50	25.00	3.13	1.91
9. Do you often feel that you are more physically attractive than most of your friends or peers?	18.75	25.00	56.25	4.91	1.66
24. How often do you feel inferior to others?	31.25	28.13	40.63	4.22	1.32
27. Do you ever feel concerned or worried about your physical attractiveness?	59.38	9.38	31.25	3.09	1.89
30. Do you ever feel especially proud or pleased with your looks and appearance?	12.50	9.38	78.13	5.47	1.47
Perception of Self by Others				4.27	0.99
1. How much do you worry about whether other people will regard you as a success or failure in your job or in school?	21.88	15.63	62.50	4.94	2.00
5. Do you think that other people hold you in high regard?	9.38	28.13	62.50	5.25	1.39
12. When you think that some people you meet might have an unfavorable opinion of you, how concerned or worried do you feel about it?	31.25	28.13	40.63	4.25	1.63
14. When you have made an embarrassing mis-take or have done something that makes you look foolish, how long does it take you to get over it?	37.50	18.75	43.75	4.28	2.08
20. How often do you feel concerned about what other people think of you?	56.25	15.63	28.13	3.53	1.80
26. How much do you worry about criticisms that might be made of you by others?	34.38	15.62	50.00	4.06	1.92
46. How often do you feel worried or bothered about what other people think of you?	53.13	15.63	31.25	3.56	1.92

reporting confidence in their ability to convincingly express ideas in an essay, 47% of the students described themselves as more likely to do a good job, although 44% were less confident (item 38). In addition, 41% of participants reported having trouble expressing ideas in writing for a class assignment (item 11), and a high 69% reported that in order to achieve the same grade as their peers on an essay test, they would have to study more than their peers (item 36).

Table 5

PASCI Results Related to Academic Components of Self-Concept

Items	Percent Always/Very Often	Percent Neither Very Often Nor Never	Percent Never/ Practically Never	*M*	SD
Mathematical Self-Efficacy				4.30	0.91
3. Do you ever think that you have more ability in mathematics than most of your classmates?	34.38	9.38	56.25	4.41	2.03
15. Do you often think of yourself as good at mathematical problems?	31.25	15.63	53.13	4.47	1.85
18. Compared with others, how confident do you feel in your mathematical abilities?	25.00	18.75	56.25	4.69	1.79
39. How often have you felt that your mathematical ability was far below that of you classmates?	37.50	25.00	37.50	4.03	1.79
43. How confident do you feel about your ability to do well on a standardized achievement test with respect to the mathematics portion?	53.13	9.38	37.50	3.91	1.96
Verbal Self-Efficacy				4.08	0.78
10. Have you ever thought that you had a greater ability to read and absorb articles and textbooks than most people?	18.75	43.75	37.50	4.59	1.34
11. How often do you have trouble expressing your ideas when you try to put them into writing for a class assignment?	40.63	21.88	37.50	4.13	1.54
32. When you have to read an essay and understand it for a class assignment, how worried or concerned do you feel about it?	40.63	18.75	40.63	4.16	1.55
34. How often do you feel you have thoroughly mastered material you have read in preparation for an exam?	31.25	25.00	43.75	4.22	1.50
36. Compared with classmates, how often do you feel you must study more than they do to get the same score on an essay test?	68.75	6.25	25.00	3.22	1.91
38. When you have to write an essay to convincingly express your ideas, how confident do you feel that you have done a good job?	46.88	9.38	43.75	3.97	2.06
42. How confident do you feel about your ability to do well on a standardized achievement test with respect to the verbal comprehension portion?	25.00	25.00	50.00	4.34	1.58

Discussion

Regarding strategy instruction, the results of this study corroborate the findings of numerous previous studies (e.g., Caverly, Nicholson, & Radcliffe, 2004; Cox, Frisner, & Khayum, 2003; Cukras, 2006; Donley & Spires, 1999; El-Hindi, 1996; Shenkman & Cukras, 1986) that show that direct instruction in reading strategies increases developmental readers' reported strategy use following instruction. Most importantly, the reading strategy instruction intervention demonstrated a significant impact on students' reported metacognitive awareness and strategy use. The findings of the study are consistent with the results of previous findings by Caverly, et al. (2004), El-Hindi (1996), and Shenkman and Cukras (1986), who concluded reading strategy instruction has positive effects on students' metacognitive strategic reading performance in developmental courses. Therefore, strategy instruction helped these students improve their awareness of the need for recognizing and applying appropriate and effective strategies when reading. The most significant increase for the developmental reading students in this study was in Global Strategies or metacognitive thinking skills. This finding is important because for

striving developmental readers the inability to monitor and control their reading comprehension is typically what causes their failure to succeed when constructing meaning from text (Paris & Myers, 1981). Greater metacognitive reading skills reflect increased prowess at strategy manipulation, a skill directly related to better academic performance (Brosnan, Demetre, Hamill, Robson, Shepherd, & Cody, 2002).

According to expectancy theory (Betancourt & Weiner, 1982; Dweck, 1986), when a person feels success is possible, he or she is likely to exert greater effort, persist for a longer period of time, and attribute a greater proportion of success to the effort exerted than is someone who does not expect success (Carr, Borkowski, & Maxwell, 1991; Garner, 1990; Yasutake, Bryan, & Dohrn, 1996). The opposite would be true in the case of failure leading to a greater expectation of failure. If striving readers are to move beyond developmental-level reading courses and become successful college readers, they must independently be able to orchestrate and modify their use of learning strategies to ensure their academic success. For this study's group of striving readers, the greatest improvement was reported in terms of metacognitive strategy use, which is heartening as metacognitive thinking is closely tied to mature reading and literacy skills. All students in the study ultimately passed the exit test and the class itself, indicating an improvement in their ability to independently apply reading strategies effectively during testing and with class materials. Their ability to acquire these skills in one context indicates the potential, with effort and guidance, to apply these skills within the context of other college reading materials.

If reporting use of the strategies equated the expert transfer of those skills to actual college classrooms by striving readers, the instructor's task would be straightforward. Professors would only need to teach these students reading strategies and be done with it. However, as Alvermann (2003) argued in her research-based recommendations, to be more successful and effective when working with striving readers, instructors must address students' self-efficacy and use explicit strategy instruction for reading strategies. The first step in addressing students' self-efficacy is exploring and understanding the characteristics of the population of striving readers as a whole in order to determine any dominant trends or patterns that could then be specifically addressed. It is important to remember in interpreting the results of our study that no conclusive causation can be concluded regarding how self-efficacy impacts reading achievement.

Although the sample size in this study was fairly small and thus not generalizable to all striving college readers, an interesting pattern emerged within the findings. Although at first glance, participants' responses regarding their self-perceptions appeared mixed, upon more careful inspection, it became evident that even though students reported a global positive perception of self in many areas, when asked to consider specific behaviors or instances within a subcategory they tended to be less positive to extremely negative in their perception of self. For example, students reported a fairly high sense of general self-respect, yet an overwhelming majority of the students reported frequently disliking themselves, doubting themselves, or feeling discouraged about their worthiness. Another example is overall self-efficacy (i.e., their perceived ability to perform given tasks). Globally, most students reported feeling generally competent to do things well. Contrarily, when asked to reflect on their specific abilities their confidence was abysmal.

Although students reported being fairly at ease in social situations, when some sort of performance behavior was required, such as being singled out to offer an opinion or having to be the one to generate a topic for discussion, they reported more anxiety. Only three participants reported thinking that others always or even often held them in high regard, and more often students reported worry about being criticized. These same trends were evident for students' academic self-efficacy. For example, 70% of participants felt less capable than their peers to perform well on an essay test unless they studied more than their peers. Students were highly conscious of how others around them regard them and how they "stack up" relative to their peers. Perhaps the significant correlation between Social Anxiety and Support Strategy provides some evidence of insecurity when performing individually on tasks. Would it seem logical that students who feel pressured when their social performance is being evaluated by others would be more likely to also seek out confirmation of their academic choices from a source outside themselves in order to reassure themselves that their academic decisions are appropriate?

The external locus of control evidenced by participants in this study (i.e., looking to others rather than within the self to glean information or make conclusions about value, competence, or performance) is not surprising when considering the focus of this study. Students enrolled in developmental reading classes have a history of limited success in a high school learning context. In high school, students are more likely to be subjected to learning that is receptive

and passive. The learner's role in high school may be little more than providing the required information on the final assessment for each topic covered. With little need for independent initiation of learning or for engagement in the types of strategic learning that build understanding about themselves as learners and their critical role in the learning process, these striving readers have not had much experience in self-monitoring and self-regulating their use of learning strategies nor in looking within themselves to gauge their understanding and comprehension. They have used their teachers and more academically oriented peers as barometers for success or failure. Although striving readers may have done well enough to be considered for college admission (which is highly commendable), their previous successes may be attributable to their ability to "get by" and depend on teachers or peers for assistance rather than on metacognitive skills. The task before them is to overcome failure, which requires taking ownership of the situation and in a very public setting, the classroom, confronting the academic skills they lack.

Although the group of participants forming the sample for this study was not large, the information gathered speaks to an overall profile of striving learners as lacking a certain degree of self-confidence and self-efficacy and as placing high value on the opinions and relative performance of others. Although the participants reported greater use of metacognitive strategies at the end of the study, the skills instruction was not enough to show related increases in their confidence in their self-esteem and self-efficacy as learners as measured by the PASCI. As pointed out by Alvarez and Risko (2009), successful college learning is not just a cognitive task but also a social one. Along with strategic reading, two additional factors are crucial to completing the profile of successful college learning: navigating academia and self-efficacy (Allgood, Risko, Alvarez, & Fairbanks, 2000). Of these two factors, helping students develop self-efficacy is the more elusive task. Bandura (1997) has taught self-efficacy to be less of a global attribute and more situated and context-specific attribute. Clearly, whole learners are more than a sum of their parts. Developmental reading instructors need to help learners break away from believing college learning operates similarly to high school learning contexts, in which they learned to regard themselves as inadequate and the learning process as passive. The striving readers need to develop a sense of "learner agency," wherein they can see the relationship between what they do as learners and the outcomes their strategies and approaches yield.

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APPENDIX

Means and Standard Deviations of Items on the MARSI

Item	Category	Description	Pretest		Posttest	
			M	SD	*M*	SD
1	GLOB	I have a purpose in mind when I read.	3.25	0.88	3.44	0.80
2	SUP	I take notes while reading to help me understand what I read.	2.56	1.13	2.69	1.09
3	GLOB	I think about what I know to help me understand what I read.	3.19	1.12	3.63	0.98
4	GLOB	I preview the text to see what it is about before reading it.	3.41	1.27	3.75	1.12
5	SUP	When text becomes difficult, I read aloud to help me understand what I read.	3.34	1.12	3.81	1.22
6	SUP	I summarize what I read to reflect on important information in the text.	3.09	0.93	2.56	0.86
7	GLOB	I think about whether the content of the text fits my reading purpose.	2.63	0.94	2.97	1.00
8	PROB	I read slowly but carefully to be sure I understand what I am reading.	3.28	1.14	3.25	1.02
9	SUP	I discuss what I read with others to check my understanding.	2.41	1.21	3.53	1.22
10	GLOB	I skim the text first by noting characteristics like length and organization.	3.09	1.09	3.13	1.16
11	PROB	I try to get back on track when I lose concentration.	4.00	0.76	3.97	1.06
12	SUP	I underline or circle information in the text to help me remember it.	3.25	1.27	2.72	1.08
13	PROB	I adjust my reading speed according to what I am reading.	3.16	0.72	3.63	1.02
14	GLOB	I decide what to read closely and what to ignore.	2.59	0.80	3.16	0.99
15	SUP	I use reference materials such as dictionaries to help me understand what I read.	2.44	1.22	2.72	1.11
16	PROB	When text becomes difficult, I pay closer attention to what I am reading.	3.59	0.98	3.63	1.04
17	GLOB	I use tables, figures, and pictures in text to increase my understanding.	3.25	1.16	3.34	1.21
18	PROB	I stop from time to time and think about what I am reading.	2.97	0.86	3.47	0.96
19	GLOB	I use context clues to help me better understand what I am reading.	3.31	1.00	3.44	0.88
20	SUP	I paraphrase (restate ideas in my own words) to better understand what I read.	3.28	0.92	3.5	1.11
21	PROB	I try to picture or visualize information to help remember what I read.	3.69	0.69	4.09	0.96
22	GLOB	I use typographical aids like boldface and italics to identify key information.	3.09	1.00	3.50	1.09
23	GLOB	I critically analyzed and evaluate the information presented in the text.	2.84	0.68	3.09	1.09
24	SUP	I go back and forth in the text to find relationships among ideas in it.	2.72	0.89	3.03	1.06
25	GLOB	I check my understanding when I come across conflicting information.	3.16	0.95	3.34	1.12
26	GLOB	I try to guess what the material is about when I read.	2.97	1.12	3.28	1.11
27	PROB	When text becomes difficult, I reread to increase my understanding.	3.72	1.02	3.94	0.84
28	SUP	I ask myself questions I like to have answered in the text.	2.69	1.09	2.81	0.93
29	GLOB	I check to see if my guesses about the text are right or wrong.	2.88	0.98	3.09	1.09
30	PROB	I try to guess the meaning of unknown words or phrases.	3.19	0.93	3.28	0.85

Note. GLOB=Global Reading Strategies; PROB=Problem-Solving Strategies; SUP=Support Strategies