Order Number 9432337

Effects of self-monitoring and strategy training on college students' spelling achievement

Detres, Michael Paul, Ph.D.

City University of New York, 1994

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

EFFECTS OF SELF-MONITORING AND STRATEGY TRAINING ON COLLEGE STUDENTS' SPELLING ACHIEVEMENT

by

MICHAEL DETRES

A dissertation submitted to the Graduate Faculty in Educational Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

1994

This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

3/15/94
Date

Barry J. Zimmerman
Chair of Examining Committee

3/16/94
Date

Carol Kehr Tittle
Executive Officer

Barry J. Zimmerman

Shirley C. Feldmann

Philip A. Saigh

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

EFFECTS OF SELF-MONITORING AND STRATEGY TRAINING ON COLLEGE STUDENTS' SPELLING ACHIEVEMENT

by

Michael Detres

Adviser: Professor Barry Zimmerman

A review of the literature on spelling indicates that many adults never develop a high level of spelling proficiency despite much reading experience. To date, few studies have addressed the issue why adults misspell words that they use repeatedly.

It has been suggested that adults misspell because they do not monitor letter features of text carefully and they lack a method for recognizing accurate spellings. Therefore, it was hypothesized that self-monitoring and strategy training would additively improve students' ability to self-regulate their learning and improve their spelling. To date, no study had examined the combined effects of self-monitoring and strategy training on adult spelling.

Subjects in this study were one hundred college

students from a public community college. They were randomly assigned to one of five conditions: (a) self-monitoring and strategy training, (b) strategy training only, (c) self-monitoring training only, (d) no-treatment control, and (e) dangling control.

Analyses of variance show that self-monitoring and strategy training are each significant treatment interventions on self-regulation efforts and spelling achievement with adults. Strategy training effects are stronger than self-monitoring effects overall. Regression analyses indicate that self-efficacy for spelling and self-efficacy for detection of misspellings (self-efficacy measures) are significant predictors of the following three dependent measures: (a) self-regulation efforts, (b) spelling achievement, and (c) self-evaluation; however, self-efficacy for spelling contributes more to the overall prediction of the three dependent measures. Self-efficacy measures are sensitive to increases in spelling competence when students are given self-monitoring and strategy training. Path analyses indicate that self-monitoring influences spelling achievement through self-efficacy and self-regulation efforts; whereas strategy training

influences spelling achievement through self-regulation efforts only.

The findings can be used to devise training programs for adults who have spelling deficits, and they can be written into texts written for nonprofessional audiences. Further research is recommended to examine the generalizability of these findings.

ACKNOWLEDGMENTS

I want to thank the following members of my dissertation committee: Prof. Barry J. Zimmerman, chairperson, for his guidance, assistance, patience, and support; and Prof. Shirley C. Feldmann and Prof. Philip A. Saigh for their assistance. I also want to thank Dottie Ellis, a fellow graduate student, friend, and teacher at LaGuardia Community College; and Dr. William J. Koolsbergen, Associate Professor and Coordinator of the Speech Communication Area of the Humanities Department at LaGuardia Community College, for their help in making available the subjects that I needed to conduct this study. Special thanks also to the students who participated in this research and the teachers that encouraged their participation.

I am especially grateful to Brian J. Foster for helping me learn some of the research tools needed to complete this dissertation and for his encouragement, assistance, and support. I am also grateful to Schoenly Rippel-Lester for her help in the pilot studies that led to the current methodology and Dr. Manuel Martinez-Pons for his assistance with path analyses.

I want to extend my gratitude to Dr. Mary Kennedy, my clinical supervisor; Sister Mary-Ann Carratuna, Principal of Saint Robert Bellarmine School; and the sixth-grade teachers from Saint Robert Bellarmine for their help in organizing subjects for my first research project on spelling in the fall of 1989. That study was a springboard to the current study. I also want to thank the students from Saint Robert Bellarmine who participated in my first study.

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

CHAPTER I

Introduction

Despite the obvious personal and social importance of spelling accuracy, many adults never attain a high level of proficiency (Lewis, 1985). The arrested spelling development of these adults may be due to one or more of the following deficiencies: (a) the absence of spelling instruction beyond elementary school, (b) the absence of corrective feedback from teachers and others regarding spelling errors, (c) the low value placed on spelling in favor of the content of writing by teachers (Gentry, 1987), (d) the lack of interest in spelling by students and teachers, and (e) an inability to self-regulate learning to spell. Self-regulated learning is defined as the ability to regulate one's own personal characteristics and behaviors, and environmental factors in order to learn and perform well (Zimmerman, 1986).

A major consequence of misspelling is that it brings the speller's competence into question, and this can in turn diminish his or her own prospects for personal or professional advancement (Lewis, 1985). As a result, many self-help books designed to improve

spelling proficiency are currently on the market. In one of these self-help books, Lewis (1985) hypothesized that people fail to learn to spell because they are unable to distinguish their misspellings from correct ones; technically speaking, this inability involves a failure to self-monitor. Self-monitoring is composed of observing and evaluating one's personal behaviors that are believed to improve learning (Schunk, 1989), a key subprocess of self-regulation (Mace, Belfiore, & Shea, 1989). Lewis (1985) also hypothesized that many nonproficient adult spellers never learn a strategy or rule for correcting misspelled words. A strategy is a systematic plan that improves one's learning and performance (Schunk, 1989). Strategies are believed to promote self-regulation because it directs the learners' attention to rules and steps that are designed to improve performance (Corno & Mandinach, 1983; Schunk, 1986). Strategies and self-monitoring may be a more powerful learning technique than either one alone (Barling, 1980; Gerber, 1981; Reid & Harris, 1991). The aim of this study is to train adults who are poor spellers to use self-monitoring and strategies to improve their spelling. A self-regulated model of

learning includes self-monitoring and strategies.

A Self-Regulated Learning Model of Self-Monitoring

To date, two major positions have influenced the way self-monitoring has been conceptualized and studied: (a) the operant or behaviorist position and (b) the social cognitive position. Because operant researchers focus on overt behavior, they define self-monitoring as learners' self-recordings of selected behaviors (e.g., writing a plus or minus next to a response to indicate whether a response is correct or incorrect) as they learn (Nelson & Hayes, 1981 cited in Mace et al., 1989). In contrast, social cognitive researchers study covert cognitive processes (e.g., expectations, evaluations) in addition to overt behavior (Schunk, 1989). They define self-monitoring in terms of self-observations and self-evaluations as well as overt self-recordings (Schunk, 1989). Self-observation involves the act of seeing and noting, and self-evaluation involves comparing one's performance to a standard or goal (Bandura, 1986). An example of self-monitoring within a social cognitive framework is a proofreader who (a) looks for errors in a text (self-observation), (b) makes notations (self-recordings) to

correct errors, and (c) compares or evaluates errors or corrections against some standard (e.g., a dictionary, English handbook, a recalled image or rule). Points a and c involve covert cognitive processes.

From a social cognitive perspective, self-regulated learning means that learners can control their own (a) personal processes (e.g., senses, mental images, physiology), (b) behaviors, and (c) environment in order to improve their learning (Zimmerman, 1989). Finding a quiet place to study is an example of self-regulating environmental factors, and rehearsing a formula repeatedly until it is memorized is an example of self-regulating personal processes and behavior. Personal processes, behavior, and environmental factors are assumed to interact reciprocally (Bandura, 1986; Zimmerman, 1989). Both behaviorists and social cognitivists consider self-monitoring to be a key subprocess in self-regulated learning because it can lead to many forms of self-correction (Mace et al., 1989, Schunk, 1989).

According to the behaviorist position, self-regulated learning includes three subprocesses: (a) self-monitoring, (b) self-instruction, (c) self-

reinforcement (Mace et al., 1989). Self-instruction involves verbalizing procedures or strategies designed to enhance performance (Mace et al., 1989). Self-reinforcement is a self-administered positive consequence for a desired behavior designed to increase the probability the desired behavior will recur (Mace et al., 1989).

According to the social cognitive position, self-regulated learning includes the following three subprocesses: (a) self-observation, (b) self-judgment (self-evaluation), (c) self-reaction (Schunk, 1989). Self-observation involves observations the learner does during the learning process that will help the learner learn (Schunk, 1989). Self-judgment is decisions based on the learner's self-observations that guide the learner's progress (Schunk, 1989). Self-reaction is any change in behavior due to self-observation and self-judgment (Schunk, 1989). According to social cognitive theorists, the first two processes (a and b) constitute monitoring.

From a social cognitive perspective, self-monitoring can be informative and motivating when people chart their progress toward a specific and

short-term goal (Schunk, 1989). A goal is informative when learners can interpret their results toward a specific and proximal goal. The specificity and time proximity of a goal are also motivating: Learners are more likely to continue toward a goal if they can see their results clearly, and they can attain the goal in the near future. A person's motivation under the aforementioned conditions is sustained through two cognitive constructs: (a) self-efficacy and (b) outcome expectation (Schunk, 1989). Self-efficacy is the belief that one has the capability to organize and implement actions necessary to succeed at a task (Bandura, 1986). Outcome expectation is the anticipation of favorable consequences resulting from self-efficacious actions (e.g., "I have the capability to do well if I apply myself so I expect that I will do well and benefit from doing well") (Bandura, 1986).

A Self-Regulated Learning Model of Strategy Use

Strategies are systematic plans that direct goal-oriented behaviors (Paris et al., 1983 cited in Schunk, 1989). Strategies can improve self-regulated learning and academic performance in a number of ways: (a) they direct learners to concentrate on how to improve

learning and performance; (b) they require learners to be active participants when they learn; (c) they provide learners with a sense of personal control over achievement outcomes; (d) they increase learners' self-efficacy and motivation to achieve through increased levels of personal control and success; and (e) they can be applied to tasks that are similar to the original task (Corno & Mandinach, 1983; Pintrich, Cross, Kozma, & McKeachie, 1986; Schunk, 1986 cited in Schunk, 1989). A number of self-regulatory learning strategies have been identified and studied (Zimmerman & Martinez-Pons, 1986, 1988, 1990). Examples of spelling strategies are (a) sounding the words out, (b) breaking the words into segments, (c) memorizing the words, (d) writing the words, and (e) looking at the words repeatedly (Zimmerman & Detres, 1989). According to social cognitivists, one can learn a strategy effectively by verbalizing it, a process labeled strategy instruction (Schunk, 1989). The behaviorists call this self-instruction (Schunk, 1989).

Strategies and self-monitoring can interact during self-regulated learning. For example, assume people on a weight-reducing program have a goal of losing 20

pounds, and they plan to adopt dieting and exercise as a strategy. In order to assess whether these strategies are effective, people need to monitor their weight by getting on a scale and charting the results. If they decide they are not losing weight (self-judgment) based on what they have observed on the scale (self-observation), they may have to change strategies or behaviors (self-reaction): for example, reducing food intake or increasing the amount of exercise. They may have to monitor the implementation of the strategies more closely to make sure the strategies are followed correctly. When people self-observe weight loss, they are getting information regarding incremental successes which increases their sense of control and self-efficacy ("I am capable of doing something to lose weight"). This sense of control and self-efficacy can motivate them to continue on the weight-reducing regimen as long as there is continued feedback of success. The next chapter provides a review of the research on the effects of self-monitoring and strategies on academic performance.

CHAPTER II

Review of the Literature

Self-Monitoring Effects on Academic Achievement

The initial studies of self-monitoring in the early 1970s were based on behaviorist hypotheses and as a result, focused on the effects of (a) feedback, (b) reinforcement, (c) study skills advice, (d) stimulus control, and (e) goals. Mahoney, Moore, Wade, and Moura (1973) asked 27 college student volunteers to self-record their progress as they engaged in quantitative and verbal preparation exercises for the Graduate Record Examination (GRE). Self-recording involved pressing a counter either continuously or intermittently following feedback from a teaching machine. Subjects were randomly assigned to four conditions: (a) continuous self-monitoring, (b) intermittent self-monitoring, (c) performance feedback, and (d) control. The performance-feedback group received information about the accuracy of their responding, but they did not self-monitor. The control group received neither self-monitoring instruction nor performance-feedback.

The authors found that the self-monitoring groups

exhibited greater accuracy on quantitative problems than either the performance-feedback or control group. However, self-monitoring did not affect verbal performance. Review performance was significantly correlated with self-monitoring activities. Continuous self-monitoring was superior to intermittent self-monitoring. Performance feedback alone did not enhance either the duration or the accuracy of review performance. The authors note that subjects differed significantly in verbal abilities but not in quantitative ability at the onset of the test. This aptitude-treatment interaction may explain why self-monitoring left verbal performance unaffected.

The study indicates that self-recording did affect quantitative accuracy if subjects were given feedback on correct answers. Two questions concerning the findings can be raised: (a) would self-monitoring have been as effective without feedback? and (b) would self-monitoring have increased verbal accuracy if verbal ability was controlled? In a later study, Brown (1975) addressed the second question by matching subjects on Metropolitan Achievement Social Studies scores to help control for aptitude. However, Brown continued to tie

self-monitoring to other conditions such as contingent reinforcement.

Brown's (1975) subjects were 48 sixth-grade children (22 boys and 16 girls). They were randomly assigned to one of three experimental conditions: a contingent reinforcement condition in which performance was either (a) self-monitored, (b) peer-monitored, or (c) teacher-monitored. All subjects were given the same questions in the same order during any one session. Subjects specified the number of questions they would complete. Subjects received one point for each question completed and a proportionate amount of bonus points for completing the specified number of questions. Performance on questions was monitored daily by subjects, peers, or the teacher. Subjects exchanged points for back-up reinforcers at the end of the day. Self-, peer-, or teacher-monitoring was the daily monitoring of the student's contract (the student's specifications of the number of questions he or she would complete).

Brown (1975) found that peer- and self-monitoring were more effective than teacher-monitoring. According to Brown, studies that had shown no significant

differences between self- and teacher-monitoring promised reinforcers but these studies did not deliver them. According to Brown, the effectiveness of peer- and self-monitoring was due to the delivery of reinforcers in each of the three conditions.

Richards (1975) combined self-monitoring with study skills advice and stimulus control additively to determine their effects on college students study behavior. The study had two control and four treatment groups. The two control groups were (a) no-contact control and (b) no-treatment control. The four treatment groups were (a) study skills advice, (b) study skills advice and stimulus control, (c) study skills advice and self-monitoring, and (d) study skills advice and stimulus control and self-monitoring. Subjects were 52 female and 38 male undergraduate university volunteers. The no-contact control group contained 18 nonvolunteers. All students in the study were enrolled in the same introductory psychology course. Nine students were randomly assigned to each control and treatment group within a block. Self-monitoring was recording the number of pages read and the number of hours studied on record sheets. The

authors hypothesized that self-monitoring would be an effective addition to study skills advice and stimulus control would not. The authors also hypothesized that study skills would be superior to the control groups and that there would be no difference between controls.

Richards (1975) found that study skills advice and self-monitoring was effective in significantly modifying college students study behaviors as measured through final exam scores, final grades, a therapist developed multiple choice exam given during treatment, a posttreatment evaluation questionnaire, and self-monitoring data. Richards did not find study skills advice and stimulus control and self-monitoring to be effective in modifying study behaviors. Treatment effects were equivalent for good and poor students.

A shift from a behavioral to a social-cognitive approach came in the late 1970s when Spates and Kanfer (1977) drew the distinction between internal or self processes and external processes. However, they measured such internal processes as goal-setting and feedback apart from the process of self-monitoring. According to the social-cognitive perspective, goal-setting and feedback are components of self-monitoring.

Spates and Kanfer (1977) studied the contribution of self-monitoring, goal-setting, self-evaluation, and self-reinforcement to solutions to problems in simple arithmetic. Subjects were 45 first-grade students (20 boys, 25 girls) from school districts in Illinois. Participation in the study was contingent on failing an arithmetic pretest. A pretest-posttest control group design was employed in this study (Campbell & Stanley, 1966 cited in Spates and Kanfer, 1977). Subjects were randomly assigned to one of four experimental conditions (self-monitoring, goal-setting, self-evaluation and self-reinforcement, self-monitoring and goal-setting) or a control group. The control group received practice in pronouncing numerals on a sheet of paper only. Self-monitoring was defined as self-observations and verbalizations of numbers the children were adding. Assistance was given if verbalizations were lacking or inappropriate regardless of accuracy of responses. Goal setting was defined as verbalizing the order three-columned numbers should be added from right to left. Self-evaluation was having each child judge whether he or she added correctly or not. The dependent variable was the number of errors on pre- and

posttests.

The authors found that the self-monitoring and goal setting group differed significantly from all other experimental groups. Goal-setting was the critical component of the training (treatment) groups. The authors conclude goal-setting plays a central role in self-regulated learning. They also conclude training in self-monitoring alone does not produce significant effects.

Spates and Kanfer (1977) treated self-evaluation and goal-setting as separate measures. According to social cognitive theory, goal-setting is a component of self-evaluation and self-evaluation is a component of self-monitoring; these measures are not distinct. In addition, goal setting is most effective when goals are specific, behavioral, contain a set criterion, and are short-term (Schunk, 1989).

Barling (1980) questions Spates' and Kanfer's (1977) study of self-regulated learning based on the following: (a) the treatment effects were confounded with training effects which were not assessed differently, (b) self-regulation effects were limited to simple arithmetic problems, and (c) the operational

definition of self-monitoring is questionable. Barling mentions that self-monitoring consists of two processes, self-observation and self-recording, which were unlikely to materialize during Spates and Kanfer's self-monitoring training. Instead, Barling continues, their idea of self-monitoring is actually self-instruction. Barling also criticizes studies that concentrate on dependent variables which reflect motivational aspects of academic performance such as time-at-task or the number of problems attempted. He feels that studies need to incorporate dependent measures that reflect skill such as the number of problems solved correctly and self-instruction (verbalizing a strategy) which includes self-determined performance standards and strategies that will enhance skill (Barling, 1980).

Mount and Tirrell (1977) examined 94 undergraduate volunteers as they monitored their study behaviors for a psychology class. Subjects were assigned to one of six experimental conditions: (a) self-monitoring of study time using note cards, (b) self-monitoring of study time using graph paper, (c) self-monitoring of study time using note cards and graph paper, (d) self-

monitoring of nonstudy time (the amount of time subjects felt they should be studying when they were not) using note cards, (e) self-monitoring of nonstudy time on graph paper, and (f) self-monitoring of nonstudy time on note cards and graph paper. The dependent variable was the final exam score for the developmental psychology class.

The authors found that self-monitoring of study or nonstudy time was more effective when note cards and graph paper were used in tandem than if they were used separately. The authors discussed the results by citing Kanfer's (1970) feedback loop model of self-monitoring. Essentially, the model states that the individual receives feedback about the target behavior due to the self-monitoring process. Feedback is then compared with the person's own subjective standards of performance causing an increase or decrease in behavior. Self-monitoring using note cards and graph paper may have been more effective because it was better at focusing the subjects' attention to the self-monitoring task and giving them more feedback that they could use to correct their performance. This finding suggests using a self-monitoring procedure that

combines note cards and graph paper. This combined procedure usually has more power in the sense that some people benefit from using note cards and others from using graph paper so that when a group uses note cards and graph paper, there is a greater likelihood that group will get higher scores. The crucial variable is the method of self-monitoring rather than the type of behavior.

Sagotsky, Patterson, and Lepper's (1978) field study examined the effects of self-monitoring training and goal-setting skills on classroom study behavior and academic achievement among elementary school children in an individualized mathematics program. Subjects were 37 girls and 30 boys (total = 67 children) enrolled in the fifth and sixth grades in a suburban elementary school. There were four treatment conditions (goal-setting, self-monitoring, goal-setting and self-monitoring and one control condition) in the 5-week treatment phase of the experiment. All subjects underwent a 4-week baseline phase prior to the treatment phase. In the self-monitoring condition, subjects were given a sheet with a space to mark the page and problem where they stopped working each day

and a grid of 12 empty boxes where they recorded a plus or minus as per math period to indicate whether they were working or not. Training was given to help subjects distinguish between working and not working. The goal setting condition had subjects record the page and problem number at the start of the math period, the page and problem number subjects expected to complete (the goal), and the page and problem number subjects actually completed.

The authors found that self-monitoring produced significant increases in both appropriate study behavior and in actual achievement while goal-setting had no effect on either study behavior or academic achievement. Goal-setting did not enhance the effectiveness of self-monitoring in the self-monitoring and goal-setting condition.

The authors conclude that self-monitoring can produce significant increases in study behavior and achievement in the absence of any external feedback, rewards, or other types of conditions. The authors believe one reason for the success of self-monitoring is its implicit evaluative component (recording instances of both positive and negative behavior). The

second reason is subjects recorded off-task behavior which served as a cue for them to return to appropriate on-task behavior. The failure of goal-setting to provide significant effects was attributed to the complex and heterogeneous nature of the mathematic lessons. As a result, subjects were unable to make reasonable estimates of daily achievement. Due to the lack of correlation between classroom study time and actual achievement, the authors do not assume that techniques that increase study behavior will necessarily increase achievement. They propose independent assessments of both variables in future research. Sagotsky et al. (1978) were the first to describe the self-evaluative feature of self-monitoring and to mention that the self-evaluative component of self-monitoring was critical to its effectiveness.

Setting simple, specific, short-term goals rather than complex, vague, long-term goals have been found to enhance the effects of self-monitoring (Bandura & Schunk, 1981; Schunk, 1983). Setting subgoals not only enhances achievement but also intrinsic motivation in the target activity (Bandura & Schunk, 1981). The lack of goal-setting effects in the Satgotsky et al. (1978)

study may have been due to the nonspecificity and complexity of the goals. The advantage of setting specific short-term goals is these goals are easier to monitor, comprehend, and attain. Mastering these goals is intrinsically motivating because they increase the learners' feelings of competency (Bandura, 1982; Deci, 1975; Morgan, 1984).

Holman and Baer (1979) examined whether the effects of self-monitoring training would increase on-task behavior in a laboratory setting and then generalize without further training to a classroom setting. They also examined whether the effects would endure over the course of 5 months for one subject and 10 months for two other subjects. The authors employed two multiple-baseline designs, one across three normal children and the other across three children who had academic, learning, and behavior problems. Of the six children, four were boys and two were girls, ranging in age from 3 years to 7 years. Self-monitoring required subjects to move red beads on a leather bracelet to get to a white bead which represented criterion. Each chain of beads on the bracelet was composed of a series of red beads representing the number of workbook-pages

of writing items or math problems that subjects could be expected to work on each day.

The results indicated that self-monitoring of academic task-completions improved on-task responding for all subjects in the laboratory and classroom setting. A subsequent reversal design showed that these effects were maintained over the time mandated by the authors. The data were recorded as mean occurrences (average increases in percentages between baseline and training conditions).

The authors conclude that self-monitoring of academic task-completions increased on-task and decreased off-task and disruptive behavior for normal and problem-oriented children. Transfer from laboratory to classroom setting was mediated by discriminative cues (colored beads on a bracelet) which served to remind subjects to work, to complete a certain amount of work, to measure ongoing progress, and to seek reinforcement from the teacher when appropriate. The authors also conclude that improved academic behavior leads to improved social behavior.

Stoller (1980) investigated effects of self-monitoring of study behavior on learning-to-spell and

spelling performance. Learning-to-spell was percent of letters and words acquired. Spelling performance was the percent of spelling letters and words retained. Self-monitoring was measured by using a card to record whether study behavior had or had not occurred at the sound of a tape-recorded beep. Recordings were marks written in 14 squares on the card. The subjects in the study were four learning disabled (LD) students in a resource room LD Summer School program at the P. K. Yonge Laboratory School. Subject 1 was a 9-year old fourth-grade white male who had an IQ of 105 and a reading grade level of 3.4. Subject 2 was an 11-year old fifth-grade white male who had an IQ of 76 and a reading grade level of 2.9. Subject 3 was an 11-year old seventh-grade white male who had an IQ of 76 and a reading grade level of 2.7. Subject 4 was a 9-year old fourth-grade white male who had an IQ of 108 and a reading grade level of 3.5.

The study used an ABAB reversal within-subjects design to determine self-monitoring effects. The four phases (ABAB) in the study were (a) independent study (baseline), (b) independent study plus self-monitoring (treatment), (c) independent study (baseline), and (d)

independent study plus self-monitoring (treatment). Subject 2 showed significant gains in the mean percent of spelling words acquired from baseline to treatment conditions, Subject 4 showed significant gains in the mean percent of spelling words acquired from the first baseline to the first treatment condition, and Subjects 1, 2, and 4 showed significant gains in the mean percent of words retained from the first baseline to the first treatment condition. Subject 2 showed significant gains in the mean percent of spelling letters acquired and retained from baseline to the first treatment condition.

The author found that self-monitoring of study behavior did not produce dramatic effects in three of the four subjects. Stoller (1980) noted several limitations of her study. One, subjects expressed their dislike of the experimental task. Stoller suggests that in the future reinforcement and feedback should be used to maintain interest. Two, subjects tended to overrate their study behavior when they self-monitored and there was a lack of correspondence between the subject's self-monitoring and that of an observer. Three, the perceptual difficulties

associated with learning disabilities may have made the experimental tasks inappropriate for them.

Smith (1982) examined effects of self-monitoring, self-administered reinforcement, and self-administered response cost on the spelling performances of 24 fourth- and fifth-grade students of average ability. Self-monitoring was defined in the study as self-recordings of behaviors that produce reactive effects. Self-monitoring forms were given different colors for each phase. During Phase 2 (self-monitoring only), a pink self-monitoring form directed subjects to indicate (a) how far they proceeded on the pretest until they reached their eighth error and how many words they wrote after their eighth error, (b) the number of words studied and not studied during the 10-minute study session, and (c) the number of pretest errors spelled correctly and incorrectly on the posttest. A gold self-monitoring sheet was used during Phase 3 (self-monitoring and self-administered reinforcement) and a blue one for Phase 4 (self-monitoring and self-administered response cost). Subjects in the study were 9- and 10-year old fourth and fifth graders enrolled in regular classes at an elementary school in

Englewood, Colorado. Students were selected for the study based on spelling scores they obtained on the New Iowa Spelling Scale (Greene & Loomer, 1977).

The data were evaluated using a single-subject simultaneous treatment design. The design had four phases: (a) baseline, (b) self-monitoring, (c) self-monitoring and self-administered reinforcement, and (d) self-monitoring and self-administered response cost contingencies. In the self-monitoring (SM) phase, subjects recorded pretest results, the number of words studied, and the posttest results on self-monitoring forms. In the self-administered positive reinforcement (SPR) phase, subjects continued to self-monitor but in addition were allowed to earn points based on spelling performance (pretest results, the number of words studied, and posttest results). These points could be exchanged for tangible back-up reinforcers. In the self-administered response cost condition (SRC), students continued to self-monitor as they had done in SPR. However, instead of receiving positive reinforcers, subjects were told they would be given a maximum number of points and points could be lost if a minimum standard was not maintained. The minimum

standard was fewer than eight words studied, not proceeding far on the pretest before achieving eight errors, or missing study words on the posttest. Subjects in SRC were able to exchange points for back-up reinforcers as they did in SPR.

A Wilcoxon signed-ranks test was used to analyze the results. The results indicate self-monitoring only was effective in increasing the study of words and decreasing posttest errors in comparison to baseline rates. Self-administered positive reinforcement was more effective than self-administered response cost in maintaining high rates of study. Both self-administered positive reinforcement and self-administered response cost contingencies were equally effective in maintaining low posttest errors. These results are consistent with Sagotsky et al. (1978) who found that self-monitoring can produce significant increases in study behavior and math achievement.

Smith (1982) attributes the effectiveness of self-monitoring to these factors: (a) specified study time helped some students manage their time and improve their study behavior and (b) self-correction of spelling tests provided informational feedback and

research in spelling predicts higher achievement when students correct their own spelling tests (Horn, 1946 cited in Smith, 1982). Kazdin's (1974) research (cited in Smith, 1982) on the self-reactive effects of self-monitoring, suggests that the implicit feedback from self-recording may be an important variable in a person's self-reaction (behavior change) because it is informative. Smith also feels that some implicit evaluation occurs as students record their spelling results and study outcomes and may even take the form of covert self-reinforcing or self-punishing responses.

Reliability ratings of the accuracy of student self-monitoring were not obtained, but periodic checks of the students' work by the examiner during self-monitoring showed that some students were not marking all spelling errors on pre- and posttests. However, Smith states that self-monitoring does not have to be accurate for it to be effective because students studied more and obtained higher spelling scores in SM than during baseline.

Smith (1982) concludes that self-monitoring and self-administered consequences can augment the study of spelling words and spelling performance in the

classroom. Smith thinks it is very likely that these results will generalize to other classrooms that use these approaches.

Wall (1982) investigated the effects of systematic self-monitoring and self-reinforcement components as children regulated their test performance. Subjects were 85 fourth-grade students (48 boys, 37 girls) from four public school classes (19 to 23 per class) in a predominantly white upper-middle class district. Intact classes were randomly assigned to four experimental conditions: (a) self-monitoring, (b) performance control, (c) self-reinforcement with self-monitoring, and (d) self-reinforcement without self-monitoring. Test performance was measured in the form of an experimenter-constructed test of history facts, Spanish-English word pairs, and reading comprehension passages for six lessons. The dependent measures were comparisons between conditions regarding number correct (mean number of correct answers), effects within conditions regarding number correct, and accuracy (degree of agreement between children's scoring and recording of their correct answers and experimenter's scoring for all baseline and treatment sessions).

Self-monitoring required subjects to check a copy of their answers against a list of correct answers after they handed in their original answer sheets. Subjects then recorded the number of correct answers on a cumulative record sheet at the beginning of each session and they received a set amount of points at the end of the final session noncontingently. Self-reinforcement required subjects to award themselves points at the end of each session based on what they thought they earned.

Wall (1982) found self-reinforcement with and without self-monitoring more effective in increasing test scores than self-monitoring alone or the control. Self-reinforcement with self-monitoring was the most effective condition. There were no differences between self-reinforcement without self-monitoring and self-reinforcement with self-monitoring. There was a high degree of agreement between children's scoring and recording of their correct responses and experimenter's scoring for baseline and treatment conditions.

Wall (1982) concludes that self-monitoring of correct answers did not affect children's test performance in comparison to a control. This finding

is consistent with previous research reporting negligible results of self-monitoring in the absence of other contingencies or preexisting conditions such as highly motivated students or valued tasks (Kazdin, 1974; Lipinski, Black, Nelson, & Ciminero, 1975; Nelson, 1977). Although systematic self-monitoring was not reactive, it was highly accurate which suggests that children are able to score their work and keep academic records. Self-reinforcement, with or without self-monitoring, resulted in significant improvements in test performance over baselines, systematic self-monitoring alone, and the control conditions. However, children who both self-monitored and self-reinforced improved both their accuracy and number attempted while children who only self-reinforced improved only the number attempted. Wall also concludes systematic self-monitoring provides feedback on accuracy and should be used to increase the efficiency of factual material whereas self-reinforcement is important in increasing motivation.

Dean, Malott, and Fulton (1983) conducted two experiments regarding the effects of self-management training on academic performance. Subjects in

Experiment 1 consisted of nine undergraduate students enrolled in one of two psychology courses at Western Michigan University. First, students identified a list of personal and career goals, positive outcomes (reinforcers) for good academic performance, and undesirable outcomes for poor academic performance during Session 1. The list was labeled rule statements. During Session 2, students received instruction in self-monitoring and self-recording (hourly records of general activities from waking to retiring each day in hour blocks of a self-management notebook which included study time), performance graphing (the number of hours they studied and weekly quiz scores), and schedule planning (planning hourly, daily, and weekly activities with study periods). During Session 3, students received instruction on the manipulation of study room conditions. During Session 4, students received instruction on constructing and prioritizing a list of academic and nonacademic tasks that they needed to complete each day. Session 5 was a review session. Further review and clarification occurred during Session 6. Students were also given bonus points provided they earned them during Session

6. The dependent variable was quiz scores. The AB design of the experiment consisted of an average 7-week baseline and 2-week training sessions.

Eight of the nine students showed improvements as a result of self-management training with six showing marked changes. Follow-up assessment at one- and three-month intervals revealed that three of the nine students continued to use all of the self-management procedures, four continued to use one or more of the self-management procedures, and two stopped using the self-management procedures altogether. The two that stopped using the procedures demonstrated the least improvement in quiz scores.

The authors stated, based on the results of Experiment 1, that self-recording, graphing, schedule planning, and list-prioritizing can improve academic performance significantly. These findings directed the authors to conduct Experiment 2 which was designed to assess the contributing influence of individual components of the procedures in Experiment 1.

Experiment 2 assessed individual self-management procedures such as hourly self-recording, student-developed rule statements, and environmental management

procedures. Subjects consisted of six low-performing undergraduate psychology students. The dependent variable was quiz scores. The design of the experiment was multiple-baseline across subjects with at least one week between intervention dates. The procedures of Experiment 2 paralleled those of Experiment 1. However, instructions were presented on handouts rather than orally communicated. The instructions did not provide positive or negative feedback contingent upon a subject's quiz performance or self-management behaviors.

Three students made significant gains regarding academic scores upon implementation of the hourly recording procedure. No lasting effects were noted as a result of rule statements for studying. The other three students showed improved quiz scores as a result of environmental management. Reliability checks were above 93%.

The authors conclude from Experiment 1 that the combined effects of graphing, schedule-planning, list-prioritizing, environmental management, and self-recording significantly improved academic performance. The authors conclude from Experiment 2 that the results

provide further support for environmental management and self-recording through an individualized implementation of each. The authors state that self-recording strengthens self-awareness and students automatically self-evaluate as they monitor their behavior. This monitoring also increases the likelihood that they will make reinforcing statements contingent upon appropriate responding. During environmental self-management, students manipulate the physical conditions of their study area to promote learning after proper planning is made.

Morrow, Burke, and Buell (1985) analyzed the effects of a self-recording procedure on attending to task and academic productivity of two males with moderate mental retardation and schizophrenia, one was 15 years old and the other was 17 years old, using an ABAB withdrawal design. A five-second time sampling procedure assessed attending to task. Academic productivity was assessed as the number of math problems attempted and solved correctly. Interrrater reliabilities were calculated for attending to task and academic productivity. During the treatment phases, a beep on an audio cassette recorder indicated when to

record a "+" for working on worksheets or a "-" for not working on worksheets on a grid card after this procedure was modelled by the teacher. During the withdrawal phases, the audio cassette recorder was removed.

The results indicate that the self-recording procedure had an immediate and dramatic increase in both subjects attending behavior and academic productivity and that the treatment effects for attending behavior were maintained 30 days after completion of the study. The follow-up data for academic productivity was not presented because the subjects were working on different material at the time of follow-up due to sufficient progress. The mean interrater reliabilities regarding attending behavior for the first and second subject was 92%. The mean interrater reliabilities regarding academic productivity for both subjects was 100%.

The authors conclude that self-recording procedures have beneficial effects on attending behavior and academic productivity and that treatment effects for attending behavior can be maintained for 30 days. The authors suggests replication of the study to

increase generalizability of the results.

Morgan (1985) incorporated specific short-term goals or subgoals when he investigated three conditions of self-monitoring on academic performance. Subgoal conditions involved (a) students setting the goals in behavioral performance terms, (b) students specifying the criteria for mastery, and (c) students recording attained subgoals with corrective feedback on attempts to formulate and monitor subgoals. Subjects were 240 first-year education students (151 women, 81 men) at St. Patrick's College in Dublin, Ireland. The main dependent measure was the year-end examination in an educational psychology course. Subjects were blocked on the basis of their academic achievement prior to their admission to college into three categories: (a) high achievers, (b) moderate achievers, and (c) low achievers. Subjects within each block were then randomly assigned to one of four study conditions: (a) self-monitoring of subgoals, (b) self-monitoring of study time, (c) self-monitoring of distal goals, and (d) control. Distal goals were long-term goals.

Morgan (1985) incorporated an extrinsic motivational measure to test the overjustification

effect which simply states that extrinsic motivation undermines intrinsic motivation (Enzle & Ross, 1978; Karniol & Ross, 1977; Lepper & Greene, 1975; Morgan, 1984; Rosenfield, Folger, & Adelman, 1980; Weiner & Mander, 1978 cited in Morgan, 1985). Extrinsic motivation is motivation based on external sources such as grades or money. Intrinsic motivation is motivation based on internal sources such as one's personal standards. In this study, extrinsic motivation was half of the randomly selected subjects turning in weekly samples of their notes to instructors for review and intrinsic motivation was the remaining half not turning in weekly samples of their notes.

Morgan (1985) found that self-monitoring of subgoals had a beneficial effect on motivation to learn and exam scores. Subjects who self-monitored study time and long-term goals did no better than the control subjects. The subgoal group spent significantly less time studying than the group that self-monitored their study time. There was an interaction of study condition and motivation due to increasing interest in the subgoal condition with extrinsic incentive. The extrinsic incentive brought about a decrease or had no

impact on interest in the other three conditions. The increasing interest due to extrinsic incentive in the subgoal condition was due to the fact that specific subgoals leads to self-perceptions of mastery and achievement (Morgan, 1984). Morgan concludes that procedures that increase feelings of competence and self-efficacy are likely to enhance intrinsic motivation in the activity (Bandura, 1982; Deci, 1975; Morgan, 1984).

Harris (1986) cited four problems with many research studies in the area of self-monitoring: (a) confounding effects due to the use of prior or concurrent external contingencies, (b) the integration of additional self-control procedures, (c) failure to require correct and consistent implementation of self-monitoring procedures, and (d) choice of on-task behavior as the sole target behavior and dependent variable. She cited Klein's (1979) finding that increased time-on-task does not necessarily improve academic performance.

Harris (1986) investigated the differential effects of self-monitoring on attention and academic productivity concerning a spelling task. Subjects were

four learning disabled children between the ages of nine and 10 with attention problems. The dependent variables were on-task behavior and academic productivity. The interventions were conducted through a counter-balanced multiple baseline design with the order of the interventions reversed for the last two subjects. The phases of the study were (a) baseline, (b) self-monitoring of attention (SMA), (c) self-monitoring of productivity (SMP), and (d) choice (after data collection had been completed, subjects were required to choose one of the two procedures in which to continue). SMA involved writing "yes" and "no" in response to the self-question, "Was I paying attention?" each time a randomly emitted tone on a tape recorder was heard. A piece of paper with a yes/no question reminding the subjects to indicate on- or off-task behavior was placed on subjects' desks. SMP involved counting the number of times spelling words had been written at the end of the period, and then recording this number on a graph in a file. Subjects were also given a choice condition of choosing to continue SMA or SMP.

Harris (1986) found a significant increase in on-

task behavior over baseline during both self-monitoring phases. The results were less clear for academic productivity, Subject 1 had equivalent results in both conditions. Subject 2's productivity level was superior in the SMP condition. Subject 3 and 4 showed decreasing trends over the two conditions although mean productivity levels were higher making it difficult to determine whether SMP was more effective. The two self-monitoring procedures were qualitatively different. SMP involved graphing whereas SMA did not. Harris considered SMA intrusive and time consuming. Three out of four subjects chose SMP over SMA. One subject had difficulty making a choice and decided to combine the procedures. To explain why there were no accuracy checks in her study, Harris mentioned that accuracy of self-monitoring is often unnecessary to achieve desirable effects (O'Leary & Dubey, 1979 cited in Harris, 1986). She also mentioned that future studies in self-monitoring and academic performance should examine standardized achievement data.

Lloyd, Bateman, Landrum, and Hallahan (1989) discussed the limitations of Harris' (1986) study. The first limitation is Harris counterbalanced the order in

which pupils received self-recording of attention and self-recording of academic productivity (e.g., ABCBC vs. ACBCB). This counterbalancing created a between-groups design with two subjects which complicated the interpretations of Harris' results. The second limitation is Harris' procedures are not comparable: self-recording of academic productivity is broad (subjects made overall judgments of academic productivity) and her self-recording of attention is specific (subjects made momentary judgments of attending). The third limitation is Harris did not comprehensively evaluate the treatments in her study by assessing other factors such as self-recording accuracy, percentage of correct responding, or standardized achievement. To control for the limitations of the Harris' study, Lloyd et al. (1989) examined self-recording of attention and productivity with a multielement design, more comparable procedures, and a more comprehensive evaluation of self-monitoring effects. Their academic productivity measure was arithmetic assignments.

Subjects in the Lloyd et al. (1989) study were five students in an elementary school who were placed

in a special education class. These children were identified as learning disabled (LD), seriously emotionally disturbed (SED), or both LD and SED. The experimental multielement design included the following phases: (a) baseline, (b) self-recording, (c) choice (subjects choosing self-recording of attention or academic productivity), (d) fade (self-recording was withdrawn), and (e) maintenance. Self-monitoring of attention (SMA) was observer's recorded codes for pupils' behavior at time-sample intervals. Pupils were judged to be attending to task when they were looking at their assigned work and holding their pencils in a writing or erasing position. There was also teacher-pupil interaction codes of (a) positive interaction (e.g., positive behaviors of the teacher directed at the subject within 1 meter of the subject), (b) negative behavior (e.g., negative behaviors of the teacher directed at the subject within 1 meter of the subject), or (c) no interaction. Self-monitoring of academic productivity (SMP) was students' rate of correct performance on prepared worksheets. The worksheets contained a sequence of arithmetic practice pages that increase in difficulty. Students'

advancement is based on rate and percentage of correct responding. The unit of measure for productivity was movement: a movement is a numeral written in the answer space to a problem or deriving the answer to a problem. For example, the answer to the problem 5 + 3 has one movement but the answer to the problem 12 + 5 has two movements. The academic achievement measure was the subtest of the Woodcock-Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977).

The authors conducted observer agreement checks on 10 (21%) of the observation sessions and calculated agreements by a weighted agreement procedure (Harris & Lahey, 1978). The mean weighted agreements for on-task behavior were 75%, 84%, and 91% during baseline, self-recording, and maintenance phases, respectively. The mean weighted agreements for teacher interaction were 96%, 95%, and 95% for baseline, self-recording, and maintenance phases, respectively. The mean agreement for permanent product measures was 99%.

Results indicate that both SMA and SMP improved attention to task and arithmetic productivity and these effects were maintained 5 weeks following treatment. The results also showed there were no significant

differences between the two types of self-monitoring. The authors discuss that the experimental effects could be confounded with increased practice and that further research is needed to determine whether the effects are due to self-recording alone.

The authors conclude that self-recording of attention and academic productivity enhances attentive behavior, academic productivity, and academic achievement immediately following treatment and over a certain period of time. They explain the differences in choice behavior between their study and Harris' (1986) study (Harris' subjects chose self-recording of academic productivity): Harris' productivity condition was substantially different from her attention condition whereas the productivity and attention condition was similar in their study. In addition, the productivity condition in the Lloyd et al. (1989) may have been relatively more intrusive than the attention condition whereas in the Harris study, the reverse appears to be true. Students may prefer the less intrusive procedure. The teacher was not interacting with the children, ruling out a competing hypothesis that effects may be due to levels of teacher contact.

Self-Monitoring and Strategy Effects on Academic Performance

Barling (1980) studied the effects time-at-task (a motivational measure) had on the number of problems solved correctly (an accuracy measure). Barling's sample were 138 children (67 boys, 71 girls) from grades three through six in the same school. Barling's experiment was a pretest-posttest design. Subjects were randomly assigned to one of five groups: (a) Group 1 - Control, (b) Group 2 - Control plus feedback (light being shone when response is correct), (c) Group 3 - Self-monitoring (self-observation and self-recording), (d) Group 4 - Self-determined performance standards and self-reinforcement, and (e) Group 5 - Self-instruction (verbalization of a strategy). Barling's definition of self-monitoring was making a mark on a piece of paper for each correct answer on the Peabody Picture Vocabulary Test (PPVT) and the Scholastic Achievement Test in Arithmetic (SATA). Barling's definition of self-instruction was to think aloud about how to do a task in a stepwise fashion: (a) don't get nervous, (b) don't rush, (c) work out the correct answer, and (d) slow down if necessary.

Barling (1980) found that self-determined standards and self-reinforcement had the most pronounced effects on arithmetic and verbal performance. However, with arithmetic performance, self-monitoring was more effective than self-instruction and control, and self-instruction was more effective than the control group. Barling suggests that in certain situations, incorporating self-instruction within a self-regulation model would be tremendously helpful in improving children's academic performance providing it is task-specific. In Barling's study, self-instruction was general. Barling thinks self-monitoring effects on arithmetic tasks are due to the difficulty of the arithmetic task and the continuous feedback related to success (self-recording) as the subject progresses through the task. According to Barling, in essence, effective performance is a function of both motivation and skill. Prior to the time his study was published, research on self-monitoring effects were directed to some behavioral or performance measure as time-at-task or accuracy of responding.

Gerber (1981) examined effects of self-monitoring

on spelling performance with 36 LD students and 16 normally achieving students. The 36 LD students were elementary school students in a small city and surrounding county in central Virginia. They were selected on the basis of spelling ability and achievement and were grouped as either phonetic or transitional based on a predominant error type. Their average age and IQ was 115 months and 95 respectively. The normally achieving control students were obtained from the same city as the LD students and were selected nonrandomly from a pool of over 100 fourth and fifth graders. The control group was appropriately matched with the LD group. The control students represented the correct spelling group. Students in the three spelling ability groups were then randomly assigned to either a self-monitoring training group or an attention control group. Self-monitoring was the ability to evaluate spelling responses based on self-recordings. It was trained through (a) self-instruction to proofread, (b) modeling, and (c) prompted imitation. Self-instruction to proofread focused on (a) spelling each part of a difficult word well and (b) reading the spelling of each word in order to find mistakes. The

experimenter modeled five components of self-monitoring: (a) self-instruction to proofread, (b) assessment of uncertainty (scanning a spelling letter by letter and expressing certainty or uncertainty about the letters), (c) self-questioning (self-reflections on the meaning and familiarity of words), (d) generation of alternatives (enacting different ways of spelling words based on rhyming and matching known sound-symbol combinations), and (e) decision-making (evaluating choices with respect to word-length, vowel, pronunciation, and readability). Prompted imitation were directions to follow the experimenter's demonstrations of self-monitoring by describing each step aloud.

Gerber's (1981) data were analyzed using a 3 X 2 (Ability Groups X Treatment Conditions) experimental design. The independent variable was self-monitoring and the three dependent variables were spelling performance, attempts at spontaneous self-correction, and self-assessments of confidence after spelling attempts. Self-assessment of confidence before the spelling attempts was an independent variable. Spelling performance was a dictation-type standardized

spelling achievement test consisting of 60 words which determined average error quality ratings. This standardized achievement test is called the Test of Written Spelling (Larsen & Hammill, 1977).

Gerber's (1981) study indicates that self-monitoring training was more effective on the spelling performance of older, more skilled LD students than on the spelling performance of untrained students achieving at a normal level. These effects were not found with younger, less skilled LD students. Self-monitoring training was more effective on self-correction than was no self-monitoring training. Self-monitoring also improved the self-assessments of younger LD students but it had a negative effect on the self-assessments of older LD and normally achieving students.

Gerber (1981) concludes that students need to have certain preliminary skills before they are trained in self-monitoring. These preliminary skills are metacognitive knowledge (awareness of what's wrong) and self-regulatory ability (the ability to control learning internally and externally). Subjects presented different levels of spelling skill even

though they may have been equivalent in characteristics that defined them as learning disabled. However, self-monitoring is effective in improving the quality of spelling errors among older LD students. Older LD students do not spontaneously self-monitor performance or generate efficient strategies for reducing self-doubts related to the correctness of spelling attempts.

Gerber's (1981) definition of self-monitoring is different from the preceding studies. His concept of self-monitoring includes other self-regulative subprocesses as self-instruction and generation of alternatives. Self-instruction resembles self-verbalization of a proofreading strategy and generation of alternatives resembles specific spelling strategies. He does not make a distinction between these types of strategies and self-monitoring. However, assessment of uncertainty, self-questioning, and decision making resemble the self-evaluative component of self-monitoring. Self-monitoring effects may have been more pronounced if self-monitoring was limited to self-observations (looking at the targeted words), self-recordings (simple notations to indicate whether subjects' spellings were correct), and self-evaluations

(assessment of uncertainty, self-questioning, & decision-making).

Reid and Harris (1991) examined the following issues: (a) the effectiveness of self-monitoring for learning, (b) the effectiveness of self-monitoring for achievement, and (c) the differential effects between self-monitoring of attention (SMA) and self-monitoring of academic productivity (SMP). Reid and Harris used a randomized, group design to examine the differential effects of SMA and SMP regarding attention (on-task behavior), academic productivity (average number of correct practices), achievement (number of words spelled correctly on weekly spelling tests), and maintenance (readministering each weekly spelling test after a 10-day interval). SMA was assessing, evaluating, and recording attentional behaviors. Subjects in this study self-recorded responses to "Was I paying attention?" to the sound of a taped tone. SMP was assessing, evaluating, and recording academic performance. Subjects in this study counted and graphed the number of correct spelling practices after each session. There were 28 LD students selected from a pool of students in ungraded self-contained

classrooms. Their ages ranged from 111 to 155 months. The criteria used for selection was based on (a) performances on the Test of Written Spelling (TWS) (Larsen & Hammill, 1986), (b) performances on the Woodcock-Johnson Psychoeducational Battery (WJ) (Woodcock & Johnson, 1977), (c) an IQ of 74 and higher, and (d) a score of less than 30% correct on a spelling pretest. Subjects were drawn from four schools. A total of nine classrooms were used with no more than four students per classroom selected. Within each school, two to four students from a classroom were randomly assigned to one of two intervention groups.

The interventions were the same but the order in which self-monitoring was given was counterbalanced to control for ordering effects. Group 1 received the interventions in the following order: (a) spelling study procedure (SSP), (b) SMP, and (c) SMA. Group 2 received the interventions in the following order: (a) SSP, (b) SMA, and (c) SMP. SSP consisted of five steps: (a) looking at a word, (b) saying a word, (c) covering the word, (d) writing the word three times, and (e) checking spelling accuracy (Graham, 1983). Each intervention was a week long. No treatment was

given during the third week to minimize carryover effects. Students continued to use the spelling study procedure during the self-monitoring conditions. Teachers did not interact with students during spelling seatwork.

Results indicate on-task behavior was significantly higher in both the SMA and SMP conditions than in the SSP condition. The number of correct practices was significantly higher in the SMP condition than in the SSP condition but the results between SMP and SMA were small favoring SMP. Spelling achievement was significantly higher in the SSP condition than in the SMA and SMP condition. Spelling maintenance was significantly higher in the SSP and SMP conditions than in the SMA condition. Interview data indicated that none of the students found SMP to be intrusive, time consuming, or confusing; they even preferred SMP over SMA by more than two to one.

The authors conclude that both SMA and SMP can significantly increase the on-task behavior and academic productivity of LD students. The SSP and SMP condition can significantly increase the spelling maintenance of LD students. SMA may inhibit spelling

achievement due to interference effects reported by students. Self-monitoring procedures must be (a) simple, (b) efficient, (c) task appropriate, (d) enjoyable, and (e) relevant to the students' needs (Barlow, Hayes, & Nelson, 1984; Reid & Harris, 1989 cited in Reid & Harris, 1991).

Reid and Harris (1991) incorporated a spelling instruction procedure (SSP) in their study of self-monitoring procedures. The lack of significant differences between SMP and SSP conditions may mean that the introduction of a spelling strategy (SSP) attenuated self-monitoring effects. Further studies need to be conducted on the relationship between self-monitoring and strategies.

Conclusion and Discussion

The literature indicates that self-monitoring improves attention-to-task, task performance, and task productivity in various domains among learning-disabled, mentally-retarded, and normal children and adults (Brown, 1975; Harris, 1986; Morgan, 1985; Morrow et al., 1985; Sagotsky et al., 1978; Spates & Kanfer, 1977; Wall, 1982). However, in the area of spelling, self-monitoring effects were limited to learning

disabled and normal children and adolescents (Gerber, 1981; Harris, 1986; Reid & Harris, 1991; Smith, 1982; Stoller, 1980). A number of studies indicate that the combined effects of self-monitoring and strategies are more powerful than either one alone (Barling, 1980; Gerber, 1981; Reid & Harris, 1991).

Self-monitoring is effective because it can trigger personal characteristics that help learning such as awareness, attention, prior knowledge, motivation, self-efficacy, outcome expectation, and judgment through three subprocesses: (a) self-observation, (b) self-recording, and (c) self-evaluation (Schunk, 1989). Self-monitoring subprocesses interact with each other reciprocally, and as a result, any one subprocess can tap a number of personal characteristics (Schunk, 1989).

It is important to note, however, the effectiveness of self-monitoring depends on how similar the monitored behavior is to the outcome variable (Barling, 1980; Lloyd et al., 1989; Reid & Harris, 1991). For example, self-monitoring of attention will not be as effective as self-monitoring of academic performance if the outcome measure is academic

performance (Barling, 1980; Lloyd et al., 1989; Reid & Harris, 1991). Provided that self-monitoring is tailored to the outcome measure, it can be an effective learning technique for a wide variety of academic tasks including spelling.

There is a gap in the literature regarding difficulties adults have with spelling. To my knowledge, no studies have addressed this gap, however, authors of a number of self-help books report that adults repeatedly misspell words they commonly use because their misspellings appear correct (Kesselman-Turkel & Peterson, 1983; Lewis, 1985; Lewis, 1987; Lewis, 1989; Shaw, 1986; Shefter, 1976). These laymen's books typically suggest techniques that involve a combination of self-monitoring and strategy training to remedy the problems adults have with spelling: strategy training is instruction on the use of spelling rules and mnemonics, and self-monitoring prompts learners to look for correct spellings and to write only the correct forms (Kesselman-Turkel & Petersen, 1983; Lewis, 1985; Lewis, 1987; Lewis, 1989).

Self-monitoring is necessary for learners to distinguish correct spellings from misspellings (Lewis,

1985). However, learners who are able to distinguish misspellings from correct spellings must also be able to correct them (Lewis, 1985). This correction ability is an outgrowth of using spelling strategies. The most transferable spelling strategies involve spelling rules (Lewis, 1985; Lewis, 1987; Lewis, 1989). None of the studies in the empirical literature have studied self-monitoring and strategy effects on adult spelling achievement.

The current study will address the gap in the literature by (a) training adults to self-monitor and (b) training adults to use spelling strategies. Self-monitoring training will teach adults to highlight words they think are incorrectly spelled. Strategy training will teach adults to use various spelling rules to correct the misspellings they have identified. The current study will have two independent variables and four dependent variables. The two independent variables will be self-monitoring training and spelling-strategy training. The dependent variables will be self-regulation processes, spelling performance, self-efficacy, and self-evaluation.

Hypotheses

The current study will examine four hypotheses:

H1: Strategy training will have a significant effect on self-regulated behaviors (highlighting and correcting misspellings during a performance task) and spelling achievement as compared to no strategy training.

H2: Self-monitoring training will have a significant effect on self-regulated behaviors and spelling achievement as compared to no self-monitoring training.

H3: Self-monitoring and strategy training will have a significant effect on self-regulated behaviors and spelling achievement as compared to the no-treatment control condition.

H4: Self-efficacy ratings will predict self-regulated behaviors, spelling achievement, and self-evaluation.

CHAPTER III

Method

Subjects

Using a table of random numbers (Kerlinger, 1986), one hundred students from LaGuardia Community College in New York City were randomly assigned to five experimental conditions. These students were selected from several undergraduate oral communication classes in the Humanities Department of LaGuardia Community College. Only students who demonstrated reading proficiency on the CUNY reading placement test could be enrolled in these classes. The students from each experimental condition were examined in groups of 5-10 at a time. Forty-two percent of the students were African-American, 33% were Hispanic, 18% were white, 6% were Asian, and 1% were African-Caribbean. The percentage of females in the study were 71% and the percentage of males were 29%. All students were native English speakers.

Materials

Training materials were (a) self-check lists containing correct spellings of 26 words, grouped according to 10 strategies (Lewis, 1985; Lewis, 1989;

Webster, 1969) (see Appendix A); (b) self-check lists containing correct spellings of 26 words alphabetized (see Appendix B); (c) a list of 26 words, half of them misspelled and the other half correctly spelled (see Appendix C); (d) a videotape of the experimenter teaching 10 spelling strategies using a flipchart; and (e) a VCR, TV, blackboard, and chalk. The experimenter gave pencils to students who did not have them and paper to students who wanted to take notes during strategy training. The experimenter used the blackboard and chalk to clarify, if necessary, any information given to subjects during the procedure. The words on all three lists were the same. Materials to measure self-efficacy included: (a) one list of 19 word pairs where one word from each list was misspelled (see Appendix D), (b) another list of the same 19 word pairs where both of the words were misspelled (see Appendix E), and (c) a 100-point Likert-type scale (Schunk & Hanson, 1985) (see Appendix F).

The performance task was a 526-word typewritten essay containing 52 misspelled words, 26 of the 52 misspelled words were covered in training and the other 26 were words not covered in training but that followed

the same rules (transfer words) (see Appendix G: misspelled words are underlined in this document but not in the essays given to subjects). The Flesch-Kincaid reading level for the essay is 8.3 which is within the students' reading capacity. Pocket dictionaries, yellow highlighters, pencils, and blank pieces of paper were made available so that each student could use them on the essay. The same scale (Schunk & Hanson, 1985) used to measure self-efficacy was used to measure self-evaluation during the posttest (see Appendix F). The pre- and posttests were identical (see Appendices H & I). They consisted of a list of 52 common misspellings found in the performance task, yes/no responses to indicate whether misspellings were correct or incorrect, and blank spaces where subjects wrote correct spellings for words with no responses.

Measures

Spelling Pretest. A description of the pretests with the four scales can be found in Appendices H and I (note: the pretests and posttests are identical; therefore, the test is only listed once as a posttest in Appendices H & I). The pretests were divided into

two sections: (a) a list containing 26 commonly misspelled training words and (b) a list containing 26 commonly misspelled transfer words. In each section, there were two scales: (a) a spelling recognition scale and (b) a spelling accuracy scale. The total number of scales in the pretest were four: (a) pretest, spelling recognition training (PSRT); (b) pretest, spelling recognition transfer (PSRTR); (c) pretest, spelling accuracy training (PSAT); and (d) pretest, spelling accuracy transfer (PSATR). Cronbach alpha reliability coefficients for each scale a-d were .75, .72, .77, and .79 respectively. The PSRT scale consisted of bracketed yes/no responses to the right of the list of 26 common misspellings (training words) where subjects circled one of the responses to indicate whether each word was correctly spelled or not (spelling recognition). The PSAT scale consisted of blank spaces to the right of the PSRT scale where subjects wrote the correct spellings of words that they indicated were spelled incorrectly on the PSRT scale (spelling accuracy). The PSRTR scale consisted of bracketed yes/no responses to the right of the list of 26 common misspellings (transfer words) where subjects

circled one of the responses to indicate whether each word was correctly spelled or not (spelling recognition). The PSATR scale consisted of blank spaces to the right of the PSRTR scale where subjects wrote the correct spellings of words they indicated were spelled incorrectly on the PSRTR scale (spelling accuracy). The scores were obtained for each scale by dividing the total number of correct responses from each subject by the total number of words (26) and converting them into percentages.

Self-efficacy lists. There was a pretest to measure self-efficacy to detect misspelled words. Students rated how sure they could detect which word from each pair of 19 word-pairs was misspelled from one list where one word from the pair was misspelled (see Appendix D) on a scale from 1-100. There was also a pretest to measure self-efficacy to spell words. Students rated how sure they could spell each pair of 19 word-pairs on another list where both of the words from each pair were misspelled (see Appendix E) on a scale from 1-100. The 19 word-pairs on each list were the same. Each pair of words reflected a spelling strategy covered during strategy training. Both self-

efficacy ratings were obtained using Schunk and Hanson's (1985) scale for self-efficacy assessment (see Appendix F). The ratings were as follows: (a) 10 - not sure, (b) 40 - somewhat sure, (c) 70 - pretty sure, and (d) 100 - really sure.

Performance task. The experimenter added the number of corrections in the performance essay entitled Psychological Service and the Mentally Retarded) (see Appendix G) in percentages (corrections divided by a total of 52 words). The experimenter added the number of accurate spellings in percentages (accurate corrections divided by 52). The experimenter also added the number of highlighted words in percentages (total number of highlighted words divided by 52).

Posttests. The spelling posttests were identical to the spelling pretests (see Appendices H & I) except that the four scales were labeled: (a) posttest, spelling recognition training (POSRT); (b) posttest, spelling recognition transfer (POSRTR); (c) posttest, spelling accuracy training (POSAT); and (d) posttest, spelling accuracy transfer (POSATR). Cronbach alpha reliability coefficients for each scale a-d were .91, .87, .92, and .89 respectively. The scores for each

scale were obtained in the same manner as the pretests.

Strategy Types. Strategy types were responses to items on the posttests. Each item reflected one of the 10 strategies covered in training (e.g., strategy type 4 is a response to an item that reflects strategy 4). A supplementary analysis was done on strategy types to determine if certain spelling strategies were more effective than others.

Self-evaluation. Schunk and Hanson's (1985) rating scale was used to assess self-evaluation (see Appendix F). Students rated on a scale from 1-100 how sure they were that they circled correct responses or corrected misspellings on the posttests: (a) 10 - not sure, (b) 40 - somewhat sure, (c) 70 - pretty sure, and (d) 100 - really sure.

Design

There was a total of seven phases in the study, summarized in Table 1. The experimenter used a pretest-posttest control group design (Campbell & Stanley, 1966). Students were randomly assigned to one of five groups: (a) self-monitoring and strategy training, (b) strategy training only, (c) self-monitoring training only, (d) no-training control, and

(e) dangling control. Random assignment consisted of assigning subjects to groups using a table of random numbers (Kerlinger, 1986).

Table 1

Phases of the Study, by Group

Phases	Groups				
	(a)	(b)	(c)	(d)	(e)
1. Spelling Pretest	X	X	X	X	X
2. Strategy Training	X	X			
3. Self-Monitoring Training	X		X		
4. Self-Efficacy for Detecting Misspelled Words	X	X	X	X	X
5. Self-Efficacy for Spelling	X	X	X	X	X
6. Performance Essay	X	X	X	X	X
7a. Spelling Posttest	X	X	X	X	X
b. Self-Evaluation for Detecting Misspelled Words	X	X	X	X	X
c. Self-Evaluation for Spelling	X	X	X	X	X

In the spelling pretest, students indicated whether 52 commonly misspelled words were correct or not by circling yes/no responses, and then correcting

the words that they indicated were incorrect in the spaces provided (see Appendices H & I). Students who received strategy training were taught 10 spelling rules designed to correct 26 common misspellings (see Appendix A). These rules were selected from a self-improvement book (Lewis, 1985; Lewis, 1989) and a supplement of a dictionary (Webster, 1969). The rules were chosen on the basis that they represent a significant number of words and that they were the most transferable. Mnemonics, a type of strategy designed to improve memory, are effective with individual words; however, they are not transferable and therefore, were not used in the study. In contrast, rules pertain to groups of words and therefore are transferable from a learning list to other lists that follow the same rules. Students who received self-monitoring training highlighted misspellings using the same words during strategy training except the words were presented in random order to control for strategy effects (see Appendix C). Half of the words were correctly spelled, the other half were misspelled. In the self-efficacy for detection phase, students rated their self-efficacy to detect which word in each pair was misspelled (see

Appendix D) using Schunk and Hanson's (1985) rating scale (see Appendix F). In the self-efficacy for spelling phase, students rated their self-efficacy to spell pairs of words correctly (see Appendices E & F). In the essay task, students were told to highlight and correct any misspelled words in the essay using a dictionary if necessary. Fifty percent of the misspelled words in the essay were drawn from a strategy-training list and 50% were new transfer words that could be corrected using one of the training strategies (see Appendix G). In the posttest, students indicated whether a list of 52 common misspellings were correct or not by circling yes/no responses, and then correcting the words that they indicated were incorrect in the spaces provided (see Appendices H & I). While students were doing the posttest, they rated their confidence on their posttest responses: (a) their circled responses (self-evaluation for detection) and (b) their corrections (self-evaluation for spelling). They used the Schunk and Hanson scale to rate their responses.

Procedure

Spelling pretest. Students were seated at a

reasonable distance from each other so that they were unable to exchange information. The experimenter distributed to each student a list of 52 common misspellings containing 52 yes/no responses and 52 blank spaces faced down. The experimenter also distributed pencils to each student. After the pretest and pencils were distributed, the experimenter told the students what to do (see Appendix J for a description of the script).

Strategy training. The experimenter played a videotape of the experimenter teaching a paraphrased version of Lewis' (1985) (1989) techniques for improving spelling and rules found in the supplement of a dictionary (Webster, 1969) to subjects receiving strategy training. The videotaped instruction was designed to ensure that everyone assigned to strategy training received the same treatment. In the videotape, the experimenter used flipcharts containing examples of spelling strategies written in magic markers (see Appendix K for a description of the script). Handouts were distributed to students after they viewed the videotape. The videotape was 22 minutes long. After students viewed the videotape and

had been given an opportunity to ask questions, students were given handouts containing lists of words grouped according to strategies (see Appendix A) to study.

No-strategy training. Students not given strategy training were given a list of the same words as students who received training; however, the words were not grouped according to strategies. Instead these words were listed alphabetically to control for strategy effects (see Appendix B). Students were told that they had a few more minutes to study the words after 10 minutes (see Appendix L for a description of the script).

Self-monitoring training. This procedure was designed to help students discriminate incorrectly spelled words when they were encountered. The self-monitoring training group was given a list of the same spelling words covered in strategy training except half of them were misspelled and the other half correctly spelled (see Appendix C). They were also given yellow highlighters. The experimenter then instructed the students on how to self-monitor (see Appendix M for a description of the script).

No self-monitoring training. This procedure was designed to control for exposure to correct words without providing discrimination training. Students not given self-monitoring training did not receive the list of words described in self-monitoring training but were asked to review the list of words used during strategy/no strategy training (see Appendix A & B).

No-task control. This procedure was designed to control for mere exposure to correctly spelled words during training and essay performance. Students in this group were not given training or the self-check lists. However, they were given the spelling pretest, the self-efficacy word pairs, the performance essay, the spelling posttests, and the self-evaluation posttests.

Self-efficacy to detect misspelled words. Prior to distributing copies of Self-Efficacy to Detect Misspelled Words (see Appendix D), the experimenter drew the Schunk and Hanson (1985) self-efficacy scale on the blackboard (see Appendix F) and told the students what to do (see Appendix N for a description of the script). The experimenter checked everyone's copies to make sure that they completed them correctly.

If they did not, the experimenter helped them complete the forms correctly.

Self-efficacy for spelling word pairs. The experimenter distributed copies of Self-Efficacy for Spelling Word Pairs (see Appendix E) to each student and then told each student what to do (see Appendix O for a description of the script). The experimenter checked their copies to make sure they completed them correctly. If they did not, the experimenter helped them complete the forms correctly.

Performance task. The experimenter gave each student copies of the essay Psychological Service and the Mentally Retarded (see Appendix G), yellow highlighters, paper, pencils, and dictionaries (Students in the dangling control group were not given dictionaries). Misspelled words in the essay were underlined in Appendix G only. After the materials were distributed, the experimenter told the subjects what to do (see Appendix P for a description of the script).

Posttest. Prior to the distribution of the posttests (see Appendices H & I), the experimenter drew the Schunk and Hanson (1985) self-efficacy scale on the

board (see Appendix F). After the experimenter distributed posttests face down and pencils, the experimenter told the students what to do (see Appendix Q for a description of the script).

Self-evaluation to detect misspelled words. Before students started the posttests, the experimenter told each student how to self-evaluate to detect misspelled words (see Appendix R for a description of the script). Students self-evaluated to detect misspelled words as they did their posttests. After the experimenter explained this section, the experimenter explained the next section before students began their posttests.

Self-evaluation for spelling. The experimenter told them how to self-evaluate their spelling (see Appendix S for a description of the script). Students self-evaluated for spelling as they did their posttests.

CHAPTER IV

Results

Summary Description of Training Group Outcomes

The present study compared the effectiveness of three treatment conditions (self-monitoring and strategy training, strategy training, self-monitoring) on self-regulated learning efforts (highlighting, self-correction) and spelling achievement (spelling recognition training, spelling recognition transfer, spelling accuracy training, spelling accuracy transfer) (Hypotheses 1-3). It also tested the predictiveness of self-efficacy measures regarding self-regulated learning efforts, spelling achievement, and self-evaluation of spelling achievement (Hypothesis 4). Hypotheses 1-3 were tested using a 2 X 2 (Self-Monitoring X Strategy) ANOVA with a dangling control group (no-task control). A *t* test was used to compare the difference between the no-treatment control and the dangling control. Where the main and interaction effects of treatments were significant, post-hoc pairwise comparisons among the three treatment groups were conducted using Tukey-HSD tests. Hypothesis 4 was tested using a multiple regression analysis. A path

analysis was used to test the causal links among relevant variables in Hypothesis 4. Finally, a 2 X 2 (Self-Monitoring X Strategy Training) ANOVA was conducted to test the effectiveness of the treatments on each type of spellings.

Spelling Achievement

Spelling recognition training. A summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling recognition training is presented in Table 2. There was no significant difference between the no-treatment control (M = 52.89) and the dangling control (M = 47.11), t (38) = .79, $p > .05$. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 16.174, $p < .05$, and a strategy training main effect, F (1, 99) = 27.989, $p < .05$. The interaction effect of self-monitoring and strategy training was also significant, F (1, 99) = 5.209, $p < .05$. The interaction effect indicates that self-monitoring had an effect on spelling recognition training when students were not given strategy training (see Figure 1).

Post-hoc comparisons using the Tukey-HSD test

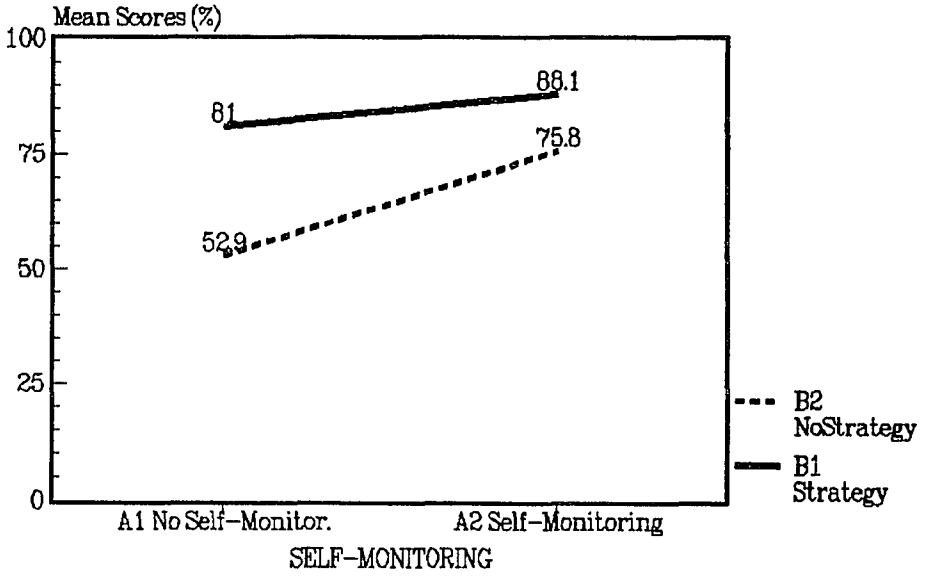
Table 2

Mean Spelling Recognition Scores

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	88.1	76.5
SD	11.9	15.4
Strategy training only		
M	81.0	73.1
SD	15.1	15.8
Self-monitoring training only		
M	75.8	64.2
SD	22.1	20.9
No-treatment control		
M	52.9	50.6
SD	23.7	21.9
Dangling control		
M	47.1	47.1
SD	22.3	19.5

Note. *n* = 20 for each group.

Figure 1. Mean spelling recognition training scores as a function of self-monitoring and strategy training.



indicated that there was no significant difference among all three treatment means, $p < .05$. All three treatment means were significantly higher than the no-treatment control. Thus, all three treatment groups had a significant effect on spelling recognition training.

Spelling recognition transfer. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling recognition transfer is presented in Table 2. There was no significant difference between the no-treatment control ($M = 50.60$) and the

dangling control (M = 47.12), t (38) = .53, $p > .05$. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 5.721, $p < .05$, and a strategy training main effect, F (1, 99) = 21.491, $p < .05$. The interaction effect of self-monitoring and strategy training was not significant.

Spelling accuracy training. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling accuracy training is presented in Table 3. There was no significant difference between the no-treatment control (M = 46.94) and the dangling control (M = 39.81), t (38) = 1.00, $p > .05$. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 18.237, $p < .05$, and a strategy training main effect, F (1, 99) = 30.031, $p < .05$. The interaction effect of self-monitoring and strategy training was also significant, F (1, 99) = 8.540, $p < .05$. The interaction effect indicates that self-monitoring had an effect on spelling accuracy training when students were not given strategy training (see Figure 2).

Post-hoc comparisons using the Tukey-HSD test

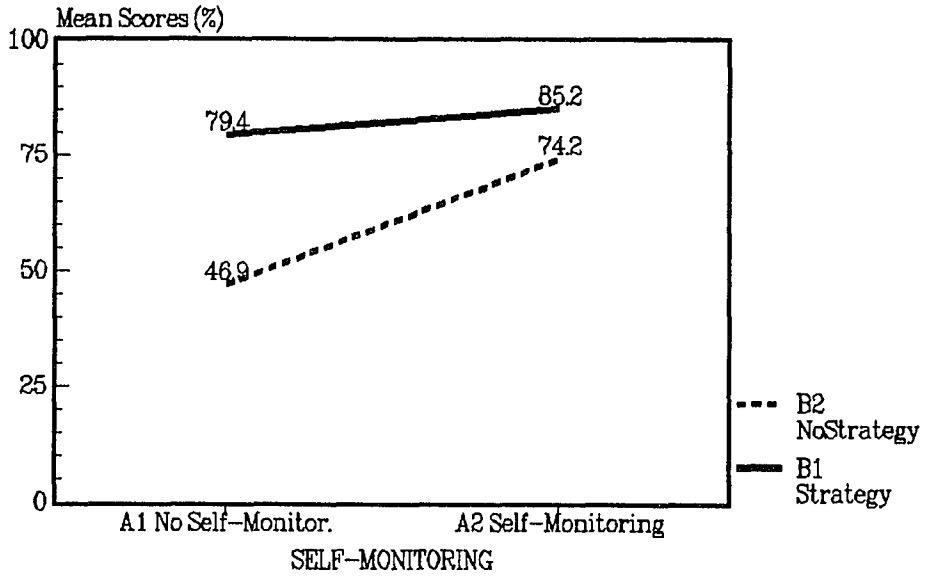
Table 3

Mean Spelling Accuracy Scores

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	85.2	74.2
SD	16.2	18.5
Strategy training only		
M	79.4	70.8
SD	16.5	16.8
Self-monitoring training only		
M	74.2	62.1
SD	23.5	21.0
No-treatment control		
M	46.9	45.4
SD	25.6	24.5
Dangling control		
M	39.8	40.0
SD	18.9	18.5

Note. *n* = 20 for each group.

Figure 2. Mean spelling accuracy training scores as a function of self-monitoring and strategy training.

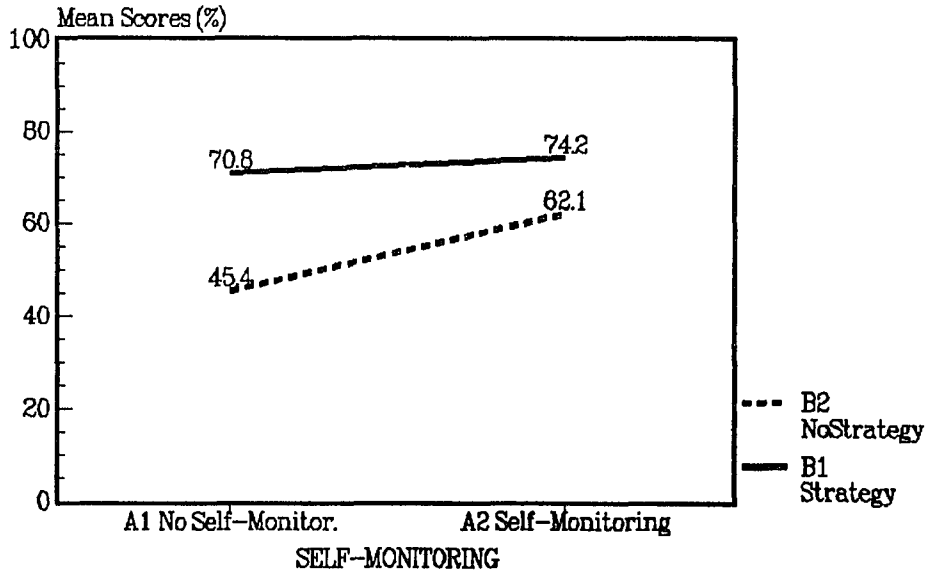


indicated that there was no significant difference among all three treatment means, $p < .05$. All three treatment means were significantly higher than the no-treatment control. Thus, all three treatment groups had a significant effect on spelling accuracy training.

Spelling accuracy transfer. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling accuracy transfer is presented in Table 3. There was no significant difference between the no-treatment control ($M = 45.40$) and the dangling

control (M = 40.00), t (38) = .79, p > .05. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 7.478, p < .05, and a strategy training main effect, F (1, 99) = 23.067, p < .05. The interaction effect of self-monitoring and strategy training was also significant, F (1, 99) = 3.635, p < .05. The interaction effect indicates that self-monitoring had an effect on spelling accuracy transfer when students were not given strategy training (see Figure 3).

Figure 3. Mean spelling accuracy transfer scores as a function of self-monitoring and strategy training.



Post-hoc comparisons using the Tukey-HSD test

indicated that there was no significant difference among all three treatment means, $p < .05$. However, only two treatment conditions (combined treatment, strategy training only) had a significant effect on spelling accuracy transfer as compared to the no-treatment control condition.

Self-Regulation Efforts

Highlighting. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on highlighting is presented in Table 4. There was no significant difference between the no-treatment control ($M = 45.30$) and the dangling control ($M = 42.61$), $t(38) = .38$, $p > .05$. Analysis of variance procedures indicated a significant self-monitoring main effect, $F(1, 99) = 8.198$, $p < .05$, and a strategy training main effect, $F(1, 99) = 25.851$, $p < .05$. The interaction effect of self-monitoring and strategy training was also significant, $F(1, 99) = 3.931$, $p < .05$. The interaction indicates that self-monitoring training had an effect on highlighting when students were not given strategy training (see Figure 4).

Post-hoc comparisons using the Tukey-HSD test

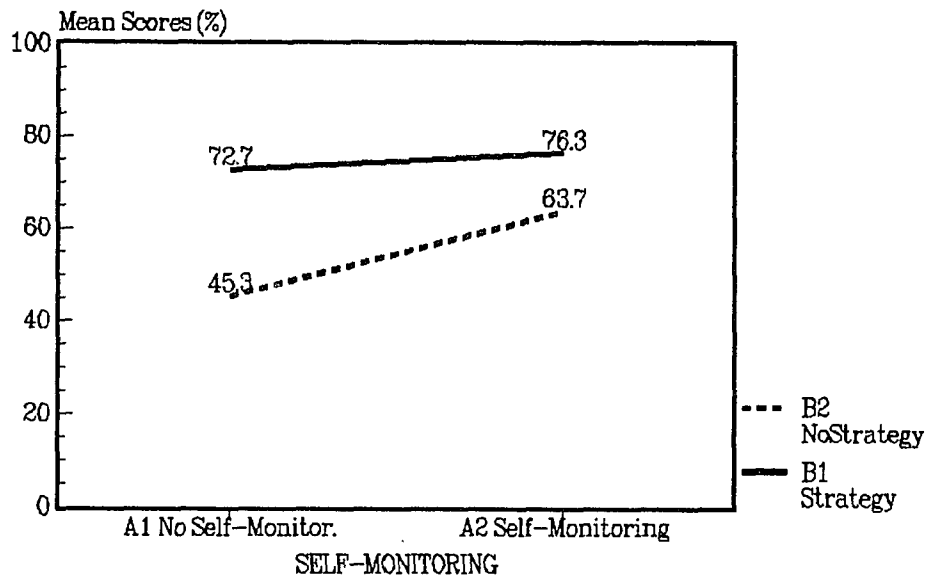
Table 4

Mean Highlighting Scores

Condition	Highlighting
Strategy training and self-monitoring	
M	76.3
SD	14.4
Strategy training only	
M	72.7
SD	15.9
Self-monitoring training only	
M	63.7
SD	21.5
No-treatment control	
M	45.3
SD	24.1
Dangling control	
M	42.6
SD	20.0

Note. *n* = 20 for each group.

Figure 4. Mean highlighting scores as a function of self-monitoring and strategy training.



indicated that there was no significant difference among all three treatment means, $p < .05$. All three treatment means were significantly higher than the no-treatment control. Thus, all three treatment groups had a significant effect on highlighting.

Self-correction. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on self-correction is presented in Table 5. There was no significant difference between the no-treatment control ($M = 43.86$) and the dangling control ($M = 33.00$), t

Table 5

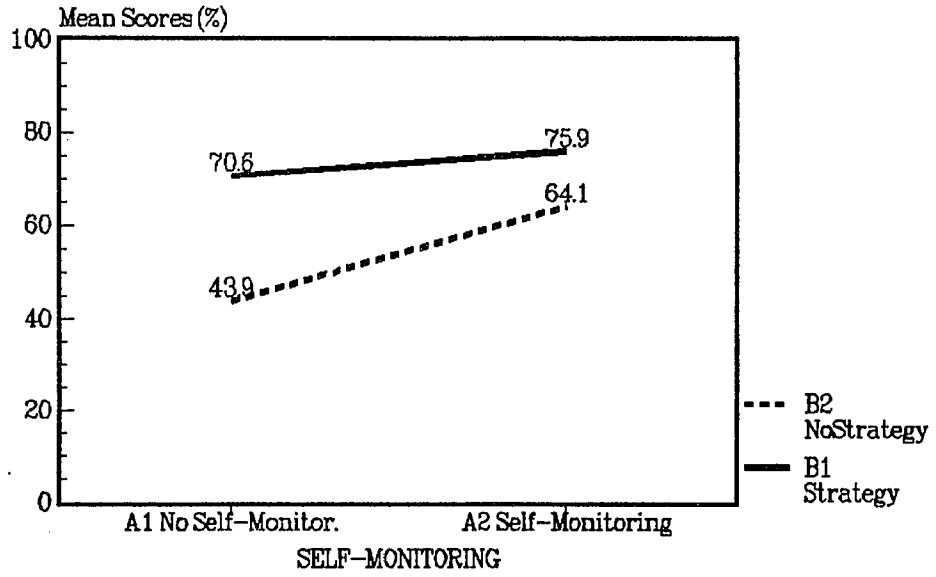
Mean Self-Correction Scores

Condition	Self-Correction
Strategy training and self-monitoring	
M	75.9
SD	14.4
Strategy training only	
M	70.6
SD	17.7
Self-monitoring training only	
M	64.1
SD	21.9
No-treatment control	
M	43.9
SD	23.5
Dangling control	
M	33.0
SD	20.2

Note. *n* = 20 for each group.

(38) = 1.57, $p > .05$. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 13.723, $p < .05$, and a strategy training main effect, F (1, 99) = 27.464, $p < .05$. The interaction effect of self-monitoring and strategy training was also significant, F (1, 99) = 5.951, $p < .05$. The interaction indicates that self-monitoring had an effect on self-correction when students were not given strategy training (see Figure 5).

Figure 5. Mean self-correction scores as a function of self-monitoring and strategy training.



Post-hoc comparisons using the Tukey-HSD test indicated that there was no significant difference

among all three treatment means, $p < .05$. All three treatment means were significantly higher than the no-treatment control. Thus, all three treatment groups had a significant effect on self-correction.

Self-Efficacy

Self-efficacy for detection. The summary of the group means involving the effects of self-monitoring, strategy training, and self-monitoring and strategy training on self-efficacy is presented in Table 6. There was no significant difference between the no-treatment control ($M = 72.56$) and the dangling control ($M = 77.34$), t (38) = -.96, $p > .05$. Analysis of variance procedures indicated a significant strategy training main effect, F (1, 99) = 3.358, $p < .05$. The interaction effect of self-monitoring and strategy training was not significant. Post-hoc comparisons using the Tukey-HSD test indicated no two groups were significantly different.

Self-efficacy for spelling. The summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training is presented in Table 6. There was no significant difference between the no-treatment control

Table 6

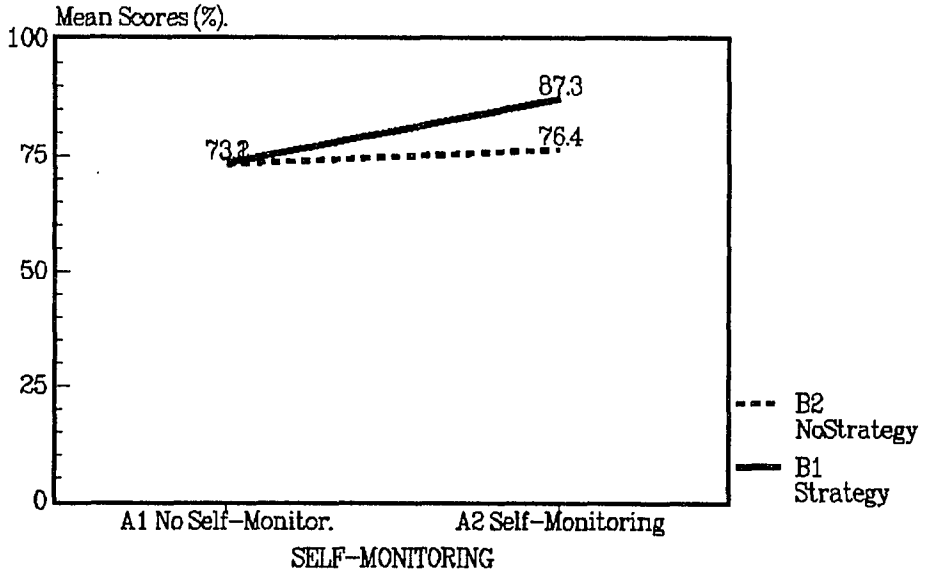
Mean Self-Efficacy Scores

Condition	Self-Efficacy	
	Detection	Spelling
Strategy training and self-monitoring		
M	82.2	87.3
SD	13.4	10.0
Strategy training only		
M	78.0	73.2
SD	10.5	20.1
Self-monitoring training only		
M	74.5	76.4
SD	15.0	13.2
No-treatment control		
M	72.6	73.1
SD	17.9	13.5
Dangling control		
M	77.3	77.1
SD	13.3	17.8

Note. *n* = 20 for each group.

(M = 73.12) and the dangling control (M = 77.10), t (38) = -.79, p > .05. Analysis of variance procedures indicated a significant self-monitoring main effect, F (1, 99) = 5.790, p < .05. The interaction effect of self-monitoring and strategy training was also significant, F (1, 99) = 4.014, p < .05. The interaction indicates that self-monitoring helps only those students given strategy training (see Figure 6).

Figure 6. Mean self-efficacy for spelling scores as a function of self-monitoring and strategy training.



Post-hoc comparisons using the Tukey-HSD test indicated that there was a significant difference between the combined treatment condition and the

following conditions: (a) the no-treatment group and (b) strategy training only group. Thus, the combined treatment had a significant effect on self-efficacy for spelling.

Types of Spelling Strategies

Items were grouped according to the 10 spelling strategies. Each strategy was measured on four tasks: (a) spelling recognition training, (b) spelling recognition transfer, (c) spelling accuracy training, and (d) spelling accuracy transfer. Spelling recognition measures are the yes/no responses to misspellings to indicate whether misspellings are correct or not. Spelling accuracy measures are the actual spellings to words that are marked no on spelling recognition measures.

To calculate each measure, the following procedures were followed. First, the total number of correct responses were divided by the total number of words within each strategy in order to standardize each measure. Second, the answers were transformed to percentages. Third, a 2 X 2 (Self-Monitoring X Strategy) ANOVA analyzed the scores derived from the second procedure to determine treatment effects on each

measure. For example, strategy 1 spelling recognition training scores were calculated by (a) taking the total correct responses and dividing by 4 (the total number of words within each strategy) for each case. If a person got preference and deterrence right and occurrence and reference wrong, that person's score would be 2 ÷ 4 = .50 or 50% after transformation. Then, the total scores (100 cases) were analyzed using an ANOVA procedure.

Spelling recognition training. A summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling recognition training is presented in Table 7. Analysis of variance procedures indicated a significant self-monitoring main effect for strategies 1, 3, and 5-10; a significant strategy training main effect for all strategies; and interaction effects for strategies 7, 9, and 10 (see Table 8). The interaction indicated self-monitoring had a greater effect on strategies 7 and 9, and less effect on strategy 10 as compared to strategy training. Thus, strategy training procedures were effective as planned and self-monitoring assisted acquisition of

Table 7

Mean Spelling Recognition Scores for Strategy 1

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	82.5	82.5
SD	24.5	24.5
Strategy training only		
M	68.8	70.0
SD	29.1	34.0
Self-monitoring training only		
M	65.0	70.0
SD	32.8	29.9
No-treatment control		
M	52.5	65.0
SD	31.3	32.8
Dangling control		
M	42.5	45.0
SD	33.5	39.4

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 2

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	85.0	62.5
SD	27.4	35.8
Strategy training only		
M	80.0	70.0
SD	20.8	41.0
Self-monitoring training only		
M	67.5	40.0
SD	29.4	26.2
No-treatment control		
M	51.3	32.5
SD	34.9	40.6
Dangling control		
M	50.0	40.0
SD	36.3	34.8

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 3

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	82.5	67.5
SD	29.4	29.4
Strategy training only		
M	72.5	65.0
SD	34.3	32.8
Self-monitoring training only		
M	62.5	55.0
SD	39.3	32.0
No-treatment control		
M	45.0	37.5
SD	39.4	35.8
Dangling control		
M	37.5	52.5
SD	35.8	30.2

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 4

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	87.5	90.0
SD	19.0	21.2
Strategy training only		
M	87.5	87.5
SD	22.2	19.4
Self-monitoring training only		
M	81.3	80.0
SD	32.3	23.3
No-treatment control		
M	68.8	64.2
SD	25.5	31.2
Dangling control		
M	63.8	61.7
SD	28.6	30.6

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 5

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	70.0	75.0
SD	37.7	30.3
Strategy training only		
M	62.5	77.5
SD	35.8	25.5
Self-monitoring training only		
M	62.5	70.0
SD	42.5	34.0
No-treatment control		
M	40.0	45.0
SD	34.8	39.4
Dangling control		
M	32.5	37.5
SD	33.5	35.8

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 6

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	97.5	80.0
SD	11.2	29.9
Strategy training only		
M	82.5	75.0
SD	24.5	34.4
Self-monitoring training only		
M	72.5	70.0
SD	38.0	41.0
No-treatment control		
M	40.0	37.5
SD	44.7	45.5
Dangling control		
M	37.5	40.0
SD	42.5	38.4

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 7

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	97.5	100.0
SD	11.2	.0
Strategy training only		
M	85.0	95.0
SD	32.9	22.4
Self-monitoring training only		
M	95.0	80.0
SD	15.4	37.7
No-treatment control		
M	60.0	62.5
SD	41.7	45.5
Dangling control		
M	45.0	47.5
SD	51.0	47.2

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 8

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	92.5	67.5
SD	18.3	29.4
Strategy training only		
M	90.0	56.3
SD	20.5	19.7
Self-monitoring training only		
M	85.0	63.8
SD	28.6	30.9
No-treatment control		
M	57.5	52.5
SD	37.3	30.2
Dangling control		
M	70.0	48.8
SD	25.1	30.9

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 9

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	95.0	67.5
SD	15.4	33.5
Strategy training only		
M	90.0	70.0
SD	20.5	37.7
Self-monitoring training only		
M	92.5	55.0
SD	18.3	35.9
No-treatment control		
M	45.0	50.0
SD	42.6	39.7
Dangling control		
M	62.5	42.5
SD	39.3	29.4

Note. *n* = 20 for each group.

Mean Spelling Recognition Scores for Strategy 10

Condition	Spelling Recognition	
	Training	Transfer
Strategy training and self-monitoring		
M	100.0	57.5
SD	.0	43.8
Strategy training only		
M	97.5	50.0
SD	11.2	45.9
Self-monitoring training only		
M	87.5	27.5
SD	27.5	34.3
No-treatment control		
M	52.5	32.5
SD	41.3	40.6
Dangling control		
M	20.0	25.0
SD	34.0	38.0

Note. *n* = 20 for each group.

Table 8

ANOVA of Self-Monitoring and Strategy Training Effects on Spelling Recognition Training, Strategies 1-10

Type	Self-monitoring	Strategy training	Self-Monitoring X Strategy Training	Total ETA Sqd.
1	6.02* (5.9%)	9.26* (8.8%)	NS	14.7%
2	NS	13.86* (12.6%)	NS	12.6%
3	4.37* (4.4%)	11.76* (10.9)	NS	15.3%
4	NS	6.45* (6.3%)	NS	6.3%
5	4.78* (4.7%)	4.78* (4.7%)	NS	9.4%
6	11.48* (10.7%)	22.83* (19.2%)	NS	29.9%
7	14.80* (13.4%)	5.99* (5.99%)	4.40* (4.4%)	23.7%
8	4.43* (4.4%)	8.95* (8.5%)	NS	12.9%
9	12.24* (11.3%)	9.60* (9.1%)	7.28* (7.1%)	27.5%
10	19.40* (16.8%)	36.53* (27.6%)	15.96* (14.3%)	58.7%

Note. F values appear without parentheses and ETA Sqd. values appear inside parentheses.

* $p < .05$.

most strategies but not all of them.

Spelling recognition transfer. A summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling recognition transfer is presented in Table 7. Analysis of variance procedures indicated a significant self-monitoring main effect for strategies 1, and 6-8; a significant strategy training main effect for all strategies except strategy 8; and an interaction for strategy 5 (see Table 9). The interaction indicated that strategy training had an effect on strategy 5 when no self-monitoring had occurred.

Spelling accuracy training. A summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling accuracy training is presented in Table 10. Analysis of variance procedures indicated a significant self-monitoring main effect for all strategies except strategy 4, a significant strategy training main effect for all strategies, and an interaction for strategies 6, 7, 9, and 10 (see Table 11). The interactions indicated strategy training had

Table 9

ANOVA of Self-Monitoring and Strategy Training Effects on Spelling Recognition Transfer, Strategies 1-10

Type	Self-monitoring	Strategy training	Self-Monitoring X Strategy Training	Total ETA Sqd.
1	3.97* (4.0%)	3.97* (4.0%)	NS	8.0%
2	NS	13.96* (12.7%)	NS	12.7%
3	NS	5.77* (5.7%)	NS	5.7%
4	NS	10.51* (9.9%)	NS	9.9%
5	NS	8.78* (8.4%)	5.04* (5.0%)	13.4%
6	5.19* (5.1%)	8.45* (8.1%)	NS	13.2%
7	4.10* (4.1%)	16.39* (14.6%)	NS	18.7%
8	4.21* (4.2%)	NS	NS	4.2%
9	NS	6.02* (5.9%)	NS	5.9%
10	NS	9.11* (8.7%)	NS	8.7%

Note. F values appear without parentheses and ETA Sqd. values appear inside parentheses.

* $p < .05$.

Table 10

Mean Spelling Accuracy Scores for Strategy 1

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	78.8	77.5
SD	30.6	30.2
Strategy training only		
M	68.8	67.5
SD	29.1	33.5
Self-monitoring training only		
M	65.0	67.5
SD	32.8	29.4
No-treatment control		
M	40.0	50.0
SD	30.8	42.9
Dangling control		
M	26.3	30.0
SD	27.5	29.9

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 2

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	83.8	60.0
SD	27.2	38.4
Strategy training only		
M	76.3	57.5
SD	26.3	43.8
Self-monitoring training only		
M	63.8	37.5
SD	29.8	27.5
No-treatment control		
M	45.0	27.5
SD	32.0	34.3
Dangling control		
M	46.3	32.5
SD	29.6	29.4

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 3

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	82.5	67.5
SD	29.4	29.4
Strategy training only		
M	70.0	65.0
SD	34.0	32.8
Self-monitoring training only		
M	62.5	55.0
SD	39.3	32.0
No-treatment control		
M	45.0	37.5
SD	39.4	35.8
Dangling control		
M	32.5	52.5
SD	33.5	34.3

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 4

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	87.5	90.0
SD	19.0	21.2
Strategy training only		
M	87.5	87.5
SD	22.2	19.4
Self-monitoring training only		
M	80.0	78.3
SD	34.0	23.0
No-treatment control		
M	65.0	58.3
SD	26.2	33.1
Dangling control		
M	55.0	55.8
SD	29.9	29.8

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 5

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	67.5	75.0
SD	37.3	30.3
Strategy training only		
M	62.5	77.5
SD	35.8	25.5
Self-monitoring training only		
M	62.5	67.5
SD	42.5	33.5
No-treatment control		
M	32.5	45.0
SD	37.2	39.4
Dangling control		
M	30.0	37.5
SD	34.0	35.8

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 6

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	90.0	72.5
SD	26.2	41.3
Strategy training only		
M	82.5	72.5
SD	24.5	38.0
Self-monitoring training only		
M	70.0	67.5
SD	41.0	40.6
No-treatment control		
M	35.0	37.5
SD	40.1	45.5
Dangling control		
M	30.0	32.5
SD	41.0	37.3

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 7

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	92.5	95.0
SD	24.5	22.4
Strategy training only		
M	85.0	90.0
SD	32.9	30.8
Self-monitoring training only		
M	92.5	80.0
SD	24.5	37.7
No-treatment control		
M	45.0	47.5
SD	48.4	49.9
Dangling control		
M	35.0	32.5
SD	48.9	46.7

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 8

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	92.5	66.3
SD	18.3	29.6
Strategy training only		
M	87.5	53.8
SD	22.2	21.9
Self-monitoring training only		
M	82.5	62.5
SD	29.4	32.9
No-treatment control		
M	55.0	47.5
SD	39.4	33.3
Dangling control		
M	65.0	46.3
SD	28.6	29.6

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 9

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	95.0	62.5
SD	15.4	35.8
Strategy training only		
M	87.5	70.0
SD	22.2	37.7
Self-monitoring training only		
M	90.0	52.5
SD	20.5	38.0
No-treatment control		
M	42.5	45.0
SD	43.8	39.4
Dangling control		
M	55.0	30.0
SD	42.6	29.9

Note. *n* = 20 for each group.

Mean Spelling Accuracy Scores for Strategy 10

Condition	Spelling Accuracy	
	Training	Transfer
Strategy training and self-monitoring		
M	85.0	52.5
SD	32.8	41.3
Strategy training only		
M	92.5	50.0
SD	24.5	45.9
Self-monitoring training only		
M	87.5	22.5
SD	27.5	34.3
No-treatment control		
M	42.5	27.5
SD	46.7	41.3
Dangling control		
M	17.5	12.5
SD	33.5	27.5

Note. *n* = 20 for each group.

Table 11

ANOVA of Self-Monitoring and Strategy Training Effects on Spelling Accuracy Training, Strategies 1-10

Type	Self-monitoring	Strategy training	Self-Monitoring X Strategy Training	Total ETA Sqd.
1	10.85* (10.2%)	15.08* (13.6%)	NS	23.8%
2	4.49* (4.5%)	17.54* (15.5%)	NS	20.0%
3	6.00* (5.9%)	11.99* (11.1%)	NS	17.0%
4	NS	9.70* (9.2%)	NS	9.2%
5	5.40* (5.3%)	5.40* (5.3%)	NS	10.6%
6	9.33* (8.9%)	22.56* (19.0%)	4.14* (4.1%)	32.0%
7	14.71* (13.3%)	8.27* (7.9%)	8.27* (7.9%)	29.1%
8	5.31* (5.2%)	9.87* (9.3%)	NS	14.5%
9	13.82* (12.6%)	11.13* (10.4%)	6.63* (6.5%)	29.5%
10	11.90* (11.0%)	17.14* (15.1%)	20.11* (17.3%)	43.4%

Note. F values appear without parentheses and ETA Sqd. values appear inside parentheses.

* $p < .05$.

a greater effect on strategies 6 and 10, and less effect on strategies 7 and 9 as compared to self-monitoring.

Spelling accuracy transfer. A summary of the group means involving effects of self-monitoring, strategy training, and self-monitoring and strategy training on spelling accuracy transfer is presented in Table 10. Analysis of variance procedures indicated a significant self-monitoring main effect for strategies 1, 4, 7, and 8; a significant strategy training main effect for all strategies except strategy 8; and interactions for strategies 5 and 7 (see Table 12).

Self-Efficacy as a Predictor

A multiple regression analysis was used to test the predictiveness of self-efficacy measures (self-efficacy for detection, self-efficacy for spelling) regarding spelling achievement, self-regulation efforts, and self-evaluation measures. Results, as shown in Table 13, indicated that self-efficacy for spelling contributed uniquely to (a) spelling recognition acquisition (during training), (b) spelling recognition transfer, (c) spelling accuracy transfer,

Table 12

ANOVA of Self-Monitoring and Strategy Training Effects on Spelling Accuracy Transfer, Strategies 1-10

Type	Self-monitoring	Strategy training	Self-Monitoring X Strategy Training	Total ETA Sqd.
1	6.94* (6.7%)	6.94* (6.7%)	NS	13.4%
2	NS	11.65* (10.8%)	NS	10.8%
3	NS	5.50* (5.4%)	NS	5.4%
4	4.87* (4.8%)	15.30* (13.8%)	NS	18.6%
5	NS	9.93* (9.4%)	4.29* (4.3%)	13.7%
6	NS	6.31* (6.2%)	NS	6.2%
7	7.63* (7.4%)	15.93* (14.2%)	4.62* (4.6%)	26.2%
8	5.16* (5.1%)	NS	NS	5.1%
9	NS	7.77* (7.5%)	NS	7.5%
10	NS	13.74* (12.5%)	NS	12.5%

Note. F values appear without parentheses and ETA Sqd. values appear inside parentheses.

* $p < .05$.

Table 13

Multiple Regression, Using Two Main Variables to Predict Spelling Recognition Training

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.475	.199	.302	2.382*
Self-Efficacy for Detection	.365	.223	.208	1.646

Multiple Regression, Using Two Main Variables to Predict Spelling Recognition Transfer

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.553	.175	.401	3.170*
Self-Efficacy for Detection	.147	.194	.096	.756

Multiple Regression, Using Two Main Variables to Predict Spelling Accuracy Training

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.429	.217	.251	1.979
Self-Efficacy for Detection	.485	.241	.255	2.010*

* $p < .05$

Multiple Regression, Using Two Main Variables to Predict Spelling Accuracy Transfer

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.572	.190	.381	3.004*
Self-Efficacy for Detection	.197	.212	.118	.928

Multiple Regression, Using Two Main Variables to Predict Highlighting

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.509	.185	.343	2.753*
Self-Efficacy for Detection	.319	.206	.193	1.550

Multiple Regression, Using Two Main Variables to Predict Self-Correction

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.476	.203	.298	2.345*
Self-Efficacy for Detection	.368	.226	.207	1.631

* $p < .05$

Multiple Regression, Using Two Main Variables to Predict Self-Evaluation for Spelling Recognition Training

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.344	.089	.412	3.850*
Self-Efficacy for Detection	.285	.100	.307	2.866*

Multiple Regression, Using Two Main Variables to Predict Self-Evaluation for Spelling Recognition Transfer

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.331	.102	.365	3.244*
Self-Efficacy for Detection	.312	.114	.309	2.748*

* $p < .05$

Multiple Regression, Using Two Main Variables to Predict Self-Evaluation for Spelling Accuracy Training

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.366	.097	.395	3.753*
Self-Efficacy for Detection	.352	.108	.342	3.248*

Multiple Regression, Using Two Main Variables to Predict Self-Evaluation for Spelling Accuracy Transfer

Variable	B	SE B	Beta	T
Self-Efficacy for Spelling	.315	.105	.331	3.000*
Self-Efficacy for Detection	.383	.117	.362	3.283*

* $p < .05$

(d) highlighting, and (e) self-correction. Correlations among these measures are in Table 14. Beta weights for a-e were .302, .401, .381, .343, and .298 respectively, $p < .05$. R^2 for a-c and e were .22, $p < .05$. R^2 for d was .25, $p < .05$. Self-efficacy for spelling also contributed uniquely to self-evaluation for (a) spelling recognition acquisition, (b) spelling recognition transfer, (c) spelling accuracy training, and (d) spelling accuracy transfer. Beta weights for a-d were .412, .365, .395, and .331 respectively, $p < .05$. R^2 for a-d were .44, .39, .46, and .41 respectively, $p < .05$.

Results also indicated that self-efficacy for detection contributed uniquely to self-evaluation for (a) spelling recognition training, (b) spelling recognition transfer, (c) spelling accuracy training, and (d) spelling accuracy transfer. Beta weights for a-d were .307, .309, .342, and .362 respectively, $p < .05$. R^2 for a-d were .44, .39, .46, and .41 respectively, $p < .05$. In addition, self-efficacy for detection contributed uniquely to spelling accuracy training. The beta weight and R^2 for spelling accuracy training was .255 and .22 respectively, $p < .05$.

Table 14

Correlations Among 12 Spelling Measures

	1	2	3	4	5	6
1	1.00	.98	.87	.87	.42	.45
2		1.00	.86	.89	.43	.43
3			1.00	.98	.38	.47
4				1.00	.39	.46
5					1.00	.71
6						1.00

Key:

1 = spelling recognition training
2 = spelling accuracy training
3 = spelling recognition transfer
4 = spelling accuracy transfer
5 = self-efficacy for detection
6 = self-efficacy for spelling

	7	8	9	10	11	12
1	.87	.88	.70	.63	.51	.48
2	.89	.90	.69	.64	.52	.51
3	.88	.87	.58	.53	.50	.47
4	.89	.90	.61	.55	.54	.51
5	.44	.42	.60	.62	.57	.60
6	.48	.44	.63	.64	.58	.59

Key:

7 = highlighting
8 = self-correction
9 = self-evaluation for spelling recognition training
10 = self-evaluation for spelling accuracy training
11 = self-evaluation for spelling recognition transfer
12 = self-evaluation for spelling accuracy transfer

	7	8	9	10	11	12
7	1.00	.95	.58	.53	.47	.45
8		1.00	.59	.55	.47	.46
9			1.00	.93	.84	.81
10				1.00	.83	.88
11					1.00	.96
12						1.00

Key:

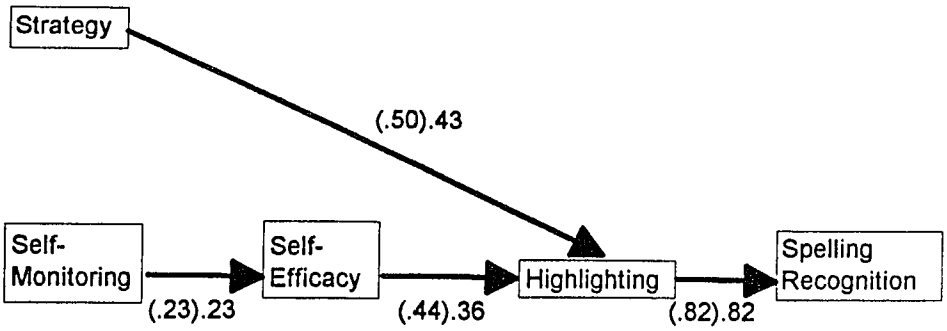
7 = highlighting
8 = self-correction
9 = self-evaluation for spelling recognition training
10 = self-evaluation for spelling accuracy training
11 = self-evaluation for spelling recognition transfer
12 = self-evaluation for spelling accuracy transfer

Path Analyses

Path analyses were conducted to test the causal links among the following variables: (a) self-monitoring, (b) strategy training, (c) self-efficacy, (d) highlighting, (c) self-correction, (d) spelling recognition, and (e) spelling accuracy. Because the correlation between highlighting and self-correction approximated 1.00, highlighting and self-correction could not be included as separate variables. As a result, two path models were generated: one model contained highlighting (see Figure 7) and the other contained self-correction (see Figure 8). The model containing highlighting used spelling recognition as a criterion variable instead of spelling accuracy because highlighting is strongly associated with spelling recognition. The model containing self-correction used spelling accuracy as a criterion variable because self-correction is strongly associated with spelling accuracy.

The results indicated that the proposed path models fit the obtained data. Therefore, in the case of the path models, none of the excluded paths attained statistical significance. The chi squares for the

Figure 7. Path Analysis Outcomes of Spelling Recognition

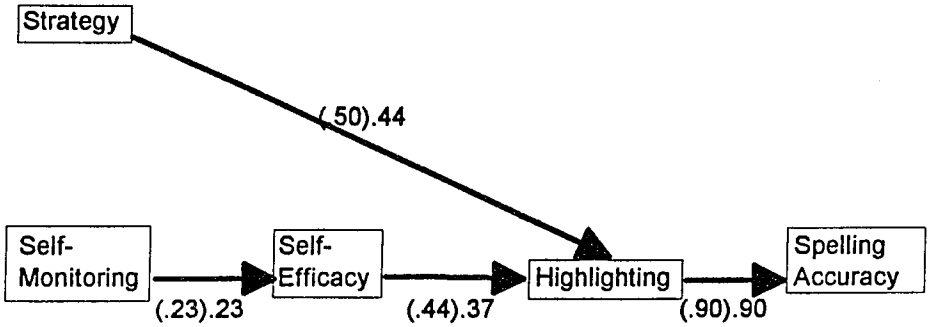


Note: The Pearson correlation coefficients appear inside parentheses, and the path coefficients appear outside parentheses.

All path coefficients are significant beyond the .05 level.

Chi Sq.(4) = 8.6, p = .07

Figure 8. Path Analysis Outcomes of Spelling Accuracy



Note: The Pearson correlation coefficients appear inside parentheses, and the path coefficients appear outside parentheses.

All path coefficients are significant beyond the .05 level.

Chi Sq.(4) = 8.47, p = .08

models containing highlighting and self-correction were 8.6, $p < .07$, and 8.47, $p < .08$ respectively. Results also indicated that self-monitoring influenced spelling achievement through self-efficacy and self-regulation efforts (highlighting, self-correction) whereas strategy training influenced spelling achievement through self-regulation efforts only. The results suggest that self-monitoring by itself does not have much influence on self-regulation efforts unless it is combined with self-efficacy.

CHAPTER V

Discussion

The findings provide support for Hypothesis 1: Strategy training has a significant effect on self-regulation efforts and spelling achievement as compared to no strategy training. This study shows that strategy training is effective on self-regulation efforts (highlighting, self-correction) and spelling achievement (spelling recognition, spelling accuracy). Strategies are systematic goal-oriented procedures that enhance learning and performance (Paris et al., 1983 cited in Schunk, 1989; Schunk, 1989). In this study, strategies involve spelling rules that teach learners how to correct any misspellings they have detected in various types of words. Strategies promote self-regulation because they direct people's attention to key procedures (e.g., rules) (Corno & Mandinach, 1983; Schunk, 1986). Assessment of self-regulation efforts and spelling achievement involved training and transfer measures. Transfer measures contained misspellings not covered in training but that follow the same rules as the misspellings in strategy training.

One explanation for the effectiveness of strategy

training on self-regulated efforts and spelling achievement is that strategy training consists of 10 specific spelling rules. The 10 spelling rules break down a complex skill such as spelling into simplified rule statements (Bandura, 1986; Zimmerman, 1983). Each rule is a group of interrelated items (Bransford, Sherwood, Vye, & Reiser, 1986; Jenkins, 1979; Perkins & Solomon, 1987; Pressley, Borkowski, & Schneider, 1987). For example, Strategy 5 pertains to words that all follow the rule: drop the e when adding a suffix to a vowel; retain the e when adding a suffix to a consonant. Because of their simplicity and generality, rules are easier to remember and understand than individual items (Bandura, 1986; Bower & Hilgard, 1981; Bransford et al., 1986; Brown & Campione, 1986; Brown, Collins, Duguid, 1989; Di Vesta, 1987; Jenkins, 1979; Mayer, 1987; Pressley et al., 1987; Wingfield & Byrnes, 1981). When understood, students can transfer spelling rules to other misspellings that follow the same rules (Bandura, 1986; Brown & Campione, 1986; Brown et al., 1989; Di Vesta, 1987; Mayer, 1987; Perkins & Solomon, 1989).

The findings also provide support for Hypothesis

2: Self-monitoring training has a significant effect on self-regulation efforts and spelling achievement as compared to no self-monitoring training. The study shows that self-monitoring training is effective on self-regulation efforts and spelling achievement. Self-monitoring promotes achievement because it is a process that includes observing and evaluating personal behaviors that one believes will improve learning (Bandura, 1986; Schunk, 1989). In this study, self-monitoring involves highlighting misspelled words for the purpose of distinguishing misspellings from correct spellings.

One possible reason that self-monitoring is effective on self-regulated efforts and spelling achievement is that self-monitoring involves a two-stage process: it requires the learner to (a) distinguish relevant stimuli (what needs to be learned, in this case, misspellings) from irrelevant stimuli (correct spellings), and (b) record some dimension of the relevant stimuli (Mace et al., 1989). This two-stage process may improve students' memory for spelling (Di Vesta, 1987; Fitzsimmons & Loomer, 1978; Gentry, 1987; Henderson, 1985; Lewis, 1985). For example,

during self-monitoring training, students make corrections using an alphabetized self-check list as they highlight misspellings. Highlighting is a recording technique that distinguishes misspellings from correct spellings so that students' awareness of the potential for misspellings is heightened. Students' memory of correct spellings is accessed during self-monitoring training which helps them detect and correct misspellings on the posttest measures. It allows them to compare their recalled standard with the misspellings on the posttests (Bandura, 1986; Lewis, 1985; Mayer, 1987; Schunk, 1989).

Self-monitoring effects are not as strong as strategy training effects on posttest transfer measures and self-regulated efforts. One explanation for this finding is that self-monitoring training does not provide the spelling standard for comparison. As mentioned earlier, spelling strategies help students transfer rules to other misspellings that follow the same rules (Bandura, 1986; Brown & Campione, 1986; Brown et al., 1989; Di Vesta, 1987; Mayer, 1987; Perkins & Solomon, 1989).

The findings also provide support for Hypothesis

3: Self-monitoring and strategy training has a significant effect on self-regulation efforts and spelling achievement as compared to the no-treatment control condition. The study shows that in general self-monitoring and strategy training had greater effects on self-regulation efforts and spelling achievement (training and transfer measures) than either of their separate effects. The greater effect of the combined treatment over the noncombined treatments may be due to the following: Strategies enable students to (a) remember correct spellings that are attributable to self-monitoring, and (b) monitoring helps them to self-evaluate misspellings. Together, they provide students with a complete feedback loop that enables the students to self-regulate their spelling (Kanfer, 1970; Zimmerman, 1989).

The findings indicate that strategy training is effective for all types of strategies except strategy 8 on the spelling recognition and spelling accuracy transfer measures. Strategy types refer to items on the posttests that are grouped according to the 10 spelling rules in this study so that there is a direct correspondence between strategy type and spelling rule.

Strategy training is more effective than self-monitoring because it provides students with standards that they can use to self-correct their performance and it is transferable to other words that follow the same rules.

Although strategy training is more effective than self-monitoring, strategy 8 was not effective on spelling recognition and spelling accuracy transfer measures. Strategy 8 sets rules for doubling a consonant. The ineffectiveness of strategy 8 on transfer measures may be due to a considerable number of exceptions to doubling a consonant, and the many conditions for the rule when doubling a t. For example, the rule for doubling a consonant does not hold if a suffix begins with a consonant such as -ness, -ly, -ful, or -ment, and a t is doubled only to words which end in a single consonant, the consonant is preceded by a single vowel, the word is accented on the final syllable, and the added suffix starts with a vowel. This rule may have been too confusing for students to transfer to words outside training that follow the same rule.

The findings also provide support for Hypothesis

4: Self-efficacy ratings predict self-regulation efforts, spelling achievement, and self-evaluation. Self-efficacy is people's perceived capabilities of attaining goals (Bandura, 1986; Schunk, 1989). The study shows self-efficacy for spelling contributes significantly to self-regulation efforts, spelling achievement, and self-evaluation. In contrast, perceived self-efficacy for spelling and for detecting errors lead to greater spelling recognition, spelling accuracy, and self-evaluative learning. According to Bandura (1986), self-efficacy predicts behavior because people are more motivated by their perceptions of competence. Self-efficacy for spelling is a better predictor than self-efficacy for detection on self-regulation efforts and spelling achievement because it is a more demanding measure of competence. Self-efficacy for spelling is an indicator of students' recall of correct spellings, whereas self-efficacy for detection is merely an indicator of students' recognition of misspelled words. Historically recall measures have been found to be much more demanding measures of learning than recognition measures (Wingfield & Byrnes, 1981). Recognizing that something

is wrong does not ensure knowledge of how to spell correctly.

The reason that both self-efficacy measures (detection and spelling) contribute significantly to predicting self-evaluation may be due to the fact that both self-efficacy and self-evaluation measures are ratings of students' spelling certainty. Self-efficacy is a measure of students beliefs about detecting and correcting misspellings before these skills are used; whereas self-evaluation is a measure of how sure students' are able to determine how well they detected and corrected misspellings after these skills are used. Both self-processes involve comparisons with a standard of success; however, with self-efficacy it involves estimated rather than observed personal performance.

The study also shows that students in the self-monitoring and strategy training condition (the combined treatment) had significantly higher self-efficacy for spelling scores than students in the no-treatment control condition and strategy only condition. This finding suggests that in order to increase students' self-efficacy for spelling, training programs should include self-monitoring and strategy

training. The fact that none of the treatments had a significant effect on self-efficacy for detection and that only the combined treatment had an effect on self-efficacy for spelling suggests that students are more confident of detecting misspellings than correcting misspellings and that they tend to overestimate their self-efficacy. A review of Tables 2-6 indicate these problems in interpreting these data.

Results from path analyses indicate that strategy training influences spelling achievement (spelling recognition, spelling accuracy) through self-regulation efforts (highlighting, self-correction), whereas self-monitoring influences spelling achievement through self-efficacy and self-regulation efforts. One explanation for these findings is that generally students do not know when they are not spelling accurately unless self-monitoring is involved. When students are given self-monitoring, they become more aware of what they do not know. However, students given self-monitoring only do not perform optimally. In order to perform optimally, students need strategy training because strategies provide standards students can use to self-correct their performance.

This study addresses the gap in the literature regarding difficulties adults have with spelling. As mentioned earlier, many adults repeatedly misspell words they commonly use because their misspellings appear correct. This study suggests that adults can improve their spelling when they use self-regulatory techniques that involve a combination of self-monitoring and strategy training. Self-monitoring helps learners discriminate correct spellings from misspellings. Strategy training helps learners correct misspellings once they have been identified.

Conclusion

The overall findings are consistent with the social-cognitive view of learning and performance which states that self-monitoring and strategy training improves self-regulation and academic achievement (Bandura, 1986; Schunk, 1989). Self-monitoring is effective because it involves (a) self-observation, (b) self-recording, and (c) self-evaluation (Corno & Mandinach, 1983; Pintrich et al., 1986; Schunk, 1986 cited in Schunk 1989). The spelling strategies used in this study are effective because they contain rules that are parsimonious and generative (Bandura, 1986;

Bransford et al., 1986; Brown & Campione, 1986; Brown et al., 1989; Pressley et al., 1987; Zimmerman, 1983). Strategies help transfer because they enable students to abstract rule elements from word-specific elements (Zimmerman, 1989).

Self-efficacy measures predict spelling achievement, self-regulation efforts, and self-evaluation. However, self-efficacy for spelling contributes more to the overall prediction than self-efficacy for detection. Strategy training influences spelling achievement (spelling recognition, spelling accuracy) through self-regulation efforts (highlighting, self-correction), whereas self-monitoring influences spelling achievement through self-efficacy and self-regulation efforts. In addition, self-efficacy for spelling measures are sensitive to increases in spelling competence as it is acquired if students are given self-monitoring and strategy training.

This study has several limitations. One, the findings of this study are limited to a population of adults (college students). As a result, the findings may not be generalizable to other populations (e.g.,

learning disabled, children, adults with no college experience). Two, the strategies that were used in this study were limited to 10 spelling rules selected from two books (Lewis, 1985; Lewis, 1989) and the supplement of a dictionary (Webster, 1969). The rules were chosen on the basis that they represent a significant number of words and that they were the most transferable. Therefore, the study is limited to rule governed aspects of spelling; the sample of misspellings in this study does not include misspellings that defy spelling rules. Words that have idiosyncratic spellings also make up a significant percentage of words that are misspelled (Fitzsimmons & Loomer, 1978; Gentry, 1987; Henderson, 1985). Mnemonics, a type of strategy designed to improve memory, are effective with individual words but because they are not transferable, they were not used in this study. In contrast, rules pertain to groups of words and therefore are transferable from a learning list to other lists that follow the same rules. Three, the study was not conducted in typical classroom environments due to the need for random assignment; instead, training was conducted in small groups. Four,

efforts should be made to measure the study's social validity: The students appeared to be satisfied but people's satisfaction should be verified in the future by using questionnaire items. Further research is needed to address the aforementioned limitations.

Implications and Future Direction

The findings suggest that many adults still have problems with spelling and that their problems with spelling can be overcome when they use self-monitoring and strategy training. These spelling problems are not merely the result of inattentive monitoring, but reflect gaps in knowledge of spelling rules. These rules provide standards that enable students to gauge their performance, and they are transferrable to other misspellings that follow the same rules. However, self-monitoring does increase one's sense of self-efficacy, and this has been found to increase self-motivation to learn (Bandura, 1986).

It was mentioned earlier that a major consequence of misspelling is that it brings the speller's competence into question, and this can in turn diminish his or her own prospects for personal or professional advancement. As a result, it is important for

employers and educators to address this issue at both job sites and institutions of learning. For example, employees could be given self-help spelling packets to help them spell words that are commonly misspelled on the job. These packets would contain the following features: (a) an explanation of the importance of spelling (e.g., consequences of misspelling regarding personal or professional advancement), (b) pretests, (c) written instructions on self-monitoring and use of the 10 strategies, (d) posttests, and (e) self-scoring devices for pretests and posttests. Or for example, educators who are interested in improving adult spelling might hand out similar packets to students in their classes who display rule related spelling problems. In addition to its cognitive effectiveness, a self-regulative training program also increases students' motivation to learn because self-monitoring and strategy training have been found to increase learners' perceived self-efficacy.

A critic might contend that society no longer needs to worry about spelling incompetence because computer spell checkers have eliminated this problem. The availability of computer spell checkers is not a

panacea because such checkers provide only limited assistance in highlighting suspect words. The ultimate decision to change a spelling depends on spelling knowledge and skill of user. Indeed, it can be argued that availability of computerized spell checkers will raise the standards of spelling accuracy that will be expected of professionals in the future and increase the importance of spelling rule skills. Ultimately, if students lack a sense of efficacy to self-regulate the spelling accuracy of their written work, they will try to avoid tasks involving writing including the use of spell checkers.

APPENDIX A

STRATEGY SELF-CHECK LIST

Strategy 1. Words with double or single r.

1. occurrence
2. preference
3. deterrence
4. reference

Strategy 2. Words that end in -able and -ible.

5. detectable
6. acceptable
7. tangible
8. compatible

Strategy 3. Words that end in -ery or -ary.

9. confectionery
10. discretionary

Strategy 4. Words with prefixes miss-, mis-, diss-, and dis-.

11. misapprehend
12. disagree
13. misstate
14. dissatisfy

Strategy 5. Words that drop or retain the final e.

15. disparagement
16. desirable

Strategy 6. Words that retain e after c and e after g with a suffix.

17. noticeable
18. manageable

Strategy 7. Words with -ally endings.

19. systematically
20. academically

Strategy 8. When to double a consonant.

21. planning
22. intermittent

Strategy 9. When to change y to i.

23. embodiment

24. angrily

Strategy 10. Words that have a k after c.

25. picnicking

26. mimicking

APPENDIX B

ALPHABETIZED SELF-CHECK LIST

1. academically
2. acceptable
3. angrily
4. compatible
5. confectionery
6. desirable
7. detectable
8. deterrence
9. disagree
10. discretionary
11. disparagement
12. dissatisfy
13. embodiment
14. intermittent
15. manageable
16. mimicking
17. misapprehend
18. misstate
19. noticeable
20. occurrence
21. planning
22. picnicking
23. preference
24. reference
25. systematically
26. tangible

APPENDIX C

LIST OF CORRECTLY SPELLED AND MISSPELLED WORDS

1. occurrence
2. preference
3. deterence
4. reference
5. acceptable
6. detectible
7. tangible
8. compatable
9. confectionary
10. discretionary
11. misapprehend
12. dissagree
13. misstate
14. disatisfy
15. disparagement
16. desireable
17. noticeable
18. managable
19. systematicly
20. academically
21. planning
22. intermitent
23. embodyment
24. angrily
25. picnicing
26. mimicing

APPENDIX D

SELF-EFFICACY TO DETECT MISSPELLED WORDS

1. incurrence and concurence
2. conferrence and inference
3. profitible and personable
4. credable and susceptible
5. distillery and millinary
6. sedentary and dignitery
7. mispend and misshapen
8. mistake and missread
9. disseminate and disimilar
10. disconnect and dissapprove
11. proveable and lovable
12. statement and truness
13. servicable and embraceable
14. salvagable and advantageous
15. emphaticly and artistically
16. quized and controlled
17. transmitted and acquited
18. emptyness and loveliness
19. frolicer and traficker

APPENDIX E

SELF-EFFICACY FOR SPELLING WORD PAIRS

1. incurence and concurence
2. conferrence and inferrence
3. profitible and personible
4. credable and susceptable
5. distillary and millinary
6. sedentery and dignitery
7. mispend and mishapen
8. misstake and missread
9. diseminate and disimilar
10. dissconnect and dissapprove
11. proveable and loveable
12. statment and truness
13. servicable and embracable
14. salvagable and advantagous
15. emphaticly and artisticly
16. quized and controled
17. transmited and acquited
18. emptyness and lovelyness
19. frolicer and trafficer

APPENDIX F

SCHUNK AND HANSON'S (1985) SELF-EFFICACY SCALE

10	20	30	40	50	60	70	80	90	100
Not Sure			Somewhat Sure			Pretty Sure			Really Sure

APPENDIX G

Psychological Service and the Mentally Retarded

Mental retardation is the embodyment of noticable deficits in intelligence and behavior. Contrarywise, giftedness means intelligence and behavior that is above normal. There are different ways psychologists try to remedy these problems. One is by treatment planing. Two is by counseling. Three is by formal evaluations. Four is by staff training. Five is by supervision.

Treatment plans are used systematicly to do several things. One is to reduce problem behaviors such as rebeliousness. Two is to increase good behaviors such as working. Treatment plans that cut problem behaviors take note of several factors. Factor one looks at causes of problem behaviors. For example, disparagments and mimicing. Another is warning signs. For example, a client's dissapproving looks. A third factor is a plan for each problem behavior. A fourth is actions to prevent problems. Sometimes, retarded people have problems that are not easily detectible. For example, they may missapprehend and missconstrue events. This can cause them to react angryly.

The main goal of treatment is to cut problem occurences to a level acceptible to others. Intermitent reinforcement is key. For example, give the person tangable rewards on a schedule. One reward can be confectionary. Another example is offering the person a choice of preferrences. Sometimes treatment stresses deterence (e.g., fines). Problem recurence can be reduced these ways.

Treatment is also designed analyticly to increase desireable behaviors. It cuts down the skill or task into smaller pieces. As a result, the retarded person can achieve success one step at a time.

Counseling is a talk between a client and a counselor. It is also a talk among clients and one or more counselors. The major aim of counseling is to improve behaviors. Clients have to be commited to this for it to work. Another factor that helps is encouragment from others. Discretionery use of confrontation in counseling helps break certain intractible behaviors. An example is resistance. A goal of counseling is to increase social compatability. This is done by teaching clients to cope with dissagreements and dissappointments. With practice,

they may be able to cope automaticly.

"Evaluations" are written reports about clients. They are written on official stationary. These often include a commentery. They can serve as a referrence for those who need information. They are used in conferrences and commitee meetings.

Treatment plans are enforcable through staff training. This makes problems managable. Reviewing treatment procedures among staff ensures that they are not mistated. Eventually, they become unforgetable. The way the psychologist and staff get along in training is invalueable. Each can learn from the other. This prevents serious misteps and misshaps. Treatment plans, of course, are not infallable. They often have to be revised to meet changable conditions.

Psychologists also oversee interns from academicly-approved programs. This guidance is more rewarding than disatisfying. It is not always easy to evaluate retarded people. It is a diservice to evaluate them in just a few situations rather than many. For example, psychologists can learn a lot about the retarded by relaxing with them. Examples of such activities are picnicing, bivouacing, and shellacing

furniture. Besides, such activities can bring merryment to staff and clients alike.

APPENDIX H

SPELLING POSTTEST - TRAINING

1. dissagree	[yes/no]	_____
2. desireable	[yes/no]	_____
3. academicly	[yes/no]	_____
4. preferrence	[yes/no]	_____
5. noticable	[yes/no]	_____
6. disatisfy	[yes/no]	_____
7. deterence	[yes/no]	_____
8. disparagment	[yes/no]	_____
9. compatable	[yes/no]	_____
10. referrence	[yes/no]	_____
11. embodyment	[yes/no]	_____
12. discretionery	[yes/no]	_____
13. intermitent	[yes/no]	_____
14. picnicing	[yes/no]	_____
15. acceptible	[yes/no]	_____
16. occurence	[yes/no]	_____
17. managable	[yes/no]	_____
18. confectionary	[yes/no]	_____
19. systematicly	[yes/no]	_____
20. tangable	[yes/no]	_____
21. mistate	[yes/no]	_____

22. angryly	[yes/no]	_____
23. detectible	[yes/no]	_____
24. planing	[yes/no]	_____
25. missapprehend	[yes/no]	_____
26. mimicing	[yes/no]	_____

APPENDIX I

SPELLING POSTTEST - TRANSFER

1. infallable	[yes/no]	_____
2. missconstrue	[yes/no]	_____
3. recurence	[yes/no]	_____
4. encouragment	[yes/no]	_____
5. unforgetable	[yes/no]	_____
6. mistep	[yes/no]	_____
7. merryment	[yes/no]	_____
8. bivouacing	[yes/no]	_____
9. dissappointment	[yes/no]	_____
10. misshap	[yes/no]	_____
11. contrarywise	[yes/no]	_____
12. automaticly	[yes/no]	_____
13. invalueable	[yes/no]	_____
14. commentery	[yes/no]	_____
15. commited	[yes/no]	_____
16. rebeliousness	[yes/no]	_____
17. conferrence	[yes/no]	_____
18. enforcable	[yes/no]	_____
19. commitee	[yes/no]	_____
20. shellacing	[yes/no]	_____
21. I want some <u>stationary</u>	[yes/no]	_____

22. diservice	[yes/no]	_____
23. changable	[yes/no]	_____
24. intractible	[yes/no]	_____
25. analyticly	[yes/no]	_____
26. dissapprove	[yes/no]	_____

APPENDIX J

SCRIPT FOR SPELLING PRETEST

The experimenter said to the students, "I would like you to turn over your paper. I have given you a list of 52 words that are either spelled correctly or misspelled. I would like you to indicate whether the words are correctly spelled by circling a yes or misspelled by circling a no. Next to the yes/no responses, you will notice a blank space. I would like you to write the correct spelling of any words that you think are incorrect even if you are not sure how to spell them. Do the best you can. When you are finished, raise your hand and I will collect your papers. Does everyone understand?" If there was a need for clarification, the experimenter repeated the instructions until everyone understood. If there was no need for clarification, the experimenter said, "Print your name at the top of your paper and your date of birth. When you have finished, I want you to turn your papers over, raise your hand, and I will collect your papers. Begin." After 30 minutes, the experimenter said to anyone still working, "Please finish up."

APPENDIX K

SCRIPT FOR STRATEGY TRAINING

The videotape of strategy training contains the following script. The beginning of the script was omitted when the 8mm Tape was copied on a VHS tape and is indicated in parentheses. The experimenter said the beginning of the script, told the students to take notes, and then played the tape. ("People often misspell words because they look correct. The following words are commonly mistaken.) I am going to teach you to spell each of these problem words correctly."

Strategy 1. "There are 10 spelling strategies you must know. The first strategy has to do with verbs that end in the letter r. Some of these verbs require that you double the r when you add -ence to the verb." The experimenter pointed to the -ence endings of the nouns (a) oc-CUR + ence and (b) de-TER + ence on the flipchart as he spoke. "Notice that each word is accented on the last syllable and that a single vowel precedes the r." The experimenter pointed to the verbs (a) oc-CUR and (b) de-TER on the flipchart as he said the verbs. "Every verb ending in r preceded by a

single vowel and accented on the final syllable forms its noun with -ence. After -ence is added to form the nouns of these verbs you will notice that the accent remains on the same syllable of these verbs." The experimenter pointed to oc-CUR-ence and de-TER-ence on the flipchart. "Notice that the accent remains on the final syllable. When the accent remains on the final syllable, we double the r." The experimenter pointed to the double r's in (a) oc-CUR-rence and (b) de-TER-rence on the flipchart.

"There are some verbs ending in r which do not require doubling the r. The r is not doubled because the accent shifts back to the first syllable when you add -ence. PRE-fer-ence, RE-fer-ence. Notice that the accent is on the first syllable when you add -ence." The experimenter pointed to PRE-fer-ence and RE-fer-ence on the flipchart and emphasized the accent of the first syllable. The experimenter said each word.

Strategy 2. "The second strategy has to do with words ending in -able and -ible. Some of these words have root words that are full words such as detectable and acceptable." The experimenter pointed to the words on the flipchart. "These are the root words. Notice

that they are full words. The root words are accept and detect." The experimenter pointed to the root words detect and accept. "An exception is the word irresistible." The experimenter pointed to the word irresistible on the flipchart.

"Words ending in -ible do not have roots that are words. Tangible, compatible. Notice that the roots of these words are tang- and compat-. These roots are not words so they require an -ible ending." The experimenter pointed to the roots and endings on the flipchart.

Strategy 3. "The third strategy has to do with words that end in -ery or -ary. When you drop the y of -ery words, you will be left with common, everyday words describing the performers of an action. Take the word confectionery. Notice that when you drop the y of this word it becomes confectioner which means one who sells candy." The experimenter pointed to confectionery and confectionery with the y crossed out on the flipchart. "The exceptions are (a) cemetery, (b) monastery, and (c) dysentery." The experimenter pointed to the exceptions on the flipchart.

"One example of a word that ends in -ary is

discretionary." The experimenter pointed to this word on the flipchart as the experimenter said the word. "Notice that when you drop the y of this word, you are not left with a common, everyday word describing the performer of an action. There is no performer called discretionar even though there is a word called discretion." The experimenter pointed to discretionary with the y crossed out as he spoke.

Strategy 4. "The fourth strategy is when to use the prefix miss-, mis-, diss-, and dis- before a word. If the root word starts with an s, then there is a double s in the prefix. For example, when we add the prefix mis- to the root word state which begins with an s, we get misstate." The experimenter pointed to the prefix and root word separately and then together on the flipchart. "Notice the double s in the word misstate." The experimenter pointed to the double s in the word misstate.

"The prefix mis- is used if the root word does not start with the letter s. For example, when we add the prefix mis- to the root word apprehend which does not begin with an s, we get misapprehend." The experimenter pointed to the prefix and the root word

separately and together on the flipchart. "Notice the single s in the word misapprehend." The experimenter pointed to the single s in the word misapprehend.

"The same rule for miss- and mis- holds true for diss- and dis-. For example, if the root word starts with s, then there is a double s in the prefix. When we add the prefix dis- to the root word satisfy which begins with an s, we get dissatisfy." The experimenter pointed to the prefix and root word separately and together on the flipchart. "Notice the double s in the word dissatisfy." The experimenter pointed to the double s in the word dissatisfy.

"The prefix dis- is used if the root word does not start with the letter s. For example, when we add dis- to the root word agree which does not begin with an s, we get disagree." The experimenter pointed to the prefix and the root word separately and together on the flipchart. "Notice the single s in the word disagree." The experimenter pointed to the single s in the word disagree.

Strategy 5. "The fifth strategy has to do with when to drop or retain the final e in a word. When you add a suffix that begins with a vowel, you drop the e.

The word desire ends in e." The experimenter pointed to this word that has the final e underlined on the flipchart. "Notice that when we add a suffix such as -able, that begins with a vowel, to this word, we drop the final e." The experimenter pointed to where the final e is deleted and the underlined suffix on the flipchart.

"The final e is retained when you add a suffix that begins with a consonant. For example, the word disparage plus the suffix -ment becomes disparagement." The experiment pointed to the word, the suffix, and the entire word on the flipchart. "The following words are important exceptions: Wise + dom = wisdom (no e), due + ly = duly (no e), true + ly = truly (no e), whole + ly = wholly (no e), argue + ment = argument (no e), and awe + ful = awful (no e). These are exceptions." The experimenter pointed to the exceptions on the flipchart.

Strategy 6. "The sixth strategy has to do with retaining e after c and e after g when a suffix is added. The letter c is usually soft, like s, before the softening vowels e, i, and y." The experimenter pointed to these vowels on the flipchart under the

heading soft c as he said them. "The letter c is usually hard, like k, before hardening vowels a, o, and u." The experimenter pointed to these vowels on the flipchart under the heading hard c as he said them. "Let's look at the word notice. The c is soft like s before the softening vowel e. Everyone say notice." The experimenter pointed to the word on the flipchart. "If we add a suffix, -able, to the word notice, we retain the e to keep the c soft so that the c has an s sound. Everyone say noticeable." The experimenter pointed to noticeable on the flipchart. "Otherwise, if the e was dropped as in noticable, the c would have a hard k sound. Everyone say noticable." The experimenter pointed to the word noticable on the flipchart.

"The same rule for e after c holds true for e after g when a suffix is added. G, like c, is soft before the softening vowels e, i, y, and consonant d." The experimenter pointed to the vowels and consonant d on the flipchart under the heading soft g as he said them. "The letter g is usually hard before the hardening vowels a, o, and u, and consonants." The experimenter pointed to the vowels on the flipchart

under the heading hard g and mentioned consonants. "Let's look at the word manage. The g is soft before the softening vowel e. Everyone say manage." The experimenter pointed to the word on the flipchart. "If we add a suffix, -able, to the word manage, we retain the e to keep the g soft. Everyone say manageable." The experimenter pointed to the word manageable and its parts, manage, and -able on the flipchart.

Strategy 7. "The seventh strategy has to do with words ending in -ally. If an adjective ends in -ic then we add -ally to the end of the word to make it an adverb. For example, we add -ally to form adverbs, systematically and academically." The experimenter pointed to ic, ally, and the adverbs on the flipchart.

Strategy 8. "The eighth strategy has to do with when to double a consonant and when to leave it alone. The doubling principle applies largely to verbs. A verb is a word that shows action. If a one-syllable verb ends in a consonant and that consonant is preceded by a single vowel, then we double the final consonant before adding a suffix that starts with a vowel such as -ing, -ed, -es, or -er. For example, the verb plan becomes plan-ning when we add -ing." The experimenter

pointed to the parts of planning, the word planning, and the suffixes on the flipchart. "If a suffix begins with a consonant such as -ness, -ly, -ful, or -ment, the rule does not hold. For example, when we add the suffix -ness to the word wet, it becomes wetness not wettness with a double t." The experimenter pointed to the parts of wetness, the word wetness, and the suffixes on the flipchart.

"We double the t only to words which end in a single consonant, the consonant is preceded by a single vowel, the word is accented on the final syllable, intermit, and the added suffix starts with a vowel. For example, the word intermit has a single consonant t, the t is preceded by a single vowel i, the final syllable is accented so that when we add the suffix -ent, we form the word intermittent." The experimenter pointed to intermit, the -ent suffix, intermit-ent, and intermittent on the flipchart. "Intermittent. The accent is on this syllable, the final syllable of the word intermit." The experimenter pointed to the final syllable for emphasis.

Strategy 9. "The ninth strategy has to do with words ending in -y preceded by a consonant. Change the

y to an i when you add a suffix that begins with any letter except i and the possessive sign apostrophe (') s." The experimenter pointed to y and i with an arrow pointing toward the i and dy of embody to illustrate this point. "For example embody becomes embodiment and angry becomes angrily when you add the suffix -ment to embody and -ly to angry." The experimenter pointed to embody, embodiment, ment, angry, angrily, and ly. "If you add -ing to the word defy, you would not change the y to an i and the product would be defying because the suffix begins with an i. When you add the apostrophe 's to a word that ends in y such as everybody, it becomes everybody's." The experimenter pointed to all relevant letters, parts of the words, and the words themselves to illustrate this point on the flipchart.

Strategy 10. "The tenth strategy has to do with when to use k after c when you add a suffix. If you add the suffix -ing to the words picnic and mimic, you would get PIK-niss-ing and MI-miss-ing because c before i is soft." The experimenter pointed to the root words, suffixes, and the root words and suffixes on the flipchart to illustrate this point. "In order to keep the c hard, we have to slip in a k between the c and

the i to keep the c hard so that the correct spellings are picnicking and mimicking." The experimenter pointed to the words picnicking and mimicking on the flipchart. "This concludes the strategy presentation. I am giving you a handout that summarizes the strategies that I have just taught. I would like you to study this handout." Then, the experimenter passed out the strategy lists (see Appendix A) to each student. The following is not on the videotape: After 10 minutes, the experimenter said to anyone still studying, "You have a few more minutes and then we will move on."

APPENDIX L: SCRIPT FOR NONSTRATEGY SELF-CHECK LIST

The experimenter said after students finished their pretests, "I have given you a handout of correct spellings. I would like you to study this handout." After 10 minutes, the experimenter said to anyone still studying, "You have a few more minutes and then we will move on."

APPENDIX M: SCRIPT FOR SELF-MONITORING

The experimenter said after the lists were distributed to each subject, "I am giving you another list to look at. Half of the words are misspelled, the other half correctly spelled. I would like you to correct those words that you think are misspelled. You should use the word list (the self-check lists) given to you before to see if your corrections were accurate. If a word is incorrectly spelled, highlight it in yellow and correct it in pencil. When you are finished, review the highlighted words until you can spell them from memory. Research has shown that highlighting words and practicing them can greatly improve your spelling memory. Print your name on the paper and when you have finished, raise your hand, and I will collect your paper. Does everyone understand?" There was a pause in the tape so that the experimenter was able to stop the tape to answer any questions if necessary. If there was no need for clarification, the tape continued with the experimenter saying, "Begin." The following is not on the tape: After 10 minutes, the experimenter said to anyone still working, "Please finish up." At the end of self-monitoring training,

the experimenter said, "The highlighter is important in learning to spell. Please use it."

APPENDIX N

SCRIPT FOR SELF-EFFICACY TO DETECT MISSPELLED WORDS

The experimenter said the following after he distributed copies of Self-Efficacy to Detect Misspelled Words (see Appendix D), the Self-Efficacy scale (see Appendix F), and had drawn the Self-Efficacy scale on the board, "I am going to give you copies of 19 pairs of words. One word in each pair is spelled incorrectly. I want you to tell me how sure you are that you can detect the misspellings in each pair by writing a number next to the pairs on a scale from 10 to 100 using the scale I have given you. For example, if you are not sure you can detect a misspelled word in each pair, you would say 10." The experimenter pointed to the number 10 on the blackboard. "If you are somewhat sure you can detect a misspelled word in each pair, you would say 40." The experimenter pointed to the number 40 on the blackboard. "If you are pretty sure you can detect a misspelled word in each pair, you would say 70." The experimenter pointed to the number 70 on the blackboard. "If you are really sure you can detect a misspelled word in each pair, you would say 100." The experimenter pointed to the number 100 on

the blackboard. Any questions?" If necessary, the experimenter answered any questions until the experimenter was convinced that everyone understood the procedure. If there were no questions, the experimenter said, "Print your name on the top of your paper and I will collect them when you have finished. Begin." After 5 minutes, the experimenter said to anyone still working, "Please finish up."

APPENDIX O

SCRIPT FOR SELF-EFFICACY FOR SPELLING WORD PAIRS

The experimenter said, "Now I am going to give you copies of the same word pairs except both words in each pair are misspelled (see Appendix E). I would like you to tell me how sure you are that you can spell the kinds of words in each pair by giving a number for each pair using the same scale that you used for the list of word pairs that were just given to you. The scale is also on the board." The experimenter pointed to the scale. "Remember that you are rating how sure you are you can spell the kinds of words in each word pair not how sure you are you can detect the misspelled word in each pair. Any questions?" If necessary, the experimenter answered any questions until the experimenter was convinced that everyone understood the procedure. If there were no questions, the experimenter said, "Print your name on your paper and I will collect them when you have finished. Begin." After 5 minutes, the experimenter said to anyone still working, "Please finish up."

APPENDIX P

SCRIPT FOR PERFORMANCE ESSAY

The experimenter said, "I have given you an essay to read and as you read the essay, highlight any words that do not look right to you and correct them in pencil. You may use a dictionary to check any words that you are unsure about (for the dangling control group, students will be told not to use a dictionary). Please work on your own without talking. Print your name on your copy. When you have finished, turn your paper over, raise your hand, and I will collect them. Any questions?" If there were any questions, the experimenter went over any part of the instructions requiring clarification. If there were no questions, the experimenter said, "Begin." After 30 minutes, the experimenter said to anyone still working, "Please finish up."

APPENDIX Q

SCRIPT FOR SPELLING POSTTEST

The experimenter said to the students, "I would like you to turn over your paper. I have given you a list of 52 words that are either spelled correctly or misspelled. I would like you to indicate whether the words are correctly spelled by circling a yes or misspelled by circling a no (the experimenter will point to the yes/no responses on his or her copy of the posttest). Next to the yes/no response, you will notice a blank space. I would like you to write the correct spelling of any words that you indicated were incorrect through your no responses even if you are not sure how to spell them (the experimenter will point to the blank spaces on his or her copy). Do the best you can. Do you understand?" If there was a need for clarification, the experimenter repeated the instructions until everyone understood. If there was no need for clarification, the experimenter said, "I want to go over the next two sections because you can do them as you circle the responses and make corrections in the blank spaces."

APPENDIX R

SCRIPT FOR SELF-EVALUATION TO DETECT MISSPELLED WORDS

The experimenter said, "Immediately to the right of the yes/no responses (the experimenter pointed to the right of the yes/no responses on his copy), I want you to give me a number using the scale I have given you to indicate how sure you are that your circled responses are correct (the experimenter pointed to the yes/no responses on his copy). For example, if you are not sure that you have circled the correct response, you would write 10 (the experimenter pointed to the number 10 on the blackboard) to the right of the yes/no response (the experimenter pointed to the yes/no responses on his copy). If you are somewhat sure that you have circled the correct response, you would write 40 (the experimenter pointed to the number 40 on the blackboard) to the right of the yes/no response (the experimenter pointed to the yes/no responses on his copy). If you are pretty sure that you have circled the correct response, you would write 70 (the experimenter pointed to the number 70 on the blackboard) to the right of the yes/no response (the experimenter pointed to the yes/no responses on his

copy). If you are really sure that you have circled the correct response, you would write 100 (the experimenter pointed to the number 100 on the blackboard) to the right of the yes/no response (the experimenter pointed to the yes/no responses on his copy). Do you understand?" If there was a need for clarification, the experimenter repeated the instructions until everyone understood. If there was no need for clarification, the experimenter continued to the next section.

APPENDIX S

SCRIPT FOR SELF-EVALUATION FOR SPELLING

The experimenter said, "After you have done that, I want you to give me a number using the same scale to indicate how sure you are that you can spell each word without any assistance (the experimenter pointed to the blanks on his copy of the posttest) to any yes or no responses. If you are not sure that you have spelled the word correctly on the blank space, you would write 10 (the experimenter pointed to the number 10 on the blackboard) to the right of the blank space (the experimenter pointed to the blanks on his copy). If you are somewhat sure that you have spelled the word correctly on the blank space, you would write 40 (the experimenter pointed to the number 40 on the blackboard) to the right of the blank space (the experimenter pointed to the blanks on his copy). If you are pretty sure you have spelled the word correctly on the blank space, you would write 70 (the experimenter pointed to the number 70 on the blackboard) to the right of the blank space (the experimenter pointed to the blanks on his copy). If you are really sure that you have spelled the word

correctly on the blank space, you would write 100 (the experimenter pointed to the number 100 on the blackboard) to the right of the blank space (the experimenter pointed to the blanks on his copy). Do you understand?" If there was a need for clarification, the experimenter repeated the instructions until everyone understood. If there was no need for clarification, the experimenter told the subjects, "Print your name at the top of your paper. When you have finished, I want you to turn your papers over, raise your hand, and I will collect your papers. Do not leave the area until everyone has finished because I would like to say a few words about this study before I dismiss you. Begin." After 30 minutes, the experimenter said to anyone still working, "Please finish up."

After collecting the subjects' completed posttests with their self-evaluations, the experimenter said to the subjects, "Thank you for participating in this study. This study had to do with how people learn to spell. These words are commonly misspelled words so you should not feel bad if you missed them. It's common to miss a high number of these words."

REFERENCES

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Bandura, A. (1986). Social foundations of thought and action: A Social-cognitive view. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. Journal of Personality and Social Psychology, 41, 568-578.

Barling, J. (1980). A multistage multidependent variable assessment of children's self-regulation of academic performance. Child Behavior Therapy, 2(2), 43-54.

Barlow, D. H., Hayes, S. C., & Nelson, R. O. (1984). The scientist practitioner: Research and accountability in clinical and educational settings. New York: Pergamon Press.

Bower, G. H., & Hilgard, E. R. (1981). Theories of learning (5th ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Bransford, J., Sherwood, R., Vye, N., & Reiser, J. (1986). Teaching, thinking and problem solving: Research foundations. American Psychologist, 41, 1078-1089.

Brown, J. H. (1975). The differential effects of monitoring procedures on achievement behavior. Journal of Educational Research, 68(8), 318.

Brown, A. L., & Campione, J. C. (1986). Psychological theory and the study of learning disabilities. American Psychologist, 41, 1059-1068.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. Educational Researcher, 18, 32-42.

Campbell, D., & Stanley, J. (1966). Experimental and

quasi-experimental design for research. Chicago: Rand McNally.

Corno, L., & Mandinach, E. B. (1983). The role of cognitive engagement in classroom learning and motivation. Educational Psychologist, 18, 88-108.

Dean, M. R., Malott, R. W., Fulton, B. J. (1983). The effects of self-management training on academic performance. Teaching of Psychology, 10(2), 77-81.

Deci, E. L. (1975). Intrinsic motivation. New York: Plenum Press.

Di Vesta, F. J. (1987). The cognitive movement and education. In J. A. Glover, & R. R. Ronning (Eds.), Historical foundations of educational psychology (pp. 203-233). New York: Plenum Press.

Enzle, M. E., & Ross, J. M. (1978). Increasing and decreasing intrinsic interest with contingent rewards: A test of cognitive evaluation theory. Journal of Experimental Social Psychology, 14, 588-597.

Fitzsimmons, R. J. & Loomer, B. M. (1978). Spelling: Learning and instruction. Des Moines, IA: Iowa State Department of Public Instruction and the University of Iowa. Iowa City, IA: Project Spelling, University of Iowa.

Gentry, J. R. (1987). Spel... is a four-letter word. Portsmouth, NH: Heinemann Educational Books, Inc.

Gerber, M. M. (1981). Effects of self-monitoring training on the spelling performance of learning disabled and normally achieving students (Doctoral dissertation, University of Virginia, 1981). Dissertation Abstracts International, 43(7-A), 2310.

Graham, S. (1983). Effective spelling instruction. The Elementary School Journal, 83, 560- 567.

Greene, H. A., & Loomer, B. M. (1977). The New Iowa Spelling Scale. Division of Continuing Education, University of Iowa, Iowa City.

Harris, K. R. (1986). Self-monitoring of attentional behavior versus self-monitoring of productivity: Effects on on-task behavior and academic response rate among learning disabled children. Journal of Applied Behavior Analysis, 19(4), 417-423.

Harris, F. C., & Lahey, B. B. (1978). A method for combining occurrence and nonoccurrence interobserver agreement scores. Journal of Applied Behavior Analysis, 11, 523-527.

Henderson, E. (1985). Teaching spelling. Boston: Houghton Mifflin Company.

Holman, J., & Baer, D. M. (1979). Facilitating generalization of on-task behavior through self-monitoring of academic tasks. Journal of Autism and Developmental Disorders, 9(4), 429-446.

Horn, T. (1946). The effect of the corrected test on learning to spell. Unpublished master's thesis, University of Iowa.

Jenkins, J. J. (1979). Four points to remember: A tetrahedral model of memory experiments. In L. S. Cermak & F. I. M. Craig (Eds), Levels of processing of human memory (pp. 429-445). Hillsdale, NJ: Erlbaum.

Kanfer, F. H. (1970). Self-monitoring: Methodological limitations and clinical applications. Journal of Consulting and Clinical Psychology, 35, 148-152.

Karniol, R., & Ross, M. (1977). The effect of performance-relevant and performance-irrelevant rewards on children's intrinsic motivation. Child Development, 48, 482-487.

Kazdin, A. E. (1974). Reactive self-monitoring: The effects of response desirability, goal setting, and feedback. Journal of Consulting and Clinical Psychology, 42, 704-716.

Kerlinger, F. N. (1986). Foundations of behavioral research (3rd ed.). New York: Holt, Rinehart, &

Winston.

Kesselman-Turkel, J., & Peterson, F. (1983). Spelling simplified. Chicago: Contemporary Books, Inc.

Klein, R. D. (1979). Modifying academic performance in the grade school classroom. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), Progress in behavior modification: Vol. 8 (pp. 293-321). New York: Academic Press.

Larsen, S., & Hammill, D. (1977). Test of Written Spelling. Austin, TX: Pro-Ed.

Larsen, S., & Hammill, D. (1986). Test of Written Spelling, 2. Austin, TX: Pro-Ed.

Lepper, M. R., Greene, D. (1975). Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. Journal of Personality and Social Psychology, 31, 479-486.

Lewis, N. (1985). 30 days to better english. New York: Nal Penguin Inc.

Lewis, N. (1987). Correct spelling made easy. New York: Dell Publishing.

Lewis, N. (1989). 20 days to better spelling. New York: Nal Penguin Inc.

Lipinski, D. P., Black, J. L., Nelson, R. O., & Ciminero, A. R. (1975). The influence of motivational variables on the reactivity and reliability of self-recording. Journal of Consulting & Clinical Psychology, 43, 637-646.

Lloyd, J. W., Bateman, D. F., Landrum, T. J., Hallahan, D. P. (1989). Self-recording of attention versus productivity. Journal of Applied Behavior Analysis, 22(3), 315-323.

Mace, F. C., Belfiore, P. J., & Shea, M. C. (1989). Operant theory and research on self-regulation. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theory,

research, and practice. Progress in cognitive development research (pp. 27-50). New York: Springer-Verlag.

Mace, F. C., & Kratochwill, T. R. (1988). Self-monitoring: Applications and issues. In J. Witt, S. Elliott, & F. Gresham (Eds.), Handbook of behavior therapy in education (pp. 489-502). New York: Pergamon.

Mahoney, M. J., Moore, B. S., Wade, T. C., & Moura, N. G. (1973). Effects of continuous and intermittent self-monitoring on academic behavior. Journal of Consulting & Clinical Psychology, 41(1), 65-69.

Mayer, R. E. (1987). The elusive search for teachable aspects of problem solving. In J. A. Glover, & R. R. Ronning (Eds.), Historical foundations of educational psychology (pp. 327-347). New York: Plenum Press.

Morgan, M. (1984). Reward-induced decrements and increments in intrinsic motivation. Review of Education Research, 54, 5-30.

Morgan, M. (1985). Self-monitoring of attained subgoals in private study. Journal of Educational Psychology, 77(6), 623-630.

Morrow, L. W., Burke, J. G., & Buell, B. J. (1985). Effects of a self-recording procedure on the attending to task behavior and academic productivity of adolescents with multiple handicaps. Mental Retardation, 23(3), 137-141.

Mount, M. K., & Tirrell, F. J. (1977). Improving examination scores through self-monitoring. Journal of Educational Research, 71(2), 70-73.

Nelson, R. O. (1977). Methodological issues in assessment via self-monitoring. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), Progress in behavior modification: Vol 5. (pp. 263-308). New York: Academic Press.

Nelson, R. O. (1977). Assessment and therapeutic

functions of self-monitoring. In M. Hersen (Ed.), Progress in Behavior Modification: Vol. 5. New York: Academic Press.

Nelson, R. O., & Hayes, S. C. (1981). Theoretical explanations for reactivity in self-monitoring. Behavior Modification, 5(1), 3-14.

O'Leary, G., & Dubey, D. R. (1979). Applications of self-control procedures by children: A review. Journal of Applied Behavior Analysis, 12, 449-465.

Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983). Becoming a strategic reader. Contemporary Educational Psychology, 8, 293-316.

Perkins, D. N., & Solomon, G. (1989). Are cognitive skills context-bound? Educational Researcher, 18, 16-25.

Pintrich, P. R., Cross, D. R., Kozma, R. B., & McKeachie, W. J. (1986). Instructional psychology. Annual Review of Psychology, 37, 611-651.

Pressley, M. J., Borkowski, J. G., & Schneider, W. (1987). Good strategy users coordinate metacognition, strategy use, and knowledge. In R. Vasta & G. Whitehurst (Eds.), Annals of child development: Vol. 4. (pp. 1-81) Greenwich, CT: JAI Press.

Reid, R., & Harris, K. R. (1989). Self-monitoring of performance. LD Forum, 15, 39-42.

Reid, R., & Harris, K. R. (1991). Self-monitoring of attention versus self-monitoring of performance: Effects on attention and academic performance. Unpublished manuscript, University of Nebraska, Lincoln, University of Maryland, College Park.

Richards, C. S. (1975). Behavior modification of studying through study skills advice and self-control procedures. Journal of Counseling Psychology, 22(5), 431-436.

Rosenfield, D., Folger, F., & Adelman, H. F. (1980).

When rewards reflect competence: A qualification of the overjustification effect. Journal of Personality and Social Psychology, 39, 368-376.

Sagotsky, G., Patterson, C. J., & Lepper, M. R. (1978). Training children's self-control: A field experiment in self-monitoring and goal-setting in the classroom. Journal of Experimental Child Psychology, 25(2), 242-253.

Schunk, D. H. (1983). Developing children's self-efficacy and skills. The roles of social comparative information and goal setting. Contemporary Educational Psychology, 8, 76-86.

Schunk, D. H. (1986). Verbalization and children's self-regulated learning. Contemporary Educational Psychology, 11, 347-369.

Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theory, research, and practice. Progress in cognitive development research (pp. 83-110). New York: Springer-Verlag.

Schunk, D. H., & Hanson, A. R. (1985). Peer models: Influence on children's self-efficacy and achievement. Journal of Educational Psychology, 77(3), 313-322.

Shapiro, E. S. (1984). Self-monitoring procedures. In T. H. Ollendick, & M. Hersen (Eds.), Child behavioral assessment: Principles and procedures (pp. 148-165). New York: Pergamon Press.

Shaw, H. (1986). Spell it right!. New York: Harper & Row.

Shefter, H. (1976). 6 minutes a day to perfect spelling. New York: Pocket Books.

Smith, D. D. (1982). The effects of self-monitoring and self-administered consequences on the study of spelling (Doctoral dissertation, University of Denver, 1982). Dissertation Abstracts

International, 44(3-A), 714.

Spates, C. R., & Kanfer, F. H. (1977). Self-monitoring, self-evaluation, and self-reinforcement in children's learning: A test of a multistage self-regulation model. Behavior Therapy, 8(1), 9-16.

Stoller, L. A. (1980). The effects of self-monitoring of studying behavior on the spelling performance of learning disabled students (Doctoral dissertation, University of Florida, 1980). Dissertation Abstracts International, 41(9-A), 3992-3993.

Wall, S. M. (1982). Effects of systematic self-monitoring and self-reinforcement in children's management of test performances. Journal of Psychology, 111(1), 129-136.

Webster. (1969). Webster's seventh new collegiate dictionary. Springfield, MA: G.N.C. Marriam Co.

Weiner, K. J., & Mander, A. M. (1978). The effect of reward and perception of competency upon intrinsic motivation. Motivation and Emotion, 2, 67-73.

Wingfield, A., & Byrnes, D. L. (1981). The psychology of human memory. New York: Academic Press.

Woodcock, R. W., & Johnson, M. B. (1977). Woodcock-Johnson psycho-educational battery. Allen, TX: DLM.

Zimmerman, B. J. (1983). Social learning theory: A contextualist account of cognitive development. In G. J. Brainerd (Ed), Recent advances in cognitive development theory (pp. 1-50). New York: Springer.

Zimmerman, B. J. (1986). Development of self-regulated learning: Which are the key subprocesses? Contemporary Educational Psychology, 16, 307-313.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. Journal of Educational Psychology, 81(3), 329-339.

Zimmerman, B. J., & Detres, M. P. (1989). Self-regulated learning and spelling. Supervised field research. Unpublished manuscript, City University of New York, The Graduate School, New York.

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. American Educational Research Journal, 23(4), 614-628.

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. Journal of Educational Psychology, 80(3), 284-290.

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. Special section: Motivation and efficacy in education. Research and new directions. Journal of Educational Psychology, 82(1), 51-59.