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Effectiveness of the Self-Regulation Empowerment Program With Urban High School Students

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With the emergence of alternative service delivery models in school settings, such as Response-to-Intervention (RTI), educators have become much more cognizant of the need to develop and implement empirically supported interventions. A key goal in this approach is to provide effective intervention services early in the academic referral process in order to reduce the number of students who develop clinically significant academic or behavioral problems (Fuchs, Mock, Morgan, & Young, 2003). A focus on empirically based interventions, particularly self-regulation training programs, is important in urban school settings because students often encounter a myriad of environmental stressors (e.g., crime, overcrowding), and inadequate academic (e.g., poor classroom instruction) and social support structures (e.g., poor parental supervision; Gerard & Buehler, 2004). These stressors, along with increased demands and expectations for self-sufficiency in secondary schools, place an enormous burden on ado-

Summary

Impacting the academic performance of high school students in core academic content areas is important because of the high-stakes nature of secondary school course grades relative to their vocational and post-secondary pursuits. Getting students to become more active, strategic participants in their learning by teaching them empirically supported learning strategies as well as specific forethought and reflective thinking skills is an important pathway to academic success. The importance of self-regulation processes also has been established in recent survey research with teachers and school psychologists showing that students who are referred for academic problems often have self-regulatory skill and motivation deficits. Intervention programs like the Self-Regulation Empowerment Program (SREP) can be conceptualized and implemented within the context of school-based service delivery frameworks. Tier I interventions typically occur at a classroom level and thus are designed to provide all students with the potential benefits of an intervention. With regards to classroom-wide self-regulation interventions, there are many empirically supported techniques that teachers can readily infuse into the daily routine of a school day, such as requiring all students to set performance goals, engage in progress monitoring, and utilize self-reflective processes. Students who do not respond (i.e., continue to exhibit poor test performance) to this general level of intervention support would be eligible to receive more intensive, Tier II pull-out programs, such as SREP.

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lescent students' capacity to adaptively self-regulate their lives (Zimmerman, 2002).

Self-regulation has received considerable attention in the literature over the past couple of decades and has been identified as a key enabler of student academic and social-emotional competence (Graham & Harris, 2005; Schmitz & Wiese, 2006). Sophisticated self-regulated learners proactively generate and implement strategic plans to attain self-set goals. They also frequently monitor and evaluate their goal progress and seek feedback to facilitate strategic adjustments to further optimize their achievement and adaptive functioning (Zimmerman, 2000). Research has shown that when individuals maintain a strong sense of self-efficacy and possess the requisite skills to effectively regulate their lives they have a much greater chance of reaching their academic potential (Bandura, 1997; Cleary, 2006; Gaskill & Hoy, 2002; Pajares & Urdan, 2006). Unfortunately, to our knowledge, there is a paucity of empirically supported interventions developed for urban high school youth, particularly those targeting self-regulation and motivation. The present study adds to the literature by examining the effectiveness of a comprehensive self-regulation training program, called the Self-Regulation Empowerment Program (SREP), to enhance the academic performance and self-regulatory skill of students in an urban high school setting.

Self-Regulation Defined

From a social cognitive perspective, self-regulated functioning involves self-generated thoughts, feelings, and behaviors that are planned and cyclically adapted based on performance feedback in order to attain self-set goals (Zimmerman, 2000). It is a cyclical process whereby students use externally provided or self-generated feedback, such as receiving a test grade from a teacher or developing self-quizzes to monitor learning during studying and to evaluate and adjust their methods of learning. This feedback loop consists of three sequential phases: forethought (i.e.,

processes that precede efforts to learn or perform), performance control (i.e., processes occurring during learning efforts), and self-reflection (i.e., processes occurring after learning or performance; Zimmerman, 2000). These phases are hypothesized to be interdependent so that changes in forethought processes will induce changes during the performance phase. This will, in turn, influence self-reflection phase processes. A self-regulatory cycle is completed when self-reflection processes influence forethought beliefs and behaviors during future learning efforts.

In general, forethought involves processes that guide learning such as *goal-setting* and *strategic planning*. Goal-setting involves deciding on specific outcomes of learning or performance, whereas strategic planning involves the proactive, intentional selection of a strategy to maximize one's learning or performance (Locke & Latham, 1990). This forethoughtful approach to learning influences students' performance phase processes, such as the *use of task/learning strategies* and *comprehension monitoring*. Task strategies refer to overt or covert actions that facilitate the acquisition of knowledge, including note taking, rehearsal strategies, or reading comprehension tactics (Weinstein, Husman, & Dierking, 2000; Wood, Woloshyn, & Willoughby, 1995). Comprehension monitoring often is defined as observing one's learning or performance in order to evaluate the effectiveness of one's strategic plans.

The final phase of the cyclical feedback loop includes a variety of important self-reflection processes such as *self-evaluation*, *causal attributions*, and *adaptive inferences*. In general, following feedback about a specific performance situation, such as a math test or a research paper in social studies, self-regulated individuals will self-evaluate their satisfaction with their performance by comparing it to specific criteria, such as a goal or prior performances (Zimmerman, 2000). These individuals also will reflect on the causes of that particular outcome, a process labeled causal attributions (Weiner, 1986). For example, if a student fails two math tests in a row, a causal attribution involves the student's perception of the reasons why he or she was not performing well, such as effort or teacher difficulty. Attributions are a critical

component of the cyclical model because they directly impact the conclusions or inferences that students draw about what and how they need to adjust their learning approaches in order to improve future performances, a process called adaptive inferences (Cleary, Zimmerman, & Keating, 2006). SREP places a high level of importance on cultivating strategic behaviors and reflective processes in students, particularly in situations following failure or minimal progress toward personal goals.

Nature of Self-Regulation Interventions

Much of the self-regulation intervention literature examines the impact of brief training protocols in one or two self-regulation processes (e.g., goal-setting, self-monitoring) on discrete academic skills, such as the number of math problems solved correctly or writing grammatically correct sentences (Schunk & Swartz, 1993; Zimmerman & Kitsantas, 2002). Other researchers have examined the efficacy of comprehensive self-regulation training programs that integrate all three phases of the recursive cycle of self-regulation (Butler, Beckingham, & Lauscher, 2005; Cleary & Zimmerman, 2004; Graham & Harris, 2005). Multiphase self-regulation training is important because it provides students with a comprehensive metacognitive framework (e.g., knowledge of task demands, awareness of skills and performance) from which to evaluate the effectiveness of one's learning strategies and often leads to optimal performance and motivation (Cleary et al., 2006).

Many of these applied self-regulated learning training programs target core academic skills, such as math (Butler et al., 2005), reading (Mason, Snyder, Sukhram, & Kedem, 2006), and writing (Graham & Harris, 2005) whereas other programs are designed to influence study skills and test performance in specific academic contexts (Butler, 1998; Cleary & Zimmerman, 2004; Weinstein et al., 2000). More recently, the SREP was developed to empower middle school and high school students to become self-directed learners by teaching them to use evidence-based

learning tactics during specific academic tasks, such as studying for tests or writing a research paper, within the context of the three-phase dynamic feedback loop of self-regulation (Cleary & Zimmerman, 2004). This program was borne out of social cognitive theory and research and thus emphasizes the importance of social change agents and cultivating adaptive cognition during instruction (Bandura, 1997; Cleary & Zimmerman, 2004). Unlike some academic self-regulation training programs, SREP adheres to an explicit curriculum that is delineated in manual form. Ultimately, a self-regulation coach (SRC) uses the manual as the framework from which to teach students to utilize empirically supported learning tactics, such as concept maps, within the cyclical framework during their learning efforts.

Another unique feature of SREP is that it targets academic activities that are both multifaceted in nature and require a high level of self-regulatory control over extended periods of time, such as studying for comprehensive classroom-based tests or writing a long-term research paper. These types of academic tasks are encountered more frequently by high school students as they progress through an increasingly stringent curriculum. Unfortunately, few applied empirically supported interventions have been developed that concurrently target students' skill in conceptualizing the nature of these tasks, establishing task-related goals and strategic plans to accomplish these goals, and engaging in adaptive reflective processes to optimize or sustain high levels of performance.

Purposes of Study

The primary purpose of this study was to gather data on the effectiveness of the SREP to improve the self-regulation, motivation, and test performance of a small group of urban high school students. The authors gathered both quantitative and qualitative data on students' self-regulation processes in order to establish convergence of data across multiple sources and methods. It was expected that participants would show adaptive changes in their

biology test performance, the frequency with which they use self-regulation strategies, and their efficacy beliefs and interest in biology. A second general objective of this paper was to illustrate the essential features of SREP, with particular emphasis on the instructional modules and the primary instructional tools and materials used during tutoring.

Method

Participants

The target high school was located in a large, urban public school system in a Midwestern region of the U.S. The school had approximately 1,600 students, with the majority (78%) being of African American or Latino descent. Approximately 67% of the student body was eligible for free or reduced lunch. The percentage of students who had attained academic proficiency on statewide tests across language arts (65%), science, (45%) and math (44%) were below state averages (Department of Public Instruction, 2007).

All students who participated in this study were in the ninth grade. In the target school, all ninth graders were placed into a teaching family, consisting of one teacher for each of the core academic content areas (English, math, social studies, and science). The authors selected students from an honors track family primarily because school administrators expressed concern about the large number of students struggling to keep up with the demands in this course and due to an administrative initiative to enhance the science achievement of the school.

The authors used multiple criteria to select students in order to help ensure that the students were comparable across key demographic and academic variables. Three of the primary inclusion criteria included: (a) ninth-grade status; (b) adequate learning skills (i.e., placement in honors classes and standardized statewide test scores in the proficient range or higher); and (c) below average biology classroom test scores (average of 75

or less on five baseline biology tests). These criteria helped to establish a homogeneous group of students who had attained adequate science knowledge and skills yet were struggling to perform well in a high school science class context. The last criteria involved having teachers complete an informal rating scale ranging from 0 (*below average*) to 2 (*above average*) across a variety of important self-regulation and academic behaviors and outcomes such as test performance, homework completion, homework quality, organization, help-seeking, and class preparation. The principal investigator then met with all teachers in a group to reach consensus about those students who most consistently exhibited negative behaviors and outcomes across these areas, such as being unprepared for class or not maintaining an organized binder, performing poorly on tests and homework, and not actively participating in class or seeking out assistance when confused. The authors only considered students for this program if they consistently attended school and biology class during the school year. From this process, the teachers recommended an initial group of 13 students. However, the authors allowed 2 students who did not meet all inclusionary criteria to participate in the training because of persistent requests from teachers and parents.

Ten students returned signed parental consent forms, with 8 students agreeing to participate in the complete SREP training program. The authors randomly assigned these 8 students to two SREP intervention groups. Each intervention group consisted of 4 students and was taught by a different SRC. However, it should be noted that 3 of these students did not attend SREP tutoring sessions on a regular basis and missed the final sessions of the program due to transportation or other logistical concerns. The remaining 2 students who returned consent forms requested a more flexible tutoring program that allowed them to receive tutoring in any of their four core content subjects. As a result, the authors did not assign them to one of the two SREP intervention groups but rather allowed them to participate as a SREP comparison group, which was instructed by a SRC who also led one of the two SREP intervention groups (see Table 1).

Performance-Based Measures

Biology test scores. The authors used teacher-developed class tests covering specific units in biology as the primary measure of academic achievement. Based on teacher reports, all tests administered throughout the year adhered to a similar format (i.e., multiple choice, short answer, diagrams, and essay questions). The scores on the tests ranged from 0% to 100%. The biology teacher directly provided test grades to the authors in order to ensure reliability of data. The biology teacher was a 17-year teaching veteran with approximately 8 years of biology teaching experience at the target school.

Wisconsin Knowledge and Concepts Examination (WKCE). The WKCE is a large-scale standardized achievement test administered to students at grades 4, 8, and 10 in the state of Wisconsin (Department of Public Instruction, 2007). It assesses students' reading, English language arts, mathematics, science, social studies, and writing and summarizes students' performance across four proficiency levels: (a) advanced, (b) proficient, (c) basic, and (d) minimal. The authors used eighth-grade WKCE science scores as a measure of participants' prior science achievement in this study. The participating school provided this information directly to the authors, ensuring a high level of reliability in the reported data.

Self-Regulation Strategies

Self-Regulation Strategy Inventory–Self-Report. The SRSI-SR is a 28-item context-specific self-report scale developed to assess students' use of various self-regulation strategies during studying and homework completion in science class (Cleary, 2006). Factor analysis indicated that the SRSI has a three factor structure: Environment and Behavior Management (α = .88), Seeking and Learning Information (α = .84), and Maladaptive Behaviors (α = .72). The Environment and Behavior Management scale is a 12-item scale assessing the frequency with which students use strategies to regulate their studying and homework completion

Table 1

Demographic Information and Baseline and Posttest Biology Test Performance for SREP Intervention and Comparison Groups

Participant Name	Gender	SES [b]	Ethnicity	WKCE Science	WKCE Reading	Baseline Test Average[c]	Intervention Test Average[d]	Test #3[e]	Final Exam	Final Exam Percentile Rank
SREP Intervention Group										
Jamal	Male	FL	African American	NA	NA	67.2 (*D*)	83.0 (*B*-)	94 (*A*)	75 (*C*)	15
Jordan	Female	NS	African American	Proficient	Advanced	70.8 (*D*)	81.7 (*B*-)	80 (*B*-)	89 (*B*+)	45
Nancy	Female	NS	Caucasian	Proficient	Proficient	66.2 (*D*)	90.7 (*A*-)	90 (*A*-)	95 (*A*)	82
Ronaldo	Male	NS	Latino	Proficient	Advanced	75.2 (*C*)	81.7 (*B*-)	82 (*B*-)	93 (*A*)	67
Tony	Male	NS	African American	Proficient	Proficient	74.2 (*C*-)	79.7 (*C*+)	82 (*B*-)	86 (*B*)	35
Comparison Group										
Akeela	Female	RL	African American	Basic	Proficient	57.6 (*F*)	53.7 (*F*)	46 (*F*)	76 (*C*)	16
Diane	Female	NS	Caucasian	Basic	Basic	53.4 (*F*)	48.3 (*F*)	46 (*F*)	83 (*B*-)	25

Note. All information was obtained from student records provided by the participating high school. There are four performance categories on the WKCE from lowest to highest: minimal, basic, proficient, and advanced. Class test average scores were as follows: baseline = 77.6 (*C*+); intervention = 80.6 (*B*-); test #3 = 81.4 (*B*-); final exam = 84.0 (*B*). NA = data not available from student records. [a] All names are fictional. [b] Lunch status was used as an indicator of SES: FL = free lunch; RL = reduced lunch; NS = no financial support. [c] Mean test score for five biology exams administered prior to SREP tutoring. [d] Mean biology test score during SREP. [e] Last biology test administered during SREP tutoring.

(e.g., comprehension monitoring, time management) whereas the 8-item Seeking and Learning information subscale measured the frequency with which students seek help or use specific study tactics during studying. The Maladaptive Regulatory Behavior scale includes 8 items and measures the extent to which students engage in maladaptive regulatory behaviors, such as forgetfulness and avoidance. A 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*) with specific anchors for each scale unit was used. Alpha coefficients obtained in this study across these three subscales were as follows: Environment and Behavior Management (α = .93), Seeking Information (α = .81), and Maladaptive Regulation (α = .77).

Rating Student Self-Regulated Learning Outcomes (RSSRL). The RSSRL is a 12-item teacher rating scale designed to assess teachers' perceptions of students' regulatory behaviors and intrinsic interest in specific classroom contexts. However, a nine-item version of the scale was used because three items were not relevant to the biology class. In addition, the wording of a couple of items was slightly modified to more closely reflect the focus on the target biology class. The authors utilized a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*) with high scores on the scale representative of more adaptive self-regulatory processes. This scale has been shown to be a single factor measure of self-regulation that correlates significantly with students' motivation and use of self-regulation strategies. The internal consistency for this adapted version of the scale was α = .95, which was identical to reliability established by prior research (K-R 20 = .95; Zimmerman & Martinez-Pons, 1988).

Motivation Belief Measures

Self-Efficacy for Self-Regulated Learning. A 10-item self-efficacy scale for self-regulated learning measure was used to examine students' confidence in regulating their learning and use of self-regulation strategies, such as completing homework assignments by deadlines and remembering information presented in class (Bandura, 2006). The current authors used a slight adapta-

tion of this scale, replacing one item (i.e., accessing information from library) with an item pertaining to help-seeking behaviors. This modification was made to more accurately reflect the purposes of the study. The measure incorporated an 11-point Likert scale ranging from 0 (*not confident at all*) to 10 (*completely confident*). The alpha coefficient obtained in this study (α = .82) was comparable to estimates obtained from prior research (α = .82; Cleary & Chen, 2008; α = .85; Joo, Bong, & Choi, 2000).

Self-Efficacy for Outcomes. A six-item self-efficacy scale from the Patterns of Adaptive Learning Scale (PALS) was used to assess students' confidence for learning and performing in specific academic content areas (Urdan & Midgley, 2003). It is important to note that this construct is conceptually distinct from outcome expectations, the latter of which are typically viewed as a judgment of the consequences that certain performances or outcomes may produce (e.g., earning praise or recognition for getting an *A* on exam; Bandura, 1997). For the purposes of this study, the authors worded all items to reflect performance in biology class and used an 11-point Likert scale ranging from 0 (*not confident at all*) to 10 (*completely confident*). The alpha coefficient obtained in this study (α = .70) was slightly lower than estimates obtained from prior research (α = .78; Cleary & Chen, 2008; α = .88; Urdan & Midgley, 2003).

Task Interest Inventory (TII). This five-item scale examines students' level of interest and enjoyment in learning about biology and attending biology class (Cleary, 2006). It was based on a previously developed task interest scale. A few modifications from the original scale were made to be consistent with the overall purposes of this study and to enhance readability and clarity for the participants. This measure utilized a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Pilot testing with an independent group of ninth-grade students revealed that one of the negatively worded items was confusing and thus was rephrased to reflect positive levels of interest ("I look forward to going to biology class"). The authors also added another item to examine students' interest in biology when encountering learning barriers ("I like learning about biology even when it is

very difficult"). This additional item is consistent with theoretical descriptions of task interest (Eccles & Wigfield, 2002). The internal consistency for this scale (α = .96) surpassed estimates obtained from prior research (α = .78; Cleary, 2006).

Qualitative Assessment of Student Self-Regulation

The authors also gathered qualitative information about students' strategy use and cognitive processes from SRC field notes and structured microanalytic assessment procedures. The SRC field notes contained information about SREP sessions including specific student behaviors and verbalizations. Microanalytic techniques are an alternative form of self-regulation assessment involving asking task-specific self-regulation questions (see Cleary & Zimmerman, 2004, for more details) as students engage in specific learning activities. These procedures have been used to differentiate high and low achievers (Cleary et al., 2006; Kitsantas & Zimmerman, 2002) and have been shown to be useful techniques for eliciting qualitative data about students' cognitive processes. In this study, the authors were primarily interested in gathering information about two self-reflective processes following students' test performance: causal attributions and adaptive inferences.

Social Validity Measures

Social validity has been defined as the extent to which consumers are satisfied with an intervention and its associated outcomes. Wolf (1978) delineates three components of social validity: (a) significance of goals, (b) acceptability of procedures, and (c) importance of outcomes. Although the importance of outcomes and acceptability of procedures are typically evaluated at posttest, it is recommended that the significance of goals be identified in collaboration with key social agents prior to implementation of the intervention (Gresham & Lopez, 1996). In collaboration with the biology teacher and school administrators for this project, enhancing test performance was identi-

fied as the primary goal because it was weighted most highly in calculating students' overall biology course grade. In order to evaluate the acceptability of SREP procedures and the importance of outcomes, the authors developed a parallel measure of satisfaction for students, teachers, and parents (see Appendix A). These scales were based on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with high scores representing greater acceptability and satisfaction. Internal consistency estimates for the student and parent versions were α = .86 and α = .91, respectively. Given that only the biology teacher completed this measure, no reliability information was obtained for the teacher version.

Research Design

This study utilized a mixed-model research design, consisting of case studies embedded in pretest-posttest methodology (Butler, 1998). Essentially, this design allowed the authors to assess quantitative changes in students' strategy use, motivation beliefs, and biology test performance from pretest to posttest (i.e., using self-report and rating scales) and to supplement these changes with data from qualitative assessment tools (i.e., use of SRC field notes and microanalytic assessments of students' self-reflection processes). The convergence of data from quantitative rating scales and case study information allowed the authors to generate a rich, supplementary database from which to evaluate the effects of SREP.

The use of a wait-list control group was not possible in this study because school administrators requested that all students receive the intervention concurrently. However, the authors were able to use 2 students as a comparison group. This group received a less-intensive and structured training program that devoted approximately 25% of the sessions to biology tutoring. In this tutoring format, the tutors allowed students to ask questions about any topics or concepts in any of their academic classes (e.g., social studies, math) and then provided students with strategic support and assistance as needed. Although this

group exhibited lower (i.e., basic) WKCE science scores than the intervention groups (i.e., proficient), they all received identical biology classroom instruction, exhibited a similar academic and self-regulatory profile, and received approximately the same number of tutoring sessions.

SRC Training Procedures

SREP training was administered by two graduate students who were well-trained in self-regulation and motivation theory. One SRC instructed a SREP intervention group while the other SRC lead both an SREP intervention and the comparison group on alternating school days. In addition to taking graduate-levels classes in these areas, the SRC's received extensive training in the SREP instructional modules from the principle investigator and served as a SRC during pilot testing with high school youth. The principal investigator did not provide any direct intervention to the high school students but periodically observed both of the coaches in the field in order to provide authentic feedback regarding their tutoring styles and procedures. The principal investigator met with both SRCs on a weekly basis to discuss the use of the SREP instructional manual and to brainstorm or problem solve about difficulties, obstacles, and challenges.

General Procedures

The SRC administered all pretest, posttest, and self-regulation training sessions prior to the formal school day in a large classroom at the target high school. Students participated in tutoring sessions two times per week for approximately 11 weeks for a total of 23 sessions. Each SREP session was approximately 50 minutes in duration. For all groups, during the first two sessions, the SRC explained the overall purposes of the project and obtained student assent. The tutor then administered pretest packets to students, which included all self-regulation and motivation belief measures. The students' biology teacher completed the RSSRL during this time. At posttest, the participants and

the biology teacher completed the same measures administered at pretest. Students, parents, and teachers also completed measures of social validity at the end of the study.

SREP Instructional Principles and Procedures

SREP adheres to a flexible standard protocol approach whereby instruction is largely guided by a training manual and corresponding student workbook. The instructional design of this program is directly linked with Zimmerman's three-phase cyclical dynamic feedback loop of self-regulation, whereby specific instructional modules target students' forethought, performance, and/or self-reflection phase processes (see Table 2). Although the authors were not able to fully delineate all of the instructional features of SREP in this article due to space limitations, we highlight two essential components: (a) sequence and content of instructional modules and (b) emphasis on strategic thinking.

SREP instructional modules. The initial components of SREP instruction, collectively labeled the *foundational modules*, involve enhancing students' awareness of their maladaptive beliefs, such as poor causal attributions (e.g., failure on tests is due to poor ability), and providing explicit instruction in core forethought processes, such as task analysis, goal-setting, and strategic planning. These modules are typically implemented during the first four to five sessions. Each module is designed to last a minimum of one session but can vary in length depending on the quality and depth of questions exhibited by students (see Table 2).

After training students in these forethought phase processes, the SRC devoted most of the remaining SREP sessions to teaching students empirically supported learning tactics, such as concept maps and mnemonic devices. The authors selected these learning tactics for this study because prior research has demonstrated the effectiveness of these tactics in improving student learning in science and social studies classes (Nesbit & Adesope, 2006). To teach these tactics, each SRC adhered to a fixed sequence of training involving explicit instruction, modeling, and guided practice (Schunk, Pintrich, & Meece, 2008). The SRC

Table 2

Overview of SREP Intervention Modules and Supporting Instructional Activities and Worksheets

Instructional Modules	Sequential Order of Modules	Purpose(s)	Key Instructional Features and Activities
Introduction	First module (1–2 sessions)	To introduce students to the nature of SREP and to examine students' beliefs about their academic struggles	• Build rapport and provide description of SREP • Engage students in activities related to causal attributions for failure and current use of learning strategies
Task Analysis	Second module (1–2 sessions)	To help students analyze and identify components of successful studying and test performance	• Discuss the value of task analysis relative to student experiences • Model and provide guided practice with the Test Analysis Form
Goal-Setting	Third module (1–2 sessions)	To teach students about setting short-term and long-term goals for biology tests	• Discuss the value of goal-setting relative to student experiences • Model and provide guided practice for setting outcome and process goals and for graphing test grade goals
Strategic Planning	Administered as fourth module (1–2 sessions)	To teach students how to systematically develop strategic plans for attaining biology test grade goals	• Discuss the value of strategic approaches to learning • Engage students in a discussion about specific areas of studying that are difficult for them (e.g., memorization) • Model and provide guided practice with the Strategy Plan Form
Strategy Training	Administered after fourth module and continued for most of remaining sessions (except for self-reflection activities)	To facilitate students' learning and recall of biology content for tests and or techniques for managing their behavior and environment when studying	• Consists of several mini-modules targeting learning strategies [a] • Model and provide guided practice in using concept maps and memory strategies • Discuss and provide additional training in learning tactics as needed
Self-Reflection	Administered following every test performance. This module is administered after test scores are returned to students	To engage students in key reflective processes such as self-judgments (e.g., assessing goal progress and attributions about test performance) and self-reactions (e.g., adaptive inferences)	• Use Self-Regulation Graph to help students evaluate goal progress and to make strategic attributions and adaptive inferences • Use Microanalytic Self-Reflection form to engage students in a discussion about their reflective beliefs about test performance • Use Error Analysis and Calibration Accuracy forms to examine students' metacognitive deficits and skills for making strategic adjustments

[a] For the current study, the primary learning strategy modules included concept maps and mnemonic devices.

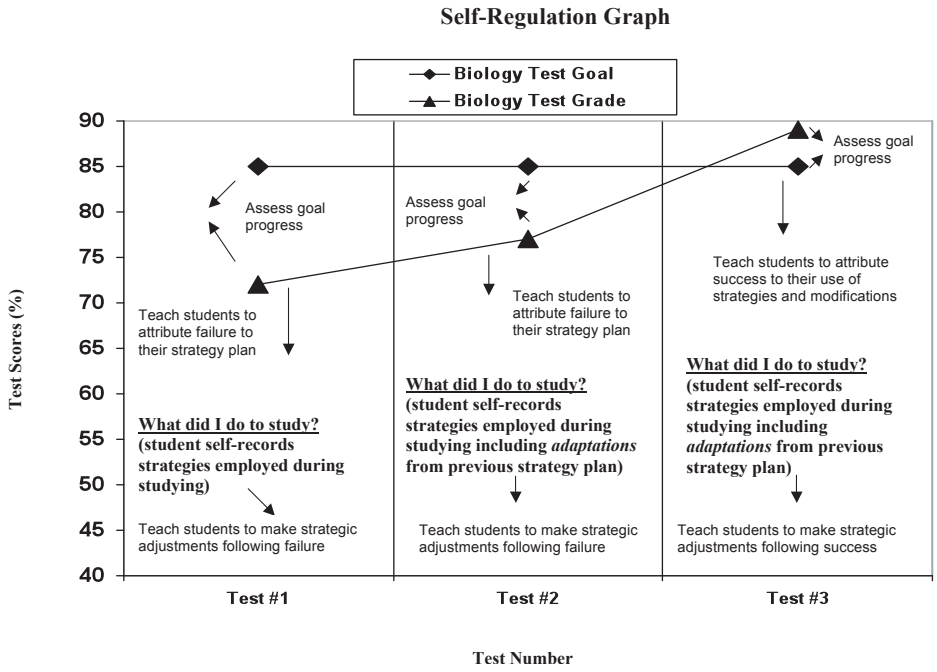

Figure 1. **Example of a self-regulation graph used to teach students to evaluate goal progress and to make strategic attributions and adaptive inferences.**

also met with the biology teacher on an informal basis to facilitate the infusion of actual course content into the modeling and guided practice activities. Although instruction in concept maps and mnemonic devices received primary attention in this study, a SRC was permitted to individualize the strategy instruction by introducing additional strategy modules related to studying, such as help-seeking, time management, and material organization.

The final core aspect of the SREP instructional manual involves the self-reflection module. This module serves as a critical component of the program because it effectively links forethought, performance, and self-reflective processes. The Self-Regulation Graph is the key instructional tool through which a SRC teaches students to evaluate the effectiveness of their strategy plan, to brainstorm about the strategic causes of their performance, and to develop a new plan for the subsequent test (see Figure 1 for an example). After each test performance, the SRC asked students to

plot their test scores and then to record the study strategies they used during test preparation. As part of the instructional process, the SRC also asked students microanalytic questions about goal progress, attributions ("What is the main reason why you got that grade on the test?"), and adaptive inferences ("What do you need to do to improve your next test score?").

Another important goal of the self-reflection module is to enhance students' metacognitive awareness, specifically with regard to the reasons for their academic struggles, the specific errors that they made on the tests, and an examination of students' calibration accuracy. In general, calibration accuracy has been defined as the accuracy between students' predictions of performance and their actual performance levels (Hacker, Bol, Horgan, & Rakow, 2000). Accurate calibrators are individuals who skillfully estimate task performance, whereas inaccurate calibrators demonstrate a discrepancy between their estimates and performance. Although calibration accuracy can be operationalized in multiple ways, the SREP defines it as the difference between students' test grade predictions from their actual test performance (Bol, Hacker, O'Shea, & Allen, 2005; Hacker et al., 2000).

From a school-based perspective, the use of test calibration techniques during progress monitoring is not intended to simply reduce the discrepancy between students' estimates and actual test grades. Rather, the primary goal is to identify potential metacognitive deficiencies, such as understanding task demands and self-knowledge, and to determine if students need assistance in reflecting more meaningfully on the causes of their performance outcomes and the potential solutions for improving these outcomes. Consider the case example of Jordan presented in Figure 2. The pattern of Jordan's test predictions was relatively constant across the course of the intervention, but her test performance was quite variable. For the first two tests, Jordan's predictions were clearly higher than her test performance. The primary goal of the SRC was not to teach Jordan to make more modest predictions so that her accuracy scores would increase, but rather to use the calibration information as an instructional

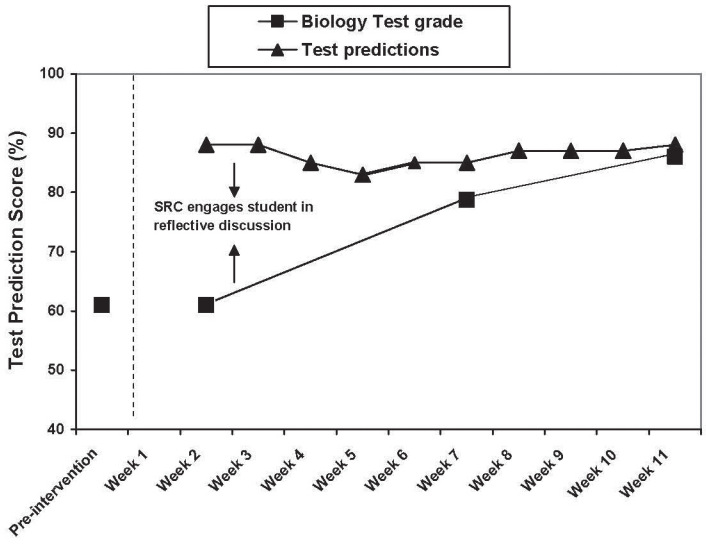

Figure 2. **Example of a calibration accuracy graph as an instructional tool during the SREP self-reflection module.**

tool to challenge her current understanding of test demands, her self-awareness of the effectiveness of her learning methods, her perceived knowledge of biology content, and the adequacy of her study strategies. Anecdotal evidence gathered from SRC observations suggested that this calibration accuracy exercise helped to guide a discussion with Jordan about the reasons for her miscalibration. For example, after receiving her first biology test grade from her teacher, Jordan plotted the grade along with her predicted test score. After highlighting the large 27-point difference between predicted and actual test scores (see Figure 2), the SRC shifted the focus of the tutoring session by posing a series of questions to Jordan (e.g., "Why do you think you got a test score so far below what you thought?") to uncover the reasons for her misjudgment.

Emphasis on strategic thinking. A hallmark feature of SREP is that it attempts to instill a sense of hope and empowerment among students who are experiencing academic difficulties. Ultimately, in this study SRC taught students that success

in school was under their control and that this control can be achieved by learning, using, and refining one's study strategies. Throughout each of the three core instructional components of SREP the application of learning and self-regulation strategies was emphasized. During the foundation modules, the SRC taught students to develop a plan incorporating specific strategies to achieve self-set goals (i.e., grade on biology test) on a specific task (i.e., studying). The tutor then taught students various strategies to improve their learning and recall of biology content (e.g., concept maps, mnemonic devices) and their skill in monitoring the effectiveness of these strategies during learning. Finally, during reflection activities the SRC taught students to make strategic attributions and adaptive inferences. This emphasis on strategy use before, during, and after learning has been shown to exert positive effects on students' learning and motivation to persist on tasks when difficulties are encountered (Cleary et al., 2006; Schmitz & Wiese, 2006).

Results

Changes in Biology Test Performance

Five biology tests scores obtained prior to the training served as baseline scores. The biology teacher administered three tests during the 11-week intervention. These three tests were averaged to represent an overall intervention biology test score. Students also completed a final exam 2 weeks after the tutoring ended. This exam incorporated content that was taught over the previous semester and thus represented students' learning of several biology content units. Student test performance was examined using descriptive (i.e., pretest and intervention test score changes) and normative analysis (i.e., comparison of students' test scores to the class test average). The authors used class test average for all students taking the same honors biology course (N = 112) as a general benchmark against which to judge students' gain scores.

In general, the SREP intervention group exhibited below-average baseline test performance (M = 70.6) relative to the class test average (M = 77.6), but demonstrated higher intervention test scores (M = 83.3) than the class average (M = 80.6; see Table 1). The average gain score for the SREP intervention group was approximately 13 points while the class test average only changed by 3 points. The improved test performance of the SREP intervention group was even more impressive when examining *individual* student performance on the last intervention test (Test #3) and the final exam. For example, on the third intervention test, all 5 participants attained test grades equaling or surpassing the class test average, with 2 students earning a 90 and 94, respectively. When these test grades were compared to students' average baseline test score, the average gain score observed was approximately 15 points. Similar results were demonstrated on the final exam. Two students received *A*s (93 and 95), while the remaining three students earned *B*+ (89), *B* (86), and *C* (75).

In contrast, the SREP comparison group obtained scores that were substantially below class averages at both baseline and during the intervention, as both students earned failing test grades throughout the intervention (see Table 1). On the final exam, one of the comparison students earned a score consistent with the class average but the other student, again, performed below the class average.

Changes in Self-Regulation Processes and Motivation Beliefs

The authors used descriptive analysis and reliability change indices (RCI) to examine pretest-posttest changes in the SREP intervention group's use of self-regulation strategies and their motivation beliefs (see Table 3). This information was not available for the comparison group. Researchers employing single participant research designs often use RCI procedures to measure changes from baseline to posttest (Jacobson, Follette, & Revenstorf, 1984). Although there are a variety of approaches to calculating this index, a simple approach essentially converts

Table 3

Descriptive Statistics and Reliability Change Indexes (RCI) Across Self-Regulation and Motivation Measures

Self-Regulation/Motivation Measures	Pretest		Posttest		Pretest-Posttest Difference	RCI
	Mean	*SD*	Mean	*SD*	Change score	*z*-score
SRSI—Manage Behavior/ Environment	3.3	1.12	4.0	.57	+ 0.7	2.52**
SRSI—Seeking Information	3.4	.89	4.2	.51	+ 0.8	2.26*
SRSI—Maladaptive Behavior	3.2	.95	3.9	.46	+ 0.7	2.24*
RSSRL	2.8	1.05	3.4	.88	+ 0.6	2.46**
Self-Efficacy for Learning	7.0	2.36	8.4	.90	+ 1.4	2.26*
Self-Efficacy—Outcomes [a]	7.7	1.26	9.5	.44	+ 1.8	4.00**
Task Interest	3.1	1.26	3.0	1.6	- 0.1	.32

Note. [a] Scores were based on only three students (Jordan, Ronaldo, and Nancy). * $p < .05$. ** $p < .01$.

a pretest-posttest difference to a *z*-score by dividing it by the scale's standard error of the measurement. One can interpret a RCI of 1.96 as a statistically significant difference at the $p < .05$ level, whereas an RCI of 2.33 or greater is significant a $p < .01$ level and may be viewed as having greater clinical significance (Jacobson et al., 1984). Furthermore, the authors used information gathered from SRC field notes as well as the microanalytic self-reflection questions to demonstrate convergence with the data provided by self-report and rating scales.

Self-regulation strategies. Students' use of self-regulation strategies was evaluated using both student self-report and teacher ratings (see Table 3). The SRSI-SR findings indicated that the SREP intervention students exhibited a clinically significant rate of change across managing environment and behavior, $RCI = 2.52$, $p < .01$, seeking and learning information, $RCI = 2.26$, $p < .05$, and maladaptive regulatory behaviors, $RCI = 2.24$, $p < .05$. Thus, students who received the SREP intervention reported greater use of adaptive self-regulation strategies such as environmental structuring and help-seeking. In addition, the students

exhibited fewer maladaptive regulatory behaviors at posttest, such as disorganization, forgetfulness, and avoidance.

Findings from the RSSRL and qualitative data (i.e., field notes and microanalytic questions) were highly consistent with student self-reports of strategy use. For example, the biology teacher's pretest-posttest reports of student behaviors illustrated a statistically significant and large, positive change in students' self-regulatory behaviors during class activities, $RCI = 2.46$, $p < .01$. Follow-up interviews with the biology teacher and the remainder of the honors family (i.e., English, social studies, and math teachers) at the end of the SREP intervention revealed that students who received the SREP intervention typically exhibited more adaptive behaviors in the classroom (e.g., help-seeking behaviors), including goal-directed behaviors such as asking about the format and types of questions that would appear on upcoming tests (biology instructor, personal interview, June 6, 2007). These observations are noteworthy because each SRC devoted SREP instructional time to reviewing tactics for seeking help from adults. In addition, the specific type of information that students were seeking from teachers (e.g., test format, types of questions) was identical to the information that the SRC prompted them to target when completing a Task Analysis Form prior to each test (biology instructor, personal interview, June 6, 2007). Collectively, these results suggest that students not only used the Task Analysis Form as a forethought process but also utilized help-seeking tactics taught by the SRC to increase their knowledge of task demands.

Another important indicator of adaptive self-regulatory behaviors is the proactive and self-initiated use of strategies outside the presence of the SRC. Based on SRC field notes, several students exhibited these spontaneous and self-directed types of behaviors. For example, after learning how to create general categories or summarizing questions as part of a concept map during a SREP session, Jamal spontaneously developed a series of questions that he perceived might appear on the next biology test when studying at home the following day. He proceeded to bring these questions into the subsequent SREP session to

present to the group (SREP session observation, April 12, 2007). Interestingly, SRC field notes revealed that Jamal's test performance following this self-initiated use of test question generation was the highest he had attained during the entire program (94%; record review, June 12, 2007). Similarly, after learning about the procedures for concept maps and practicing these skills during a couple of SREP sessions, both Jordan and Nancy spontaneously developed separate concept maps for each body system (e.g., skeletal, respiratory) that were identified to be on their next biology test. Similar to Jamal, these girls brought these concept maps to their SREP group to share their work and to seek feedback (SREP session observation, April 24, 2008).

Motivation beliefs and reactions. The authors also were interested in examining whether the SREP impacted students' motivation beliefs, such as self-efficacy and interest in biology. Across both self-efficacy for self-regulated learning, $RCI = 2.26$, $p < .05$, and self-efficacy for biology outcomes, $RCI = 4.00$, $p < .01$, students in the training group reported having greater confidence at posttest (see Table 3). No pretest-posttest differences were observed for task interest.

Although the authors were not able to provide qualitative data to supplement these observed changes in self-efficacy, the SRC systematically gathered qualitative data about students' cognitive judgments and reactions following two biology tests (see Table 4). In short, the SRC asked students to write out responses to attribution and adaptive inference questions during the Self-Reflection module. Although the primary purpose of this activity in SREP is to help the SRC identify faulty student attributions and adaptive inferences and then use this information to emphasize the importance of linking strategy use and test performance, this microanalytic data provided some supporting evidence for the general premise that students became more strategic thinkers during the course of the intervention.

For example, consider the attributions made by Jordan, Ronaldo, and Nancy following Test #2 (data for Tony and Jamal were not available for Test #2). Jordan's and Ronaldo's attributions were adaptive in that they were unstable, controllable,

Table 4

Microanalytic Self-Reflection Questions Administered During Self-Reflection Module After Intervention Test #1 and #2

Participant	Intervention Test #1			Intervention Test #2		
	Grade	Causal Attributions	Adaptive Inferences	Grade	Causal Attributions	Adaptive Inferences
Jamal	78	"Because I didn't study as soon as I should have."	"Study a week in advance and really focus on studying instead of trying to get on the phone or doing something else."	77	NA	NA
Jordan	76	"I believe I made simple mistakes. I believe I also was rushing through the test and didn't double check."	"I think study harder and maybe a little longer."	90	"I studied more and I asked people around me for help. I also didn't freeze up."	"I just need to do the same thing but maybe try a little harder."
Nancy	85	"First there were no essay questions. Another, I got the whole process of ecology and I studied really hard so I could get a good grade."	"Study in a quiet place and study longer. Make flash cards."	97	"Well I made simple mistakes and I think that the reason why I did bad on my essay questions was because I did not explain things well."	"Do not rush and really think about the questions. And not second guess myself."
Ronaldo	85	"Because I used my old methods with a few new ones that I learned."	"I think I just need to manage my time a little better so I have more time to study."	79	"I think it might have been because of the new strategies I used. Even though some worked, some didn't."	"I am going to try my 'old' way because I was getting B's using these methods."
Tony	83	"I mixed a few answers that I knew on the test and the answers were marked wrong. I was upset because I know I could have done better."	"I think that I need to study a little harder so I could get the answers more, so that I have it down packed and it would be easier."	74	NA	NA

Note. NA = not available.

and internal (Schunk et al., 2008)—that is, students attributed their test performances to strategies being taught during SREP. Consistent with teacher reports and field notes regarding the increase in Jordan's strategic behaviors, Jordan's response to the attribution question showed that she began to interpret her test performance in relation to her own studying efforts as well as her help-seeking behaviors. Interestingly, Ronaldo, who showed a 6-point decline in his performance from the first to second tests, concluded that some of the new strategies that he learned during tutoring were actually interfering with his performance. Although Ronaldo's confusion about strategy effectiveness became a focal point of the SREP reflection discussions, the key point here was that he was thinking strategically about his test performance. Furthermore, Nancy showed a 12-point increase from the first to second tests, but strategically focused her attention on the minor errors that she was committing, seemingly to optimize future test performances.

Discussion

Poor academic achievement in secondary schools often is the result of student factors and/or environmental influences. Although no single intervention can adequately address all of these factors, the current study examined whether a multidimensional self-regulation training program, called SREP, can improve the academic success and regulatory behaviors of urban high school students. Based on convergence of quantitative and qualitative data, it appears that SREP is a promising intervention for improving the academic and regulatory functioning of high school students.

Effectiveness of SREP

Test performance. Relative to the biology class test average, all 5 students in the SREP intervention group showed marked improvement in their test performance from baseline to inter-

vention (see Table 1), whereas the comparison group exhibited failing test grades at both baseline and during the intervention. The gain scores demonstrated by the SREP intervention groups are particularly impressive when one considers that the overall biology class test average was virtually identical from baseline to intervention. In other words, all SREP intervention participants exhibited test scores *below* the class average during baseline, but they all *matched o*r *surpassed* the class test average on the last intervention test, with 4 of these students matching or surpassing the class average on the final exam. Class test average served as an important control variable in that the authors were able to reasonably rule out the effects of a few extraneous variables, such as test difficulty and changes to classroom instruction. That is, if the biology teacher developed easier tests or used more effective teaching methods during the intervention phase, one would probably have observed a large increase in biology class test average; however, this did not occur. In addition, given that the students exhibited consistently poor test performance during the baseline, it is highly unlikely that a historical factor accounted for the relatively quick improvement in test performance exhibited by most of the students (Kazdin, 1998).

In terms of the clinical significance of the observed test gains, students raised their grades to either the class average, which was approximately a *B*- grade, or to the upper echelon of the class (grades of *A*- and *A*). In addition, given that students exhibited consistently poor test scores over a 6-month period, it was highly probable that they would have exhibited low test scores throughout the school year. These outcomes were high-stakes in nature for the participants because final science grades in the ninth grade typically appear on students' high school transcripts. In terms of social validity, teachers, parents, and students perceived the SREP in a highly favorable manner, particularly with regard to the utility of strategy instruction and the development of more positive academic attitudes and behaviors of students (see Appendix A). All consumers of this program indicated that they would recommend the SREP to students who struggle in school. Interestingly, the biology teacher reported that she was

unsure whether SREP impacted several covert processes such as students' confidence in school, the nature of their attributions, or their perceptions of control in school (personal interview, June 6, 2007). This finding is consistent with prior research showing that teachers are often less accurate in assessing students' internal processes, such as motivation beliefs, than overt behaviors (Kamphaus & Frick, 2005).

Changes in self-regulation and motivation processes. Given that SREP focuses primarily on strategic and self-regulatory training, the observed changes in students' regulatory skills and motivation beliefs as measured by self-reports and rating scales were expected. Of greatest importance, however, was the convergence of data among student self-reports, teacher rating scales, SRC field note observations, and microanalytic self-reflection questions illustrating that students not only used more regulatory strategies to learn biology content but also began thinking in the *language of strategies* following test performance. Becoming more strategic in one's thinking is important because prior research has consistently shown that students who are more skilled in using specific tactics during learning and who attribute poor test performances to strategic causes attain high levels of success and will exhibit adaptive motivation profiles (Cleary et al., 2006; Graham & Harris, 2005; Mason et al., 2006).

The general student profile that emerged from this research study included enhanced science test scores, more frequent use of self-regulatory strategies, and enhanced perceptions of confidence for learning science material and regulating one's behaviors. Interestingly, students' level of interest and enjoyment in biology class did not show any changes. Although this finding was unexpected, it does have a few important implications. First, it suggests that when conducting self-regulation intervention research in school contexts, it is important to recognize the conceptual differences among different motivational beliefs, such as self-efficacy perceptions, task interest, outcome expectations, and goal orientation, and to use separate measures targeting each of these processes. Second, because SREP was implemented as a pull-out intervention program, it actually makes sense that the

tutoring did not alter students' interest or enjoyment relative to biology class. Research has shown that in order to directly impact students' interest or enjoyment in classroom and learning activities, it is important to provide students with opportunities for autonomy and choices about their learning, to participate in classroom decision-making, and to evaluate their learning progress (Blackwell, Trzesniewski, & Dweck, 2007; Pajares & Urdan, 2006; Reeve & Jang, 2006).

Limitations and Areas for Future Research

The authors selected a small group of ninth-grade students to participate in this study by using various criteria such as prior science achievement, grade level, and evidence of maladaptive self-regulation and/or academic behaviors. The small sample size and highly selective nature of the sample selection limits the generalization of the current results. Thus, it is important for future research to replicate the current findings with student populations possessing similar characteristics to the current sample but more importantly, to extend these findings across diverse samples (e.g., students with learning disabilities, significant academic skill weaknesses, or substantial motivation problems) and academic contexts and tasks (e.g., taking math tests or writing essays in English). However, based on the sample's characteristics, the current results may best generalize to student populations who are transitioning to high school and who possess adequate prior science achievement and skills. It also is important to note that all students, regardless of gender or ethnicity, who received the complete SREP intervention, demonstrated improved biology test performance and more adaptive beliefs.

In terms of research methodology, a pure control group was not included in this study. In addition, the comparison group displayed lower WKCE science test scores and baseline biology test scores (approximately 10 points lower) than the intervention group, suggesting that the two groups possessed different levels of prior science knowledge. This is a particularly interesting point because it raises the question of whether the effectiveness

of SREP will generalize to students who do not possess minimal background knowledge or skills in specific content areas. Future research should examine the relative efficacy of SREP across diverse groups of students varying in academic achievement and cognitive skill level.

Another limitation was the emphasis placed on teacher rating scales and student self-reports as measures of self-regulation strategy use and motivation. Research has shown students to often be inaccurate reporters of their behaviors (Winne & Jamieson-Noel, 2002). In addition, given that the biology teacher knew which students received SREP, it is possible that her opinions and reports of student behaviors were biased in a positive direction. However, these concerns are greatly minimized when one considers the strong convergence of self-report data with quantitative information.

An important quality of this study was that it utilized both quantitative and qualitative measures, including assessment tools to track changes in students' performance and behaviors. However, it may be beneficial for future research employing mixed-model research designs to include more comprehensive event forms of self-regulation assessment, such as systematic observations (Perry, 1998), personal diaries (Schmitz & Wiese, 2006), and comprehensive microanalytic assessment protocols (Zimmerman, 2008). Although we incorporated a few microanalytic self-reflection questions about attributions and adaptive inferences, future researchers should consider expanding this type of assessment to include both forethought (goal-setting, strategic planning) and performance control (attention focusing, self-recording) processes.

Educational Implications

Impacting the academic performance of high school students in core academic content areas is important because of the high-stakes nature of secondary school course grades relative to their vocational and postsecondary pursuits. Consistent with

research on learning-disabled and low-achieving youth across diverse academic areas, the findings from this study suggest that getting students to become more active, strategic participants in their learning by teaching them empirically supported learning strategies as well as specific forethought and reflective thinking skills is an important pathway to academic success (Gleason, Archer, & Colvin, 2002; Reeve & Jang, 2006). The importance of self-regulation processes also has been established in recent survey research with teachers and school psychologists showing that students who are referred for academic problems often have self-regulatory skill and motivation deficits (Cleary, in press). Interestingly, this research also shows that although evaluating these students' processes are highly valued in educational circles they are rarely evaluated in a direct or comprehensive manner by school personnel. Clearly, a more extensive commitment to implementing self-regulation intervention programs in schools is needed.

A more broad implication pertains to how intervention programs like SREP can be conceptualized and implemented within the context of school-based service delivery frameworks. Since the passage of IDEA 2004, the Response-to-Intervention service delivery framework has received considerable attention in educational circles because school districts must now emphasize the implementation of evidence-based interventions as well as the delineation of the essential processes for providing such services (Fuchs & Fuchs, 2006). In short, this service delivery approach operationally defines service delivery within a multi-tiered framework. Tier I interventions typically occur at a classroom level and thus are designed to provide all students with the potential benefits of an intervention. With regards to classroom-wide self-regulation interventions, there are many empirically supported techniques that teachers can readily infuse into the daily routine of a school day, such as requiring all students to set performance goals, engage in progress monitoring, and utilize self-reflective processes (Fuchs et al., 2003). These processes are similar to many of the key components of SREP outlined in this article.

Students who do not respond (i.e., continue to exhibit poor test performance) to this general level of intervention support would be eligible to receive more intensive, Tier II pull-out programs, such as SREP. An important aspect of this study was that it explicitly illustrates the process and procedures for implementing an intensive intervention program for academically at-risk youth.

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Appendix A

Mean and Standard Deviation Scores for Student, Parent, and Teacher Social Validity Measures

Student Version		Teacher Version		Parent Version	
Acceptability	**Mean (*SD*)**	**Acceptability**	**Mean (*SD*)** [a]	**Acceptability**	**Mean (*SD*)**
The strategies that the tutors taught me were very important.	4.6 (.55)	The strategies that tutors used in the program are very important for student success.	4.0 (-)	The strategies that tutors taught my child are very important for his/her success.	4.7 (.58)
I would recommend this program to a friend who was struggling in school.	4.0 (1.22)	I would recommend this program to parents of other children who are struggling in school.	5.0 (-)	I would recommend this program to parents of other children who are struggling in school.	4.3 (1.15)
The tutoring forced me to do a lot of extra unnecessary work. [b]	4.0 (.71)	The tutoring involved too much work for the students. [b]	4.0 (-)	The tutoring involved too much work for my child. [b]	4.7 (.58)
Going to the tutoring was a waste of my time. [b]	4.8 (.45)	I am happy that the students participated in the program.	5.0 (-)	I am happy that my child participated in the program.	4.7 (.58)
Importance of Outcomes	**Mean (*SD*)**	**Importance of Outcomes**	**Mean (*SD*)**	**Importance of Outcomes**	**Mean (*SD*)**
The tutoring helped me to become more aware of the reasons why I sometimes struggle in school.	4.4 (.55)	The tutoring helped the students recognize the reasons why they were having difficulty in school.	3.0 (-)	The tutoring helped my child recognize the reasons why he/she was having difficulty in school.	4.0 (1.0)
I think about myself in a more positive way because of the tutoring sessions.	4.0 (.71)	The students think about themselves in a more positive way because of the tutoring.	4.0 (-)	My child thinks about him/herself in a more positive way because of the tutoring.	3.7 (1.53)

Student Version		Teacher Version		Parent Version	
I am more confident in my ability to manage things in school because of the tutoring.	4.2 (.45)	The students seem to be more confident in school because of the tutoring.	3.0 (-)	My child seems to be more confident in school because of the tutoring.	4.0 (1.0)
The tutoring helped me realize that I can change or improve my learning in school.	4.4 (.55)	The tutoring helped the students realize that they can change or improve their learning in school.	3.0 (-)	The tutoring helped my child realize that he/she can change or improve his/her learning in school.	4.0 (1.0)
The tutor taught me strategies that will help me to manage things in school better.	4.0 (0.0)	The tutoring helped the students manage the demands of school more effectively.	4.0 (-)	The tutoring helped my child manage the demands of school more effectively.	3.7 (1.15)
Total Average	4.3 (.30)	Total Average	3.9 (-)	Total Average	4.2 (.68)

***Note*. Student version (*N* = 5); teacher version (*N* = 1); parent version (*N* = 3). All measures were based on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). [a] Standard deviation (*SD*) was not applicable because only 1 teacher completed the questionnaire [b] Items were reversed scored to reflect adaptive perceptions of satisfaction.**