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An Exploratory Study of Seven Procedures to Encourage College Student Studying Behavior

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AN EXPLORATORY STUDY OF SEVEN PROCEDURES TO ENCOURAGE COLLEGE STUDENT STUDYING BEHAVIOR

by

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VITA

Calvin Edward Hainzinger was born in Chicago, Illinois on January 22, 1953. His elementary and secondary education was obtained in the public schools of Niles, Illinois and Park Ridge, Illinois. He was granted a Bachelor of Arts Degree from the University of Illinois at Chicago Circle with a major in psychology in December, 1974. In February, 1975, he entered the Master of Arts program at Loyola University of Chicago where he pursued the study of educational psychology. In June, 1977, he completed a one-year internship serving as a school psychologist intern in the Northern Suburban Special Education District in Highland Park, Illinois. Upon graduation, he will be certified as a school psychologist in the State of Illinois.

Abstract

AN EXPLORATORY STUDY OF SEVEN PROCEDURES
TO ENCOURAGE COLLEGE STUDENT STUDYING BEHAVIOR

College student underachievement is a critical problem manifested in low academic grades, student dropout rates, and declining college entrance test scores (e.g. SAT scores). Students' lack of motivation and organization may be partially responsible for the problem.

Traditionally, colleges and universities have approached studying problems of their students through individual or group counseling by a psychologist or counselor, enrollment in study skills courses, or providing literature on how to improve study habits. However, these approaches appear to inadequately address organizational and motivational variables of studying, and the treatment delivery via individual or group counseling is expensive and inefficient.

More recently, behavioral self-control techniques including self-monitoring, stimulus control, and self-reinforcement have been introduced as an alternative approach to facilitating study behavior. The purpose of the present exploratory study was to investigate the efficacy of different self-control techniques (e.g. recording and/or graphing daily study time, rewarding oneself verbally, socially, or materially for studying a planned amount of time, studying in the same place and/or at the same time of day) for encouraging

student studying behavior and improving study habits.

Thirty-two volunteer undergraduate and graduate college students participated in a program for the purpose of improving their study habits and increasing their study time. A between-groups experimental design was utilized; eight experimental groups were involved. Each study program consisted of self-control treatment procedures in a sequence of five conditions (ie. time intervals of 10 or 12 days each), in an ABABC time-sample reversal design. As a dependent variable, students recorded their study time during the study program. The Survey of Study Habits and Attitudes (SSHA) questionnaire (Brown & Holtzman, 1965) was administered before and after the study program to provide an additional measure of change in study habits.

Comparisons among self-control treatment procedures were made to determine whether or not one treatment or a combination of treatments would emerge as more effective than others for increasing study time. An 8 x 5 two way analysis of variance with repeated measures in the second factor was computed using the students' recorded study time as the dependent variable. The results indicated that subjects significantly ($p < .05$) increased their study behavior when treatment procedures were introduced that had not been previously utilized in the experiment. They did not increase their study behavior when they returned to previous treatment procedures. Results from four one-way analyses of variance as well as t tests for correlated pairs between pre- and post-experimental administrations of the SSHA

failed to demonstrate significant differences between the eight experimental groups, but post-experimental study habits scores on the SSHA were significantly ($p < .05$) improved over the pre-experimental scores. A Pearson product moment statistic yielded a significant ($p < .05$) correlation between the students' overall amount of study time and improvement in study habits (according to difference scores on the SSHA).

From the results of this study the following conclusions were drawn: Firstly, self-managed study programs are a productive alternative to externally-managed treatments of studying behavior such as student counseling or study skills courses. Secondly, participants in self-managed study programs will perceive an increase in their use of study skills and promptness in completing academic work and a reduction in procrastination and inefficiency. Thirdly, as the number of self-control procedures utilized is increased, students will more likely increase their amount of studying time. In addition, the more time that the students study, the more likely they will note an improvement in study habits (in terms of the SSHA). Fifthly, in designing study programs, repetition (or reversal) of treatment procedures should be avoided because it appears that study behavior is positively influenced by the periodic introduction of novel treatment procedures. Seven recommendations for further research were discussed. This exploratory investigation of procedures to encourage student studying behavior supports the conclusion that self-management of behavior is a promising area for productive research and meaningful applications to solving human problems.

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CHAPTER I

INTRODUCTION

Statement of the Problem and Rationale

Many colleges and universities are faced with the problem of students' underachievement. Students drop out rates, the trend towards decreased levels of literacy among college students, and failing grades are symptoms of this problem. Declining scores of students on college admissions tests, including the Scholastic Aptitude Test (SAT), demonstrate the need for investigating the potential causes (Harnischfeger, 1976). Lack of motivation and organization for improving the student's study behavior may provide a partial explanation for underachievement. The student's reinforcement history, availability of effective models, value system, intelligence, and cultural or personality background are all suspected variables influencing achievement.

A student may be aware of the need to study and how to study in terms of outlining, taking notes, reading for the main idea, but may have difficulty studying a sufficient amount of time. Two possible reasons for the lack of studying are that the college student is not sufficiently motivated to start and continue studying or the student is disorganized in utilizing available time or in planning activities.

A review of the psychological literature on college study be-

havior reveals a dearth of research and consolidation of organizational and motivational aspects of study habits. In addition, few experimental comparisons have been made of the relative effectiveness of the available approaches. In some universities, a course is offered for the purpose of improving study habits, but generally, these courses inadequately address organizational and motivational variables. Suggestions for improving study behavior appear to be largely deficient in empirical support. Moreover, the courses depend on the dissemination of knowledge in a group situation and require considerable time in attendance.

Traditional methods of dealing with motivational and organizational problems of studying behavior have included individual counseling by a psychologist or counselor, enrollment in courses on how to improve study habits, and reading literature on how to improve study habits. Most of the research has been descriptive in nature and deficient in supportive experimental data (Poulsen, 1969).

Recently, learning theory based approaches in addition to the traditional alternatives mentioned above have been employed for the treatment of student motivational and organizational problems. These learning theory techniques incorporate many motivational components which are based on empirically investigated psychological principles of behavior modification. Progress has been made towards utilization of behavior modification in the design of the classroom instruction, course requirements, teaching

style, and structure of the curriculum. Programmed instruction, self-paced instruction, and token economies are largely based on behavioristic learning theories. Unfortunately, many of these behaviorally oriented approaches do not specifically address the issue of individual motivation for studying outside of the classroom. They rely on a group of individuals, teaching machines, and external administration of reinforcers. Another problem is that the techniques or contingencies usually vary from one course to another. There appears to be a need for the development of motivational strategies the psychologist or counselor can offer students to manage their study time which can be generalizable to different course demands.

The efficacy of training students to self-monitor studying behavior and to increase it by the use of motivational strategies has been investigated tangentially by a number of psychologists.

McReynolds and Church (1973) and Richards (1974) discussed techniques to enhance students' achievement in school by motivating and organizing students to study. Essentially, they suggested self-management strategies to promote student studying behavior. The strategies have in common the fact that the students have the responsibility for changing themselves and their environments. If the students structure themselves and increase their amount of studying, learning and consequently grades should be enhanced (Richards, 1974).

Johnson and White (1971) found that students who recorded

their study time improved their grade point average. Self-reward (Jackson & Van Zoost, 1972) and stimulus control (Fox, 1962) have also been observed to be useful as part of a combination of procedures in studies which have attempted to improve studying behavior. Groveman, Richards, and Caple (1975) and Richards (1974, 1975) also studied the application of other self-management strategies which have served to assist students to improve their studying behavior.

The importance of increasing one's studying time cannot be underestimated. It is a generally accepted fact that amount of study time is positively related to the quality of academic work accomplished and achievement. That is, study time and college grades are positively correlated with one another (Allen, Lerner, and Hinrichsen, 1972; Richards, 1974).

A study by Duncan, Bell, Bradt, and Newman (1951) utilized a questionnaire to compare the study habits of a group of high-ranking students with a group of low-ranking students in an introductory psychology course. Trends in the data indicated that the low-ranking students may not study a sufficient amount of time or review the chapter a sufficient number of times. They may also not spend as many hours in extra studying for examinations as do the students with better grades.

Research was undertaken to compare the methods of studying between a group of college students on strict probation with a group of superior students matched in aptitude, language back-

ground, and parent occupations (Jones, 1955). Results revealed that superior students were more than twice as likely (35%:15%) to "study at least two hours per class credit hour" than the inferior students, and more than four times as likely (60%:14%) to "consistently plan enough time to review all their notes carefully."

Therefore, motivating students to study appears to be an important objective and possibly more so than teaching study techniques since students who really want to study are more likely to discover techniques that work for them.

There are essentially three self-control techniques developed from behavior modification principles, which have been applied to the problem of organizing and motivating college students to improve their studying behavior. The first technique is self-monitoring of study behavior. This involves recording or graphing study time. There is evidence to suggest that individuals tend to maintain certain standards of performance for selected activities (Kanfer & Karoly, 1972; Kanfer & Phillips, 1970). Individuals may attempt to regulate their behavior (amount of study time) when it departs from their standard of performance.

A second self-control technique that has been applied to studying behavior is stimulus control. This technique is based on the principle that specific behaviors are performed in the presence of specific stimuli. After the stimuli have been associated with the desired behavior a number of times, the stimuli serve as

cues to increase the probability that the behavior will be performed. It has been suggested that students who study in the same place under similar conditions and at the same time of day will increase their amount of study time (Fox, 1962).

Third, self-reinforcement has been utilized as a self-control technique to improve studying behavior. The individual is trained to reinforce or punish himself contingent upon fulfillment of a behavioral objective or performing the desired behavior rather than receive consequences from another individual. In terms of study behavior it is felt that study time will increase if students praise themselves for studying a self-selected amount of time or withhold praise when they do not reach their individual time goal. Positive results in study behavior are similarly expected if the student grants himself self-selected material or social rewards such as visiting a friend, going out for dinner, or buying new clothes contingent upon studying a determined amount of time.

Therefore, three organizational and motivational strategies for application to studying behavior (from self-control research) appear relevant to the problem at hand-- self-monitoring, stimulus control, and self-reinforcement. Study habits advice has also been mentioned as another means to change the study behavior of college students although it is not a self-control procedure. To some extent, these techniques have been empirically investigated (Briggs, Tosi & Morley, 1971; Fox, 1962; McReynolds & Church, 1973;

and Silverman, 1974) yet most of the information about these procedures applied to study behavior stems from popular literature on methods of studying (Poulsen, 1969). Meanwhile, many of the scientific studies utilizing self-control techniques confound the effects of a specific procedure because other procedures or factors may be involved (Kazdin, 1974b). In several instances, methodological problems in the experiments make the drawing of conclusions cautious at best. There appears to be a need for further studies in practical study situations which demonstrate the efficacy of these techniques. Given that these self-management strategies have been effective in some experimental studies and not in others, more research is needed to identify those aspects of the techniques which are most responsible for the behavior change. The present investigation makes several comparisons among self-control procedures.

In the present study, the experimenter has applied seven different procedures for the treatment of study behavior which are conceptually based on the three primary self-control techniques discussed above (ie. self-monitoring, stimulus control, and self-reinforcement). Each student experiences three of the seven treatments; various combinations of the three treatments are sequenced to contrast their effectiveness with one another in terms of studying time. The various treatment procedures are as follows: (a) recording study time; (b) recording and graphing study time; (c) recording and studying according to a time schedule; (d) recording,

studying according to a time schedule, studying in the same locations and under the same conditions; (e) recording and reinforcing oneself verbally for studying a predetermined amount of time; (f) recording, reinforcing oneself with social or material rewards, and reinforcing oneself verbally; and (g) recording, graphing, and reinforcing oneself verbally.

It was hypothesized that some of the treatment techniques are more influential than others or some combinations of treatment techniques are more effective than others. The experimenter suggests that the change strategies which are demonstrated to be empirically productive can be packaged into a recommended study program. Such a program could be made available to students who express the desire to improve their academic performance. Research could continually provide additonal empirically based data to dispose of the inefficient methods and integrate the successful ones. The ultimate objective is to eventually design a total study program to motivate and organize individual students to increase their study time. Alterations of procedures could be undertaken in future investigations to demonstrate an optimal treatment to increase study time. The anticipated product of increased study time, based on previous research, is improved academic grades. It is also expected that students who acquire more control over their own behavior will develop a more positive attitude toward their own education. More personal satisfaction may be derived from making one's own decisions and controlling one's own study behavior.

A second exploratory hypothesis was that the greater the number of applied treatment components of the self-management technique, the greater the degree of successful behavior change. In other words, a self-monitoring student who not only recorded how much time he or she spent studying but also graphed study time each day would study more than if he or she only recorded time. Similar results were expected for a student following stimulus control procedures. The student who was trying to establish a habit of studying at the same time of day would study more if he or she was concurrently trying to form a habit of studying in the same place. A third hypothesis involved self-reinforcement. Extending this hypothesis to self-reinforcement, it was expected that a positive change in study behavior was more likely to be obtained from a student who was receiving self-reinforcement by self-praise and self-administered social or material reinforcement than if the student were only praising himself or herself for studying a selected amount of time.

The educational implications accompanying these new data focus on the following: Are the self-control techniques of self-monitoring, stimulus control, and self-reinforcement effective in encouraging study behavior of college students? How are the specific procedures of each technique related? Are educators able to accelerate the study behavior of college students and thus enhance academic achievement? Are there self-managed study programs comprised of combinations of self-control procedures which are more

facilitative to a reduction of procrastination and a change in work methods than other study programs? In other words, are there viable alternatives to externally managed treatment of motivational and organizational aspects of study behavior?

Summary of the Problem

A behavior analysis has been presented explaining the difficulties college students have in organizing and motivating themselves to study. The available strategies for treatment of this problem were elaborated.

It was suggested that efforts to enhance student studying have traditionally involved attending study skills courses. Recently, research on self-management has demonstrated the possibility that students may become their own managers (or therapists) of their behavior change rather than rely on external agents to control their behavior. There appears to be a dearth of evidence concerning the aspects of the self-management strategies that are responsible for the change in study behavior. In addition, very few empirical comparisons have been made between the techniques of self-monitoring (ie. recording or graphing study time), stimulus control (ie. studying in the same time or place or under similar environmental conditions), and self-reinforcement (ie. rewarding oneself for studying to a specified goal).

The purpose of the present study was to examine the role of different self-control techniques for encouraging college students' studying behavior. It was hypothesized that the number of ele-

ments (e.g. rewarding oneself verbally and rewarding oneself materially or socially may be two elements in the self-reinforcement procedure) involved in a single self-control technique utilized by the college student would be a crucial variable affecting studying behavior. In addition, it was hypothesized that different self-control techniques (e.g. graphing study time, studying at the same time and place, and praising oneself) would be more influential for modifying amount of study time by college students than others. A further hypothesis was that subjects exposed to different combinations of self-control techniques would manifest different degrees of self-reported change in their methods of study, their promptness in completing academic assignments, their lack of procrastination, and their freedom from wasteful delay and distraction.

CHAPTER II

REVIEW OF THE LITERATURE

Reactive versus self-directed models of man

Two conflicting models of man exist. The traditional, therapeutic model of change conceived of man as passive and controlled by his environment. Allport (1960) found that psychologists primarily used a reactive model of man to interpret their results. Man was an animal who reacted and was controlled by environmental stimuli. An alternative model considered man as having the capacity for being creative and self-directed. In the twentieth century, common-sense psychologies like those of Norman Vincent Peale or Dale Carnegie were originally the prime advocates of the self-change point of view. Recently, this second, self-directed model became incorporated in respectable, mainstream psychological theories (e.g. social learning theory).

There have been a number of psychological theorists who have questioned the reactive or behaviorist model of man and placed increased emphasis on the power of man's ego processes for the rational direction and control of his behavior (Hartmann, Kris, & Loewenstein, 1947). Among this group of men, Carl Rogers created client-centered therapy, a method of psychotherapy which emphasized man's creative and problem-solving abilities and his capacity for self-directed change (Rogers, 1951).

Konrad Lorenz (1963) stated that the apparent conflict between the two models of man is not real. The fact that his behavior is controlled by stimulus-response-type laws is compatible with the fact that he attempts goals and can change his behavior by his own choice. Lorenz suggests that we can increase man's capacity for self-direction if we increase his understanding of the psychological laws which control his behavior.

One of the psychologists to first apply Lorenz's suggestions was Goldiamond (1965). He assisted subjects in designing self-management procedures by instructing them in how to change the stimuli controlling their behaviors. His approach incorporated many concepts from operant conditioning theory with aspects of social reinforcement. Personal behaviors included as targets for change were marital conflicts, study problems, and handwriting.

In Goldiamond's procedures the subject possessed the main control over his behavior change. The change agent provided information to facilitate change, but he or she was not a therapist. In addition, the subject learned to apply simple learning principles such as stimulus control, self-reinforcement, and self-punishment to his or her own behavior. The individual developed the technique of self-observation (ie. measurement and recording of selected behaviors to obtain feedback about his or her progress toward self-selected behavior change goals).

At approximately the same time another approach to self-directed change was being investigated. Several cases were re-

ported (Schwitzgebel, R. L., 1964) in which subjects attempted to change their behaviors through self-research (ie. observing one's behavior selected for change and graphing the record of its frequency of occurrence). Numerous successes in behavior change were established when subjects undertook self-change projects. Target behaviors included sexual behavior, study habits, anxiety, shyness, smoking, and other behavioral deficits.

From these studies of self-directed change two principles emerged (Schwitzgebel, R. K., 1974). The first principle states that under appropriate conditions, proactive forces appear in individuals which allow them to experiment with new behavior and move toward new goals. White (1959), Rogers (1951), and others lend support to the concept of proactive motivation. When lower-order physical, safety, social, and ego needs are sufficiently fulfilled, states Maslow (1954), motivation for personal growth and self-actualization is developed.

The second principle states that behavior change is more likely to be maintained if the individual perceives the process of change to be under his or her control. Cognitive dissonance experiments demonstrate the importance of the individual's feeling of responsibility for attitude change. The evidence indicates that most durable and greatest attitude change occurs when individuals feel themselves chosen to modify their point of view (Secord & Backman, 1964). A great deal of research exists which states that self-imposed strategies for behavior change are as effective as ex-

ternally-imposed strategies (Glynn, 1970; Johnson & Martin, 1972; Kanfer, 1970; Lovitt & Curtiss, 1969).

Since Goldiamond's and Schwitzgebel's work, a considerable amount of research has been devoted to the application of behavioral self-control techniques to human problems. Self-control refers to the application of the principles of behavior modification to alter one's own behavior. The behavioral principles describe lawful relationships between a number of environmental conditions and the behavior. Originally, the behavioral principles and derived techniques had usually been used by one individual (the experimenter) to change the behavior of another individual (the subject). However, the research has shown that the subject can manage personal behaviors with the same principles. The lawful relationship between environment and behavior exists independently of who applies the principles (Homme, 1965). The individual manages personal behaviors by using techniques which modify the antecedent and consequent conditions which control behavior (Skinner, 1953), the same way he or she would control the behavior of others.

In everyday life the individuals control their personal behaviors with a number of techniques. First, they may deprive or satiate themselves to control behavior such as drinking water when hungry in between mealtimes. A second technique is to use physical restraint such as holding one's lips together tightly to avoid saying something. Third, one can change emotional reactions by

imagining pleasant conditions when under stress or by doing something else that is incompatible with the natural response. Fourth, one can use aversive events in the environment to control behavior such as using an alarm clock to prevent continued sleeping. Fifth, one may do something other than the behavior (e.g. avoidance activities) which leads to aversive consequences. Sixth, self-reinforcement or self-punishment may be used to manage behavior like praising or criticizing oneself for a performance. As a seventh technique, drugs, stimulants, and alcohol may be consumed with the intent of changing the person's physiological state. Eighth, stimulus control may be utilized to change aspects of the environment which are perceived as controlling the individual's behavior, such as removing all snack foods from sight in the home when one is dieting.

By using the above techniques the individual is able to control personal behaviors in everyday life situations. The person learns to engage in one behavior to influence the probability of another behavior. When the person is taught techniques of self-control he or she may learn a method to control not only a specific behavior but also a method to modify other behaviors in new situations. However, the generalizability of the technique to other behaviors and other situations greatly depends upon individual differences.

Social Learning Theory Explanation of Self-Control

Social learning theory suggests an explanation for how self-

control is developed as the child matures. As the child interacts with his or her environment the child's behavior is controlled externally by parent, teacher, and other adult models. These models establish standards of behavior and provide reinforcement for performances. When the child achieves the standard, the parent models disseminate positive reinforcement, but when the child does not perform up to the standard, they punish or do not reward the child. As learning continues with these standards and consequences, the achievement of a particular standard may take on reinforcing qualities of its own because past achievement had been paired with external reinforcement. On the other hand, failure to attain the standard of performance may take on punishing qualities of itself because punishment (or lack of reinforcement) had been previously paired with lack of achievement (Bandura, 1969). The child gradually internalizes the standards of performance in his childhood. Eventually the individual's standard-setting and providing of consequences for behavior become independent of externally-controlled consequences.

The above account of how a person develops self-defined standards and self-administered consequences has been supported by laboratory research (Bandura, 1969). Conclusions have been drawn which state that individuals reward themselves consistent with the way others have reinforced them. For instance, people who reward themselves generously are those who have been re-

warded generously by others (Kanfer & Marston, 1963).

A second important vehicle for developing self-control is modeling. Children model the behaviors and performance standards of others they observe, particularly teachers and parents. The children adopt high or low standards of reinforcement if they interact with a model who holds such standards (Bandura & Kupers, 1964; Mischel & Liebert, 1966). People who have been exposed to low performance standards for reinforcement usually grant themselves rewards for a mediocre performance (Bandura, 1969). Observers also adopt the self-reinforcing comments made by the model (Bandura & Kupers, 1964; Liebert & Allen, 1967).

A third means by which standards of performance and patterns of self-reinforcement are transmitted is social control (Bandura, 1971). Other people in daily encounters influence a person's level of standards and delivery of self-reinforcement. Society will not favor the individual's self-reinforcement for achievement of an obviously low standard of performance. For example, a person rarely exhibits his or her own failures such as speeding tickets because the standards are so low.

The literature on behavioral self-management explores the efficacy of social learning strategies applied to a multitude of problems, including reducing smoking (Axelrod, Hall, Weis, & Rohrer, 1974; Premack, 1970), reducing weight (Jeffrey, Note 2; Mahoney, Moura, & Wade, 1973), reducing fears (Jacks, 1972), increasing studying (Johnson & White, 1971), and other human behav-

iors (Bandura, 1969; Cautela, 1971; Goldfried & Merbaum, 1973; Meichenbaum, Note 3; Meichenbaum & Cameron, 1974; Thoresen & Mahoney, 1974). In using self-control, the individual selects the goals for behavior change and the means to attain them in spite of or in addition to external pressures or influences from peers, parents, and others to control the behavior (Cautela, 1969; Goldfried & Merbaum, 1973; Kanfer & Phillips, 1970; Thoresen & Mahoney, 1974).

Techniques of Self-Control

Basically five patterns of self-control have been developed from social learning theory and behavior modification techniques to fulfill behavior change. These self-control techniques include: (a) self-monitoring; (b) stimulus control; (c) self-reinforcement and self-punishment; (d) self-instruction; and (e) alternate response training.

The first three techniques have been employed in different research investigations to improve the study behavior of college students. These three self-control techniques are reviewed. For a detailed discussion of other techniques many contemporary references are available (Goldfried & Merbaum, 1973; Kanfer & Phillips, 1970; Thoresen & Mahoney, 1974; Watson & Tharp, 1972).

Self-monitoring. Self-monitoring is defined as "systematic self-observation followed by self-recording" (Richards, in press). Self-observation is the first step in a behavior change strategy to help the person become aware of the elements of the

environment which are controlling his or her behavior. Ferster (1972) referred to this observation of the environment to determine the functional relationship between it and the behavior as "outsight therapy".

Self-observation not only may include analysis of the interaction with the external environment but with the internal environment, such as monitoring of covert thoughts and feelings (Cautela, 1967, 1971; Homme & Tosti, 1971; Jacobson, 1971; Kazdin, 1974b; Meichenbaum, Note 3; Thoresen & Mahoney, 1974). Through self-observation the individual can identify and examine the antecedents and consequences which are initiating and maintaining the behavior of concern.

Two primary benefits may result from self-monitoring. First, the procedure may be used as a means of collecting data and second, as a technique for behavioral self-change. It appears that individuals maintain certain cultural or self-imposed standards of performance upon which they evaluate and reinforce their behavior. When individuals behave inconsistently with the standard, they alter behavior to adjust to the standard, thus controlling their behavior (Kanfer & Karoly, 1972; Kanfer & Phillips, 1970). For the practice of self-monitoring individuals can record the occurrence of the target behavior by writing it down (tallying or keeping a diary), keeping track of it by a wrist counter, or by graphing the information or any combination of these recording techniques. In many cases the act of self-recording itself may become

reinforcing or punishing. Homme and Tosti (1971) suggest that the "act of plotting on a graph serves as a positive consequence for self-management, and once conditioned, the operation of a wrist counter appears to act as a reinforcer in its own right." The reactive effects of self-monitoring have been well-documented but not completely understood. Research is inconclusive in this area. Its effectiveness has depended upon the valence of the behavior, the timing of the self-observation, the kind of response monitored, and the frequency of the observations (cf. Broden, Hall, & Mitts, 1971; Johnson & White, 1971; Kazdin, 1974a; McFall, 1970; McFall & Hammen, 1971; Thoresen & Mahoney, 1974). Its effectiveness as a method for behavior change has motivated its application in a number of therapeutic settings (Kazdin, 1974b). Sometimes it has been used as a self-control technique by itself and other times as part of other self-control techniques. For example, self-monitoring has been utilized in conjunction with self-reward or stimulus control.

Research has shown self-monitoring of behavior to be clinically effective in cases of lip-biting (Broden et al., 1971), overeating (Mahoney, 1974; Stuart, 1967), smoking (McFall, 1970; McFall & Hammen, 1971), face-touching behavior (Nelson, Lipinski, & Black, 1975), increasing mother's attention to her children (Herbert & Baer, 1972), and with maladaptive behaviors (Maletzky, 1974). For a comprehensive review of self-monitoring see Kazdin (1974b).

Self-monitoring has been used in studies on academic behavior in conjunction with other treatment procedures or with a combination of them. Sometimes it has been used with graphing, goal-setting, study skills advice, self-reinforcement, self-reinforcement plus goal-setting, and self-reinforcement plus graphing plus goal-setting.

In a controlled treatment study by Richards (1975) self-monitoring techniques were found to be useful in improving the grades and study behaviors of 108 students. Students who self-monitored and received study skills advice had a mean grade of 2.9, slightly higher than the mean grade of the group that received study skills advice alone ($\underline{M}$ = 2.7). Meanwhile, the attention-placebo control group ($\underline{M}$ = 2.3) and no-contact controls ($\underline{M}$ = 2.2) achieved significantly lower grades.

Behavioral self-control procedures which emphasized self-monitoring were again successful in increasing the grade point average of college students in two other studies. The first involved 81 students (Groveman, Richards, & Caple, Note 1). The self-monitoring group increased their semester grade point average by .3 during the investigation. The non-treatment control group, the attention-placebo control group, and two study skills counseling groups, in comparison, manifested reductions or no change in their grade point average. The second study (Richards, McReynolds, Holt, & Sexton, 1976) replicated the findings that self-monitoring could influence study behavior. The self-monitoring plus study skills advice group

improved its mean grade point by .29, whereas the study skills advice group decreased its mean grade point by .04 and the attention-placebo and no-contact control groups decreased their mean grade point by .28.

One of the major difficulties in behavioral self-control is helping the students maintain their use of the treatment. Richards, Perri, and Gortney (1976) undertook a controlled treatment investigation of 118 students. They compared a group of students who participated in regular treatment sessions (equal intervals between them), with a group of students who participated in gradually fewer treatment sessions (faded contact). After a five week follow-up students in the faded contact treatment groups were approximately one-third of an academic letter grade above the students in the regular contact treatment groups. The investigators suggested that the fading enhanced treatment maintenance.

Another study which highlighted the importance of treatment maintenance was carried out by Perri and Richards (Note 4). The researchers interviewed students who made natural attempts at self-control and learned that the distinction between successful and unsuccessful attempts mainly depended on the degree to which they systematically followed the specific techniques. Fifty percent of the successful subjects systematically used the written self-monitoring techniques to improve study behavior, whereas only eight percent of the unsuccessful subjects systematically used them (n=24). This study underscored the necessity for therapists to focus on the main-

tenance issue.

The efficacy of self-monitoring of study behavior was again supported by the Richards, Perri, and Gortney (1976) study. In comparison to two control groups, the faded contact group averaged a half academic letter grade advantage at the five week follow-up. Richards, McReynolds, Holt, and Sexton (1976) demonstrated the value of focusing on the information feedback aspect of the self-monitoring procedures, particularly with the subjects who are not knowledgeable about their study habits. The authors discovered that students unaware of their study habits improved their grades more when they self-monitored (M grade improvement = .54) than self-monitoring students who were already aware of their study behavior (M grade improvement = .06).

One of the primary benefits of self-monitoring is assumed to be its positive reactive effects, that is, monitoring of study behavior produces an increase in the amount of study behavior (Broden, Hall, & Mitts, 1971; Johnson and White, 1971; Richards, 1975). Several investigators have provided evidence to support the logical assumption that increased study time will result in higher course grades. Allen et al. (1972), Gottman and McFall (1972), and Richards (1974) have carried out experiments which substantiate this conclusion.

Stimulus control. Stimulus control allows individuals to control their own behavior by altering environmental and situational events which serve as cues for behavior. Individual subjects are in-

structed to design their environment so that certain cues increase the likelihood that specific behaviors are performed and other cues which have an undesirable controlling effect no longer influence behavior. The stimulus control technique focuses on environmental planning to manipulate antecedent or initiating stimuli to increase the probability of the target response. After identification of the specified behaviors in their environment, the individuals investigate the antecedents and consequences of their behaviors. They learn what contingencies are controlling their behavior by identifying these consequences. A behavior is under stimulus control when it manifests itself in association with one stimulus and not with other stimuli (Krasner & Ullman, 1973).

In utilizing stimulus control as a therapeutic behavioral self-control procedure, the therapist meets with clients individually to convey learning principles and stimulus control methods and suggest applications which may be helpful. Clients from that point on apply the stimulus control procedures to themselves on their own.

Stimulus control has been used both by itself and as an adjunct to other treatment procedures for a number of human problems. Most of the research has focused on eating and smoking as target behaviors for change (Bernard & Efran, 1972; Mahoney, 1970; Mahoney, Moura, & Wade, 1973; Shapiro, Tursky, Schwartz, & Shnidman, 1971). The principle also has been effective in the research on weight control (Ferster, Nurnberger & Levitt, 1962), obesity (Schacter, 1971; Strinkard, 1972; Stuart, 1967), and insomnia (Bootzin, 1972).

Few studies have applied stimulus control procedures to the problem of college underachievement. Goldiamond (1965) carried out a number of case studies which employed stimulus control procedures with college student studying behavior. Study behavior was significantly influenced by the methods.

Another researcher who successfully applied stimulus control to study behavior was Fox (1962). He reported a case study in which a student was instructed to go to the library at a specific time each day and in a specified room. The student began by studying only one subject at the library. He was required to leave the study room if he began to daydream or feel uncomfortable studying in the situation. A small amount of work such as reading one page had to be completed before the student could leave. Gradually the amount of work to be finished before leaving was increased. This procedure served to shape longer periods of studying until eventually the student was devoting one hour daily of study time in the library for each course. Thus, the association of incompatible behaviors such as taking coffee breaks, daydreaming, and social conversation was weakened and study behavior was brought under the stimulus control of time and place (Fox, 1962).

Two other studies explored stimulus control with other treatment procedures (Beneke & Harris, 1972; Harris & Reams, 1972). In the latter experiment, college students were required to study at one or two places to control the stimuli of their studying environment. They were also instructed to avoid doing things other than

studying at these places. Subjects attended lessons on study skills techniques. Self-reinforcement and self-monitoring were components of the treatment procedures, but the authors failed to discuss the possible effects of the latter.

Richards (1975) examined stimulus control techniques as an addition to study skills advice to improve the grades and studying behavior of college students. However, the procedures were not successful.

Self-reinforcement and self-punishment. A self-control procedure which has received increasingly more attention is administering reinforcing or punishing consequences to oneself contingent upon engaging in a behavior. The consequences are controlled by the self rather than another person. The consequence is defined as positively reinforcing only if it increases the probability of performing a particular response (Skinner, 1953). Withdrawal of the positive reinforcer may constitute punishment. Complete self-control using self-reinforcement entails the individual's selection of the criteria for reinforcement as well as administration of the reinforcement. Self-observation and self-recording of the target behavior is usually a concomitant of the self-reinforcement procedures to determine whether the person has fulfilled the criterion. The self-monitoring component may enhance the effectiveness of self-reinforcement (Kazdin, 1974b).

Skinner (1953) first introduced the concept of self-reinforcement in an attempt to explain the observation that much of our ac-

quired behavior is maintained without the continued external administration of highly generalized reinforcers. Individuals themselves may serve as their own source of reinforcing stimuli either by manipulating the conditions for obtaining external reinforcement or by administering social reinforcers through subvocal responses.

Self-reinforcement has proven itself to be an effective self-control strategy. Using this technique persons administer a positive reinforcer to themselves if they participate in the desirable target behavior such as studying or deny themselves the reinforcer if they fail to participate in the desirable target behavior. Conversely, individuals punish themselves if they engage in the undesirable target behavior (e.g. smoking) or reward themselves for refraining from the undesirable target behavior. The individuals present themselves with consequences following the occurrence of a target behavior. The reinforcements can be verbal, imaginal, or material (positive or negative, overt or covert) (Shapiro & Zifferblatt, 1976).

Self-reinforcement as a self-control technique has been successfully applied in a number of settings. Mahoney, Moura, and Wade (1973) treated patients' weight loss on a hospital outpatient basis. The disruptive behavior of emotionally disturbed children in a psychiatric hospital (Santagrossi, O'Leary, Romanczyk & Kaufman, 1973) and the social responses of male college students (Rehm & Marston, 1968) were the target behaviors in other investigations.

Self-punishment has been the treatment employed in other studies. Overeating, deviant sexual behavior, anxiety, smoking cigar-

ettes, and the craving for drugs have been effectively controlled by the use of this self-control technique (Axelrod et al., 1974; Cautela, 1966, 1967; Ferster, Nurnberger & Levitt, 1962; Harris, 1969; McGuire & Vallance, 1964; Powell & Azrin, 1968; Wolpe, 1965).

In educational settings, self-reinforcement has been only recently applied. First and second grade children were the subjects of a study which compared the effectiveness of each of the following techniques to reduce disruptive behavior: self-reward, external reward, and self-reward plus self-monitoring (Bolstad & Johnson, 1972). The groups utilizing rewards were more successful in controlling disruptiveness, while self-reward was slightly more effective than external reward.

In a study by Ballard and Glynn (1975) the effects of self-assessment and self-recording alone were investigated before reinforcement was included in the treatment in order to compare the effectiveness of the two procedures. It was determined that self-assessment and self-recording alone had no effect on the target response, which was writing productivity. Writing output more than doubled with the addition of reinforcement contingencies for number of sentences. With reinforcement contingencies the mean number of sentences written was 20, compared with a mean of seven in both the baseline and the self-assessment and self-recording phase. This study demonstrated that self-management procedures increased writing responses and improved the subjectively assessed quality of children's writing. It showed that self-reinforcement contingencies applied to academic be-

havior were correlated with an increase in on-task behavior. In their study reinforcement was partially determined by the student, both the amount of reinforcement per response and the type of reinforcement being predetermined by the experimenter.

Second grade children have also been shown to use behavioral self-control procedures successfully in a regular classroom (Glynn, Thomas, & Shee, 1973). On-task behavior was established initially by externally-administered reinforcement. Behavioral self-control procedures consisted of self-assessment, self-monitoring, self-selection of reinforcers, and self-administration of reinforcement. These procedures were found to be effective in maintaining high rates of on-task behavior by the second grade students. The study failed to determine whether these self-control techniques would be as effective without prior training under externally administered reinforcement conditions.

A study which demonstrated the effectiveness of goal-setting and self-reward for increasing academic behavior did not utilize self-monitoring as part of the procedures. This study was conducted by Felixbrod and O'Leary (1973). It compared the effects of contingent reinforcement under conditions of self-determined and externally-determined performance standards. They found that children who self-determined their performance standards produced a greater amount of academic behavior than children in a no-reinforcement condition. Over time the academic behavior was maintained but the children became gradually more and more lenient in their self-imposed

performance standards when other people were not present to observe them.

Lovitt and Curtiss (1969) in an experiment with a 12-year old student demonstrated that self-determined contingencies and self-administration of reinforcement could produce higher academic response rates than teacher-specified contingencies and teacher-administration of reinforcement. In this study the student completed each academic assignment, was shown how many responses had been made, and was asked to calculate the corresponding points he had earned. The utility of this finding is it demonstrates that students with the ability to assess their own competencies can set their own behavioral objectives and specify a contingency system whereby they might obtain these objectives.

Bristol and Sloane (1974) conducted a study in which a group of students who self-monitored and graphed study time was compared with another group who did the same but received reinforcement for attaining their objectives. The researchers found that the contracting procedure (in which subjects received money for self-monitoring, graphing, and achieving their goals for amount of studying) increased study time for all subjects. The subjects in the contracting condition produced a 100% increase in studying over their baseline amount of studying. Again, the reinforcement procedure in this study proved to be a useful adjunct to the self-monitoring and graphing treatment condition.

Self-reward has been used with self-monitoring (Ballard & Glynn, 1975; Glynn et al., 1973), with self-monitoring and goal-setting

(McReynolds & Church, 1973), with self-monitoring, graphing, and goal-setting (Bristol & Sloane, 1974), with goal-setting alone (Felixbrod & O'Leary, 1973), with study advice alone (Jackson & Van Zoost, 1972), and with self-monitoring and stimulus control (Williams, 1975).

Self-Control Techniques and Study Skills Advice

Study skills advice is not a self-control technique per se. Self-control techniques have the purpose of organizing and motivating individuals to increase their study behavior. In contrast, study skills advice provides knowledge to college students to increase their efficiency of studying. That is, it provides information on how to take notes, how to read better, how to prepare for tests, and other methods to facilitate studying.

Traditionally, college students who required assistance to improve their study skills enrolled in a study skills course. There are several areas of study skills which are typically included in such a course. Advice in these courses covers reading skills (Barbe, 1952; Mouly, 1952; Robinson, 1970), Robinson's (1970) SQ3R method for improved textbook reading, test taking skills, writing skills (Haslam & Brown, 1968), organizing and outlining a textbook chapter, efficient classroom note-taking (DiVesta & Gray, 1972; Fischer & Harris, 1974), and reviewing for examinations (Behrens, 1935; Pauk, 1962). A review of the literature indicates that a successful study skills program is structured to provide the above components (Bednar & Weinberg, 1970).

Although the literature reports several experiments using behavioral self-control techniques and other experiments using study skills approaches, only a few studies have focused on a combination of the two methods or compared the relative effectiveness of both of them.

One investigation to improve study behavior compared approaches of self-reinforcement, general counseling, and study skills advice (McReynolds & Church, 1973). Students in the self-control group set up self-contracts in which they specified a required amount of time to be engaged in target behaviors (such as study for a few minutes each day) over a few days. The students received reinforcers contingent upon their meeting the specified performance criteria. Every few days, a new contract was drawn up as the behavior met the specified criteria. Although students defined the performance levels and the target behavior for themselves many subjects rewarded themselves even though the requirements for the behavioral contract had not been met. The results of the experiment indicated that study skills and self-control techniques were equivalent to one another. Both were more effective than the general counseling method for improving grade point averages and scores on the Study Habits and Attitudes Questionnaire (Brown & Holtzman, 1965).

Richards (1975) demonstrated that self-monitoring (as a self-control technique) could be a significant addition to study skills advice for improving the grades and studying behavior of college students. Beneke and Harris (1972) used a combination of self-control techniques

(stimulus control and positive reinforcement) with study skills techniques (Robinson's SQ3R method, note-taking, and test-taking skills). The subjects following this combination experienced an increase in grade point average whereas the control subjects did not. However, the validity of the conclusions is questionable because dropout subjects were used as control subjects.

Other treatment outcome studies have utilized a combination of self-control procedures and study skills advice (Groveman, Richards, & Caple, Note 1; Richards, McReynolds, Holt, & Sexton, 1976; Richards, Perri, & Gortney, 1976). In general, the combination of self-control procedures with study skills advice was effective as a treatment of studying behavior whereas study skills advice alone was not effective.

Recapitulation

Behavioral self-control refers to those behaviors which individuals purposely attempt to change independently of external agents. They select for themselves the outcome they want to attain and then apply the techniques of behavior modification to themselves. Social learning theory explains how individuals develop self-defined standards and self-administered consequences through modeling, a history of external reinforcement, and social control. The learning principles which apply to the changing of other people's behaviors are similar to those which govern self-directed behavior change.

Three self-control techniques were discussed-- self-monitoring, stimulus control, and self-reinforcement. First, self-monitoring involves individual observation and recording (e.g. graphing) the occur-

rence of the behavior one desires to change. Self-monitoring may have reactive effects. That is, the act of recording itself may be sufficient to cause a change in the behavior. Second, stimulus control requires individuals to arrange the environmental stimuli (internal or external) to serve as cues for their behavior. In the presence of certain stimuli, the probability of engaging in the target behavior is increased. Individuals also design their own environments so that cues which control undesirable (off-target) behavior are removed. The third technique of self-control, self-reinforcement, allows individuals to give themselves reinforcement (overt or covert, positive or negative, material or imaginal) contingent upon achievement of a self-selected goal. Unlike external control of reinforcement, self-reinforcing individuals are free to reinforce or punish themselves at any time under appropriate conditions on their own.

The preceding analysis demonstrated the effectiveness of these self-control techniques applied to a range of human problems (e.g. smoking, obesity, lip-biting behavior). Recently, academic behaviors such as studying have been the target of these applied investigations. In the present experiment the behavioral self-control techniques known as self-monitoring, stimulus control, and self-reinforcement were further investigated.

Self-monitoring of study time and/or number of pages studied has been successfully used to improve the course grades of college students (Johnson & White, 1971), increase the grade point averages of students (Groveman, Richards, & Caple, Note 1) and increase the study

time of junior high school and college students (Broden et al., 1971). In another study the effectiveness of self-monitoring was demonstrated in the increased number of writing responses of grade school children (Ballard & Glynn, 1975) and the greater frequency of on-task classroom behavior of third grade children (Glynn, Thomas, & Shee, 1973). However, many self-monitoring studies have yielded inconsistent findings. Bristol and Sloane (1973) found that only self-monitoring of study behavior did not improve test scores. Richards, McReynolds, Holt, and Sexton (1976) also determined that self-monitoring alone did not significantly improve grades in those cases when students were already knowledgeable about their study behavior. Self-monitoring has been used successfully as a component of other procedures for the improvement of studying behavior. In combination with study skills advice (Richards, 1975; Richards, McReynolds, Holt, & Sexton, 1976) or with self-reinforcement (Bristol & Sloane, 1973; Jackson & Van Zoost, 1972), or with a combination of stimulus control and self-reinforcement (Fox, 1962), self-monitoring has been effective. In other combinations self-monitoring has not been effective. It was unsuccessful in conjunction with stimulus control instructions and study skills advice (Richards, 1975).

The second technique of self-management reviewed was stimulus control. Stimulus control has successfully increased the study time of college students (Goldiamond, 1965). It has also been effective in combination with study skills advice and the expectation for reinforcement to increase the study time of college students (Briggs et al.,

1971). Harris and Trujillo (1975) found it increased the grade point averages of junior high school students when used in combination with self-monitoring and study skills advice. In another experiment stimulus control instructions in addition to study skills advice, self-monitoring, and self-reinforcement increased the grade point averages of college students (Beneke & Harris, 1972). Another study revealed stimulus control with study skills advice failed to improve the grades and studying behavior of college students (Richards, 1975).

The third technique, self-reinforcement, has evidenced its utility in several studies. It has helped to increase the Work Methods scores of college students on the Survey of Study Habits and Attitudes (Jackson & Van Zoost, 1972). In studies of college students by Fox (1962) and Briggs et al. (1971) where the reinforcement was the opportunity to leave the study room after studying, self-reinforcement again improved grade point averages and increased study time. Both of these experiments involved the Premack Principle (Premack, 1968), stimulus control procedures, and study skills advice. Self-reinforcement with self-monitoring also has been reported to have increased the on-task behavior of third grade students (Glynn et al., 1973), the writing output of children (Ballard & Glynn, 1975) and the study behavior of a junior high school student (Broden et al., 1971). College students who received reinforcement for contracted courses also experienced an increase in study time and test scores in those courses (Bristol & Sloane, 1974).

A number of comparisons have been made relative to the effect-

iveness of various strategies to improve studying behavior. Self-monitoring of study time and contingency contracting was much more effective in increasing the study time of college students than self-monitoring alone (Bristol & Sloane, 1974). Richards (1975) found a combination of self-monitoring and study skills advice to be more effective in changing college students' study behavior than a combination of stimulus control instructions and study skills advice, but equally effective as study skills advice alone. Richards (1975) and Richards, McReynolds, Holt, and Sexton (1976) supported further the effectiveness of self-monitoring in conjunction with study skills advice in comparison to study skills advice alone for improving grade point averages. Another experiment involved a treatment which utilized self-control techniques that emphasized self-monitoring (Groveman et al., Note 1). Students in this condition experienced an increased grade point average whereas two study skills counseling groups did not. In the Ballard and Glynn (1975) study, self-monitoring plus self-reinforcement successfully changed writing output but self-monitoring alone did not. Similar results were reported in a study which increased the on-task behavior of an eighth grade student (Broden et al., 1971). Although both procedures were effective, self-monitoring plus self-reinforcement was even more effective than self-monitoring alone.

The preceding review of the literature emphasized the influential role of self-management techniques for the improvement of college student studying behavior. Self-monitoring, self-reinforcement, and stim-

ulus control have each been utilized in one form or another in various therapeutic strategies. The observation was made that the effectiveness of the procedures has been erratic. Systematic replications of experimental findings are scarce in the published research.

The opinion was offered that self-control techniques demand further investigation in their application to studying behavior. First, additional experiments are needed which support the efficacy of these methods. Second, the psychological literature is replete with comparisons among these techniques to evaluate their unique contributions to the change in study behavior. For example, the following questions might be asked: Is stimulus control more important than self-reinforcement in a study program to help college students? Does self-monitoring have any effect at all when used with stimulus control? Answers to these questions will assist in the design of an educational or psychological intervention for the study problem. Third, it is suggested that the success of self-monitoring, stimulus control, or self-reinforcement may depend to a large extent on the specific operational procedures involved. It is important to determine the processes involved in each self-control technique to understand the reasons it is effective in some studies and not in others. The present study ventures to compare two different types of self-monitoring procedures, two different types of self-reinforcement procedures, and two different types of stimulus control techniques to hopefully gain some insight about the processes involved which account for the change in behaviors.

As can be inferred from the review of the literature, several self-control methods have at different times proved their worth in increasing study time or improving grades. The variability among specific procedures which have been used under the auspices of stimulus control, self-reinforcement, or self-monitoring have made comparisons of their effectiveness futile. As part of this problem, no attention has been focused in a breakdown of the techniques to illuminate the specific processes involved. The present study attempts to explore these theoretical and empirical issues and provide information to establish a series of procedures for the treatment of studying behavior.

CHAPTER III

METHOD

Subjects

Subjects were selected from eight universities and colleges in the Chicago metropolitan area and from the University of Wisconsin at Madison. College students volunteered for the program to help them study more effectively by signing up on sign-up sheets on 32 campus bulletin boards. Using a table of random numbers, subjects were randomly divided into eight experimental groups. Table 1 contains a numerical description of the subjects according to selected demographic variables and experimental group assignment.

Fifty-five subjects originally began the study program. However, eleven of these subjects were lost through natural attrition. Two additional subjects did not complete the study program because their semester ended during the study program. All in all, forty-two subjects completed the 52 days of the study program. However, due to the apparent lack of consistency in some subjects' self-recording behavior, a set of standard criteria was developed to evaluate the reliability of the performance of all subjects. Utilizing the standard set of reliability criteria, subjects were eliminated for the following reasons: (a) incomplete data: This included failure to state a goal or compute an average study time, failure to send in a graph or a schedule, or failure to submit a post-experimental Survey of Study Habits and Attitudes questionnaire (Brown & Holtzman, 1965); (b) insuffi-

cient number of days (less than 26) on which studying occurred during the total study program; or (c) insufficient number of days (less than four) on which studying occurred during a specific condition. Using these reliability criteria, the experimenter reduced the number of subjects in each of the eight experimental groups to four (N = 32).

Experimental Design

A between-groups experimental design was utilized; eight groups were involved. Each group was presented with treatment procedures in a sequence of five conditions (ie. time intervals of 10 to 12 days each) in a time-sample reversal design (ABABC). The first and third conditions were essentially baseline periods wherein treatment procedures consisted of self-monitoring study time. The overall design is summarized in Table 2 and the procedures are detailed in later sections.

General Procedures

The purpose of the study program as communicated to all subjects was to provide exposure to different strategies to organize themselves and provide structure to approach their studying tasks. Subjects were told that the study techniques would probably be equally effective with all individuals.

Participants were instructed to self-monitor their amount of study time throughout the 52 days of the study program and maintain records on daily record sheets (typing paper cut into four strips). They were requested to record each day's study time on a separate

Table 2

Summary Description of the Treatment Procedures

Utilized in Each Condition of Each Experimental Group

Experimental Group	Treatment Sequence				
	1	2	3	4	5
1	SMI	SMI SMII	SMI	SMI SMII	SMI SMII SRI
2	SMI	SMI SCI	SMI	SMI SCI	SMI SCI SCII
3	SMI	SMI SRI	SMI	SMI SRI	SMI SRI SRII
4	SMI	SMI SCI SCII	SMI	SMI SCI SCII	SMI SRI SRII
5	SMI	SMI SCI SCII	SMI	SMI SCI SCII	SMI SRI SMII
6	SMI	SMI SMII SRI	SMI	SMI SMII SRI	SMI SRI SRII
7	SMI	SMI SMII SRI	SMI	SMI SMII SRI	SMI SCI SCII
8	SMI	SMI SRI SRII	SMI	SMI SRI SRII	SMI SCI SCII

SMI = recording study time only
SMII = graphing study time daily
SRI = verbal self-reinforcement (praise)
SRII = material or social reinforcement
SCI = stimulus control of time
SCII = stimulus control of place

sheet. A mailing schedule was provided with each set of instructions for Conditions 1 through 5. Subjects mailed in their daily record sheets in pre-addressed stamped envelopes every four days during Condition 1 and every five days during Conditions 2, 3, 4, and 5. Before mailing in the record sheets, subjects recorded each day's total amount of study time on their Cumulative Time Record. This Cumulative Time Record sheet provided subjects with a historical record of their study time during the study program and provided an extra copy of the data if the daily record sheets were lost in the mail.

The experimenter presented each subject with a study program folder which contained the sealed envelope of materials for Conditions 2, 3, 4, and 5. Each envelope contained the list of treatment procedures, ten daily record sheets, a sample daily record sheet, and any additional materials appropriate for the treatment. Each subject was instructed not to open the sealed envelope until the day on which the treatment was scheduled to begin. For the first twelve days (ie. Condition 1), subjects were requested to record their daily amount of study time.

The orientation meeting between the experimenter and the subject lasted approximately forty minutes. At this time the Survey of Study Habits and Attitudes (SSHA) by Brown and Holtzman (1965) was administered to the subjects. The purpose of using the SSHA was to determine possible differences in knowledge and usage of study techniques. The SSHA is recognized as one of the best empirical measures of its type because of its low correlations with measures of scholastic ap-

titude and its loading on both attitudinal and factual items.

The three stated purposes of the Survey of Study Habits and Attitudes (SSHA) are as follows: (a) to use it as an aid in understanding students with academic problems; (b) to provide information to help these students improve their study habits and attitudes; and (c) to identify students whose study habits and attitudes differ from those students who attain high grades (Buros, 1972). The purpose of using the SSHA in the present study was to determine possible differences in knowledge and use of study techniques.

The reliability of the SSHA subscales on Form C (for college students) is supported. The lowest (K-R 8) reliability coefficient is .87. The 14-week test-retest coefficients for the four subscales range from .83 to .94. Validity information from Shay (cited in Buros, 1972) expressed in terms of correlation coefficients indicates that the test is related to grades but is not only a measure of ability. This is based on moderate correlation coefficients (mean of .36 for Form C) between SSHA and grades and low correlations (mean of .21 for Form C) between SSHA and aptitude tests. According to Buros (1972) intercorrelation coefficients of SSHA subscale scores range from .51 to .75. These coefficients indicate some relationship between subscales and uniqueness of the subscales. High correlations are found between the two study habits subscales (DA versus WM = .70) and between the two study attitude subscales (TA versus EA = .69). Intercorrelations between subscales range from .49 to .71 according to Higgins (cited in Buros, 1972). Although the SSHA is susceptible

to faked scores, Roark and Harrington (1969) have stated that there is evidence to support its reliability and a predictable relationship with grade point average. Subscale scores should be interpreted cautiously because of the correlations between them (Buros, 1972).

Subjects were instructed and encouraged to telephone the experimenter if they had any questions. The experimenter informed the subjects that he would telephone them at irregular intervals during the study program to ascertain if they had any questions or to clarify procedures with them. The subjects were informed to expect additional questionnaires to be filled out following the completion of the study program. The experimenter assured each participant that information related to the result of their Survey of Study Habits and Attitudes, information about study techniques, and summary results and conclusions about the total study program research would be provided after thorough completion of the study.

After completion of the study program a Survey of Study Habits and Attitudes questionnaire and a Follow-Up Questionnaire were mailed to each subject. Subjects were instructed to return them after filling them out within two weeks of their receiving them in the mail.

Conditions 1 and 3 were periods of 12 and 10 days respectively. During these time periods subjects were instructed to record (self-monitor) their daily amount of study time. The treatment procedures for Conditions 2, 4, and 5 were different for individuals in different experimental groups. For a description of these treatment procedures refer to a subsequent section entitled "Specific Procedures."

Those individuals who were following a college schedule were required to send one copy of the college schedule to the experimenter at the beginning of the condition in which it was used.

In addition, throughout the 52 days of the study program, each subject was instructed to do the following:

1. Record their study time as they studied each day on daily record sheets.

2. Total the amount of study time for each day on the daily record sheet.

3. Transfer the total amount of study time to a Cumulative Time Record which they kept in their notebooks in case there was a loss of a daily record sheet.

4. Write on the daily record sheet the calendar date, the day number of the study program, and their name.

Specific Procedures

Each subject followed treatment procedures in a sequence of five conditions (ie. time intervals) during the study program. The order and/or the nature of the treatment procedures varied among the eight experimental groups. The treatment procedures of Condition 1 were repeated in Condition 3 and the treatment procedures of Condition 2 were repeated in Condition 4 for each subject. The 52 days of the study program were divided nearly equally among the five conditions according to the following schedule:

1. Condition 1: days 1 through 12

2. Condition 2: days 13 through 22

3. Condition 3: days 23 through 32

4. Condition 4: days 33 through 42

5. Condition 5: days 43 through 52

Refer to Table 2 for a summary description of the treatment procedures utilized in each condition of each experimental group.

Experimental Group 1

Condition 1: Self-monitoring I. Subjects were instructed to record the different times during the day in which they studied and each day sum the total amount of time. For example, 7:30-9:15 a.m., 1:35-4:10 p.m., 6:15-6:40 p.m., 8:10-9:50 p.m., 10:15-10:25 p.m.: Total time is six hours, 35 minutes.

Condition 2: Self-monitoring I plus self-monitoring II. Subjects were instructed to do the following:

1. Record their daily study time as in Condition 1.

2. Total the amount of time they spent studying on each of days 13 through 22 and graph the totals at the end of each day on the graph paper provided.

3. Place the graph in a location where they would often see it (e.g. on the wall above their desk).

Condition 3: Self-monitoring I. Same procedures as in Condition I.

Condition 4: Self-monitoring I plus self-monitoring II. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus self-monitoring II plus

self-reinforcement I. Subjects were instructed to do the following:

1. Continue treatment procedures of Condition 4 (self-monitoring I and self-monitoring II).

2. Determine their average amount of study time for a single day. First, subjects added up all of the time they spent studying from day 1 through day 12. Secondly, subjects divided this sum by the total number of days spent studying. Subjects were instructed not to include days in which they did no studying at all. The result of this computation was the daily average of study time.

3. Set high goals for themselves so they could get all of their studying done. They were encouraged to attempt to study 25% more than their average study time. Guidelines for establishing goals were suggested. Please refer to Appendix A. The guidelines suggested amounts of study time. If they required more time to complete their course requirements, subjects were instructed to select a higher goal for themselves and gradually study more each day to attain it.

4. Total their amount of study time at the end of each day, compare the sum to their selected study goal, and evaluate their performance. If they attained their goal, they were instructed to praise themselves (such as "You did great!"). If they failed they were told to withhold praise.

Experimental Group 2

Condition 1: Self-monitoring I. Subjects were instructed to record the different times during the day in which they studied and sum the total amount of time for each day as in Experimental Group 1,

Condition 1.

Condition 2: Self-monitoring I plus stimulus control I (time). Subjects were instructed to do the following:

1. Record their daily study time as in Condition 1.

2. Make a weekly schedule of their time. Paper was provided for this purpose. Subjects were given suggestions on how to set up the schedule. These points included the following: (a) "Map out a weekly schedule based on the time you spend in classes and the time you require for accomplishing your assignments and preparing for exams." (b) "Schedule the hours spent in activities such as meals, labs, work for pay," and "hours spent in sleep." "Cross hatch or lightly fill-in these squares." (c) Please refer to Appendix B for a complete list of the instructions and recommendations for the college schedule.

3. Place a copy of their schedule on the wall in front of their desk where they could see it frequently.

4. Send one copy of their study schedule in the mail to the experimenter during Condition 2.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus stimulus control I. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus stimulus control I (time) plus stimulus control II (place). Subjects were instructed to do the following:

1. Continue the treatment procedures of Condition 4.

2. Each subject was given a page entitled "Study Advice" listing several instructions and information related to organizing the student to develop the habit of studying regularly in certain places and under recommended environmental conditions. Please refer to Appendix C for a detailed listing of the instructions and recommendations.

Experimental Group 3

Condition 1: Self-monitoring I. Subjects were instructed to record the different times during the day in which they studied and each day sum the total amount of time as in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus self-reinforcement I (verbal). Subjects were instructed to do the following:

1. Record their daily study time as in Condition 1.

2. Determine their average amount of study time for a single day. First, subjects added up all of the time they spent studying from day 1 through day 12. Secondly, subjects divided this sum by the total number of days spent studying. Subjects were instructed not to include days in which they did not study at all. The result of this computation was the daily average of study time.

3. Set high goals for themselves so they could get all of their studying completed. They were encouraged to attempt to study 25% more than their average study time. Guidelines for establishing goals were suggested. (Please refer to Appendix A.) The guidelines suggested amounts of study time as minimums by which the subjects

were to select a higher study goal for themselves and gradually study more each day to attain it.

4. Total their amount of study time at the end of each day, compare the sum to their selected study goal, and evaluate their performance. If they attained their goal, they were instructed to praise themselves (such as "You did great!"). If they failed, they were told to withhold praise.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus self-reinforcement I. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus self-reinforcement II (material or social). Subjects were instructed to do the following:

1. Record their daily study time as in Condition 1.

2. Set goals for their study time as in Condition 2.

3. Total their study time for the day and evaluate whether they reached their goal. Subjects were to praise themselves if they attained their goal and withhold praise if they did not.

4. Think during the day about a reward they believed to be powerful enough to motivate them to study. The reward was intended to be something which they could give themselves or experience that day subsequent to the attainment of their selected study goal. Subjects were required to plan the reward in advance of studying in order to have an expectation for the reward while studying. Examples of rewards suggested to subjects included going out for icecream, going

for a drive in the car, watching television, going on a date.

5. Allow sufficient time to engage in the reward after they finished studying. The importance of doing their work first and then rewarding themselves was stressed. Written procedures instructed the subjects to delay any other reinforcing experience (such as watching television or talking to friends or other social experiences) until they finished studying. They were told that rewarding themselves before they completed their work weakened the power of the reward they selected to give themselves for achieving their goal.

6. State on their daily record sheet if they had given themselves the reward despite not reaching their study goal. They also were instructed to describe what the reward had been.

Experimental Group 4

Condition 1: Self-monitoring I. Each subject was instructed to record their daily study time as described in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus stimulus control I (time) plus stimulus control II (place). Subjects were instructed to do the following:

1. Record their daily study time as described in Experimental Group 1, Condition 1.

2. Design and follow a schedule as described in Experimental Group 2, Condition 2.

3. Each subject was given a page entitled "Study Advice" list-

ing several instructions and information related to organizing the student to develop the habit of studying regularly in certain places and under recommended environmental conditions. Please refer to Appendix C for a detailed listing of these instructions and recommendations.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus stimulus control I plus stimulus control II. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus self-reinforcement I (verbal) plus self-reinforcement II (social or material). Subjects were instructed to do the following:

1. Record their daily study time as described in Experimental Group 1, Condition 1.

2. Set goals for their study time as described in Experimental Group 3, Condition 2.

3. Evaluate their performance and praise themselves according to the procedures described in Experimental Group 1, Condition 5.

4. Reward themselves according to the procedures listed in Experimental Group 3, Condition 5.

Experimental Group 5

Condition 1: Self-monitoring I. Subjects were instructed to record their daily study time as described in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus stimulus control I plus

plus stimulus control II. Subjects were instructed to follow the same procedures as in Experimental Group 4, Condition 2.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus stimulus control I plus stimulus control II. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus self-monitoring II plus self-reinforcement I. Subjects were instructed to follow the same procedures as in Experimental Group 1, Condition 5.

Experimental Group 6

Condition 1: Self-monitoring I. Subjects were instructed to record their daily study time as described in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus self-monitoring II plus self-reinforcement I. Subjects were instructed to follow the same procedures as in Experimental Group 1, Condition 5.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus self-monitoring II plus self-reinforcement I. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus self-reinforcement I plus self-reinforcement II. Subjects were instructed to follow the same procedures as described in Experimental Group 3, Condition 5.

Experimental Group 7

Condition 1: Self-monitoring I. Subjects were instructed to

record their daily study time as described in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus self-monitoring II plus self-reinforcement I. Subjects were instructed to follow the same procedures as in Experimental Group 1, Condition 5.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus self-monitoring II plus self-reinforcement I. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus stimulus control I plus stimulus control II. Subjects were required to follow the same procedures as in Experimental Group 2, Condition 5.

Experimental Group 8

Condition 1: Self-monitoring I. Subjects were required to record their study time as described in Experimental Group 1, Condition 1.

Condition 2: Self-monitoring I plus self-reinforcement I plus self-reinforcement II. Subjects were instructed to follow the same procedures as described in Experimental Group 3, Condition 5.

Condition 3: Self-monitoring I. Same procedures as in Condition 1.

Condition 4: Self-monitoring I plus self-reinforcement I plus self-reinforcement II. Same procedures as in Condition 2.

Condition 5: Self-monitoring I plus stimulus control I plus stimulus control II. Subjects were instructed to follow the same

procedures as described in Experimental Group 2, Condition 5.

Analyses and Hypotheses

Analysis 1

It was expected that students would not study every day. A wide discrepancy between subjects in the number of days of the study program on which they actually studied was considered a possibility. It was felt that the proportion of days subjects do not study could seriously alter the comparability of the data because students may continue for several days once they have fallen into a pattern of not studying. When such a situation arises and all or most of the zero studying days occur during one condition it becomes virtually impossible to compare the average daily studying time of one condition with that of another.

In anticipation of such an occurrence the study time data was analyzed in two ways. In the first set of data the students' average study time was calculated by including all of the days in the experiment. This data was denoted as the All Day study time. In the second set of data, the days on which the students did not study was not counted in calculating the average amount of time spent studying: this was denoted as the Nonzero Days study time.

An 8 x 5 two way analysis of variance experimental design (Hays, 1974) with repeated measures in the second factor was performed on the study time data to test for an interaction between conditions and experimental groups. This computation was utilized

to determine if there existed a significant effect between conditions or between experimental groups.

Hypothesis 1. There will be no observed difference between conditions in the overall amount of time spent studying.

Hypothesis 2. There will be no observed difference between experimental groups in the overall amount of time spent studying.

Hypothesis 3. There will be no observed experimental groups x conditions interactions in the overall amount of time spent studying.

Analysis 2

Four one-way analyses of variance were conducted with experimental group membership as the independent factor and pre-post differences on each of the four subscales of the Survey of Study Habits and Attitudes (SSHA) as the dependent variables. While significant results were hypothesized only for the Delay Avoidance and Work Methods subscales, the analyses were conducted for all four subscales, including Teacher Attitudes and Education Acceptance.

Hypothesis 4. There will be no observed differences between experimental groups of subjects in the pre-post difference on both the Delay Avoidance and Work Methods subscales on the Survey of Study Habits and Attitudes (SSHA).

In addition, a *t* test for correlated pairs between the pre- and post-administrations of each of the four subscales of the SSHA was conducted. Again significant results were predicted only for the Delay Avoidance and Work Methods subscales of the SSHA.

Hypothesis 5. There will be no observed differences in scores between the pre- and post-experimental administrations of the Survey of Study Habits and Attitudes on the Delay Avoidance and Work Methods subscales.

Analysis 3

The Pearson product moment correlation statistic was used to evaluate the existence of relationships between the average of the average nonzero study times taken across the conditions (hereafter referred to as overall study time) and pre-post differences in the four basic subscales (Delay Avoidance, Work Methods, Teacher Attitudes, and Education Acceptance) on the Survey of Study Habits and Attitudes. Significant results were predicted only for the relationship between overall study time and pre-post Delay Avoidance differences and the relationship between overall study time and pre-post Work Methods differences.

Hypothesis 6. There will be no observed significant correlation between overall amount of studying time and pre-post differences in the Work Methods or Delay Avoidance subscales on the Survey of Study Habits and Attitudes.

CHAPTER IV

RESULTS

The means of study time for the eight experimental groups and each of their five conditions using Nonzero Days study time data are presented in Table 3. All Days study time data is presented similarly in Table 4. The grand mean and standard deviation for each of the five conditions is also noted. Figure 1 graphically depicts the mean amount of study time for each experimental group. In the Nonzero analysis seven of the eight experimental groups had higher mean study rates in the second condition than in the first condition and higher mean study rates in the fifth condition than in the fourth condition. In the All Days analysis, six of the eight experimental groups had higher mean study rates in the second condition than in the first condition and higher mean study rates in the fifth condition than in the fourth condition.

In order to test hypotheses 1, 2, and 3, an 8 x 5 two way analysis of variance with repeated measures in the second factor (Anova Model R-II, Hays, 1974) was performed on the study time data. The repeated measures analysis of variance for the Nonzero Days study time revealed a significant between conditions effect, $F(4,96) = 5.38$, $p < .01$. There was not a significant difference between experimental groups, $F(7,24) = .36$, $p > .05$. No interaction effects between conditions and experimental groups were detected, $F(28,96) = .88$, $p > .05$. The analysis of variance summary using Nonzero Days

Table 3

Mean Number of Minutes Studied by Experimental Groups in Each Condition During Nonzero Days[a]

Experimental Group	Conditions				
	1	2	3	4	5
1	194.0	225.3	265.8	209.5	279.0
2	204.3	225.5	245.8	235.5	301.5
3	195.5	213.8	228.3	183.8	245.8
4	196.0	172.5	156.0	166.5	195.5
5	220.0	226.5	184.8	203.0	218.3
6	173.3	229.3	228.8	196.0	269.0
7	188.0	221.3	232.5	215.3	243.3
8	209.0	247.3	188.8	232.8	224.5
Total Mean	197.4	220.2	216.3	205.3	247.1
Standard Deviation	71.2	68.3	79.4	53.2	85.2

[a]Nonzero Days means studying time was computed by dividing by the number of days studying occurred.

Table 4

Mean Number of Minutes Studied by Experimental Groups in Each Condition During All Days[a]

Experimental Group	Conditions 1	2	3	4	5
1	179.3	204.3	215.8	185.0	204.0
2	188.0	172.3	218.0	180.3	241.0
3	180.0	183.0	200.8	174.0	232.5
4	163.3	151.0	135.5	146.8	161.0
5	195.5	197.3	145.3	164.8	192.3
6	159.5	205.0	206.8	170.0	196.5
7	158.0	186.0	224.8	197.8	197.0
8	173.3	218.8	165.0	200.0	190.8
Total Mean	174.6	189.7	189.0	177.3	201.9
Standard Deviation	75.9	70.8	85.5	61.7	91.1

[a]All Days means studying time was computed by dividing by the total number of days regardless if studying occurred.

study time data is presented in Table 5.

The repeated measures analysis of variance for All Days study time failed to find significant differences between conditions, $F(4,96) = 1.56$, $p > .05$, or between experimental groups, $F(7,24) = .19$, $p > .05$. The interaction effect between experimental groups and conditions was also not significant, $F(28,96) = .65$, $p > .05$. The analysis of variance summary for All Days study time data is shown in Table 6.

As an a posteriori statistical analysis t tests were computed on the Nonzero Days study time data between conditions for all of the groups, and differences significant at the $p < .05$ level were found within the following pairs of conditions: (a) between 1 and 2, $t(31) = -2.30$, $p < .05$; (b) between 1 and 5, $t(31) = -4.38$, $p < .05$; (c) between 2 and 5, $t(31) = -2.23$, $p < .05$; (d) between 3 and 5, $t(31) = -3.02$, $p < .05$; (e) between 4 and 5, $t(31) = -3.35$, $p < .05$. Utilizing the All Days study time data, the only significant difference was found between Conditions 1 and 5, $t(31) = -2.36$, $p < .05$.

The data was subjected to two one-way analyses of variance to test hypothesis 4. This hypothesis stated that there would be no difference between experimental groups in the pre-post differences on both the Delay Avoidance and Work Methods subscales of the Survey of Study Habits and Attitudes (SSHA). As a supplementary evaluation, the data on pre-post differences on the Education Acceptance and Teacher Attitude subscales were subjected to two one-way analyses

Table 5

Analysis of Variance of Studying Time

for Nonzero Days[a]

Source	SS	df	MS	F-ratio
Between Subjects	552870.7	31		
Groups	52417.5	7	7488.2	0.36
$Error_b$	500453.2	24	20852.2	
Within Subjects	303051.8	128		
Conditions	45944.2	4	11486.1	5.38*
Conditions x Groups	52282.5	28	1867.2	0.88
$Error_w$	204826.0	96	2133.6	

* $p < .01$

[a]Nonzero Days includes study time data only on those days of the study program in which studying occurred.

Table 6

Analysis of Variance of Studying Time for All Days[a]

Source	SS	df	MS	F-ratio
Between Subjects	654837.0	31		
Groups	33819	7	4831.3	0.19
$Error_b$	621018	24	25875.7	
Within Subjects	296619	128		
Conditions	15321.9	4	3830.3	1.56
Conditions x Groups	45055	28	1609.1	0.65
$Error_w$	236243	96	2460.9	

* $p < .01$

[a]All Days includes study time data on all days of the study program regardless if studying occurred.

of variance to determine whether there were significant differences between experimental groups. F-ratios (7,31) of .65, .75, .74, and .93 respectively for the pre-post differences on the Work Methods, Delay Avoidance, Education Acceptance, and Teacher Attitude subscales failed to reject the null hypothesis at the $p < .05$ level of significance. Experimental groups did not vary significantly in their pre-post differences on these four SSHA subscales.

The t test for correlated pairs was employed to test hypothesis 5, which stated that there would be no difference between pre- and post-experimental scores on the Delay Avoidance or Work Methods subscales of the SSHA. The data indicated that pre-experimental scores differed significantly from the post-experimental scores on the Delay Avoidance ($t(31) = 2.84$, $p < .05$) and Work Methods subscales ($t(31) = -2.27$, $p < .05$). The null hypothesis was thus rejected.

In addition, t tests were conducted on the pre- and post-experimental scores for the Education Acceptance and Teacher Attitudes subscales. The resulting t-ratios of -.51 and -1.51 respectively were not significant at the $p < .05$ level. No significant difference was hypothesized and none was found.

A Pearson product moment correlation coefficient was computed to test hypothesis 6. This hypothesis stated that there would not be an observed significant correlation between the overall study times taken across conditions and the difference of scores on the four basic subscales of the pre- and post-experimental SSHA (ie. Delay Avoidance, Work Methods, Education Acceptance, and Teacher

Attitude). Results established statistically significant correlations ($p < .05$), between subjects' overall study time and the improvement in Delay Avoidance and Work Methods scores on the SSHA. The correlation of .44 was found to be statistically significant for the Delay Avoidance score and overall study time. Similarly, a correlation of .37 between the Work Methods difference score and overall study time was significant. Significant correlations ($p < .05$) of .40 and .33 respectively were also found using All Days data for the overall amount of study time.

Utilizing Nonzero Days study time data, Pearson r's failed to establish significance at the $p < .05$ level between the Education Acceptance difference scores and overall study time ($r = .27$) and between Teacher Attitude difference scores and overall study time ($r = .01$). Similarly, All Days study time data did not reveal a significant correlation between overall study time and Education Acceptance difference scores ($r = .09$), or between overall study time and Teacher Attitude difference scores ($r = .10$).

CHAPTER V

DISCUSSION

General Discussion

The results from the present study can be summarized as follows:

1. Hypothesis 1, which stated that study time did not vary significantly between conditions, was rejected. With the introduction of a novel treatment procedure in Condition 2 (ie. different from the previous condition), a significant increase in subjects' study time was observed. Similarly, Condition 5's treatment procedures differed in nature from those in the previous four conditions. Again, subjects' study time was significantly greater in Condition 5 than Conditions 1, 2, 3, or 4. Conversely, when previous treatment procedures were re-introduced during later conditions of the study program, they failed to increase their study time. There were no significant differences between Conditions 2, 3 (same treatment procedures as Condition 1), and 4 (same treatment procedures as Condition 2) in the amount of study time.

2. There was not a significant difference between experimental groups in the amount of study time; thus, hypothesis 2 could not be rejected. In other words, the data failed to distinguish specific treatment components of the self-control procedures which were more effective between experimental groups. The type of treatment intervention in Conditions 2, 4, or 5 did not differ significantly between

experimental groups in effect on study time.

3. The data failed to reject hypothesis 3. There was not an observed interaction between experimental groups and conditions in the amount of time spent studying. That is, the effects of sequence of treatments and the specific treatment procedures in each condition did not influence which condition produced the greater amount of study time.

4. Experimental groups did not vary significantly in their pre-post experimental differences in scores on the Delay Avoidance or on their Work Methods subscale of the SSHA. This supports hypothesis 4.

5. The data rejected hypothesis 5 that there were no significant differences between pre- and post-experimental SSHA scores on the Work Methods and Delay Avoidance subscales. Overall, post-experimental SSHA scores were significantly improved over the pre-experimental SSHA scores.

6. The overall amount of study time and improvement in scores on the Delay Avoidance and Work Methods subscales of the SSHA were significantly correlated, thus rejecting hypothesis 6. Scores on the Delay Avoidance and Work Methods subscales tended to improve as the overall amount of study time of the students increased.

The results of this investigation noted a tendency for studying time to increase across conditions as the number of treatment components of self-management techniques utilized by the students increased. Students experienced greater success in changing study behavior as they employed more self-control procedures. This con-

clusion is based upon the following explanation: For Experimental Groups 4 through 8, Condition 5 and Condition 2 (or 4) had similar self-control procedures in the sense that each involved self-recording plus self-reinforcement or stimulus control or additional self-monitoring procedures. Meanwhile, in Experimental Groups 1, 2, and 3, Condition 5's treatment procedures were not a substitute but an addition to the treatment procedures which existed in Condition 4. A possible explanation for the apparently greater influence on study time with a larger number of self-control procedures is the greater awareness of study habits on the part of students when they are required to follow additional treatment procedures or the effect of a greater degree of structure in their lives.

The obtained significant differences in study time between conditions could also be explained by using the following explanation alone or in combination with the preceding one. In looking at the significant increase in study time in Condition 5 in comparison to Conditions 1, 2, 3, or 4, the significant increase in study time in Condition 2 in comparison to Condition 1, and the lack of significant differences in study time between Conditions 2, 3, and 4, it could be interpreted that the introduction of novel treatment procedures (ie. different from treatments in previous conditions) is associated with an increase in study time. Contrariwise, re-introduction of previous treatment procedures is not associated with an increase in study time.

Another possible explanation is that when new treatment pro-

cedures are presented, subjects' curiosity may be aroused which subsequently influences them to maintain their use of treatment procedures.

No evidence was found (in the between experimental groups analyses) to support the inference that the greater number of applied self-control techniques, the greater amount of study time. In addition, a (between groups) analysis of the study time data failed to find some self-control techniques that were more influential than others.

The present study reported a trend of higher amount of study time in Condition 5 (wherein treatment consisted of a baseline of self-monitoring, plus self-reinforcement or stimulus control or additional self-monitoring) than in Conditions 1 or 3 (wherein treatment involved self-monitoring only). The inferiority of using self-monitoring alone for increasing study time was further demonstrated by the significant difference in study time between Conditions 1 and 2. Students required to follow treatment procedures (Condition 2) which involved other components in addition to self-recording of study time, studied more than students who were just self-recording (as in Condition 1). One way to interpret these findings is to conclude that self-control procedures in addition to self-monitoring will enhance studying more than self-monitoring alone.

Evidence of the effectiveness of self-control approaches in the improvement of study habits is provided by the pre-post difference scores on the Work Methods and Delay Avoidance subscales of the SSHA.

Study habits of college students improved in terms of lack of procrastination, freedom from wasteful delay and distraction, promptness in completing assignments, and change in methods of studying. Analysis of experimental data failed to identify specific self-control procedures which were more successful than others.

In the present study the improvement in study habits associated with application of self-management techniques (including stimulus control, self-monitoring, and self-reinforcement) corroborates other findings which indicate that self-management techniques can enhance student studying behavior (Broden et al., 1971; Richards, 1975).

From the observation that Delay Avoidance and Work Methods difference scores are correlated with overall studying time the interpretation is made that the more students study the less likely they will procrastinate, waste time, and distract themselves. Furthermore, it is likely that students who study more will be more efficient in study procedures, efficient in doing academic assignments, prompt in completing assignments, and utilize how-to-study skills. This speculation appears appropriate in light of the research which indicates a positive relationship between the amount of study time and academic achievement (Allen et al., 1972; Gottman & McFall, 1972; Richards, 1974).

The observation that there were not significant differences between Condition 2 and Condition 3 makes it reasonable to assume that the effects of Condition 2's procedures on study time did not diminish

immediately.

Although there were not significant differences between Condition 2 (in which treatment consisted of self-recording plus self-reinforcement or stimulus control or additional self-monitoring), Condition 3 (in which treatment was self-monitoring only), and Condition 4 (same treatment procedures as Condition 2), an inspection of Figure 1 suggests a gradual reduction in the amount of study time from Condition 2 to Condition 4. One explanation for this downward trend in study time is the possible psychological letdown of subjects due to the requirement of resuming previous procedures during the treatment reversals.

It may be that when treatment procedures were re-introduced in subsequent conditions, the subjects' curiosity about their effectiveness was not aroused. Consequently, it is possible that subjects' motivation to adhere to treatment procedures may have been reduced, thus negatively influencing their study behavior. Mahoney (1974) has mentioned the possible unwillingness of a subject to reverse treatment procedures in a successful self-management project.

Another explanation for the apparent decrease in study time is the treatment maintenance problem (ie. subjects may evidence a lack of persistence in the use of treatment techniques). This problem has also been observed by Groveman et al. (1975) as well as Richards et al. (1976).

Statements Concerning Internal and External Validity

Although there was not enough data to make any statistical inferences on the power of each self-control procedure, the results did suggest that the study was incomplete and inconclusive as regards the interrelationships among different self-control techniques including stimulus control, self-reinforcement, and self-monitoring in the improvement of study habits and encouragement of studying behavior.

In evaluating the utility of the results of the present study two general criteria were considered. The first of these, internal validity, must be met or the research findings are at best meaningless (Campbell & Stanley, 1966). The following extraneous variables were evaluated: History--it is conceivable that other factors during the experimental treatments such as testing schedules, coursework, and term papers could have accounted for the improvement in study habits and increase in study time over the semester. However, the random assignment of subjects across experimental groups would randomly distribute this source of variance. Maturation--during the study program students were developing intellectually, socially, physically, and emotionally and may have become fatigued, discouraged, or encouraged. Their increased maturity may have contributed to the treatment effects. However, random assignment of subjects across experimental groups utilizing different treatments would randomize out the effects of this extraneous variable. Statistical regression--it was assumed that randomization of subjects to experimental groups following different treatment procedures would randomize out the effect of

this variable. There were subjects who achieved high as well as low scores on the pre-test. Since overall there was an improvement in Work Methods and Delay Avoidance scores, it is believed that statistical regression was not a significant influence. Selection-maturation interaction--the eight experimental groups were comprised of students of differential age and years of education and, thus, maturation. However, the subjects were randomly assigned to each of these experimental groups.

One problem with the randomization of uncontrollable variables is that any variability due to nuisance variables (that is, uncontrollable variables) becomes deposited in their error term. This results in an increase in the variability of subjects treated alike. With a larger error term, the ability to detect the presence of real treatment effects is reduced (Keppel, 1973).

Instrumentation--the SSHA did not change during the study program. Evidence for its reliability and validity was presented in Chapter III. The current exploratory study controlled for drift by the experimenter's monitoring the data of each subject as it was mailed in to determine whether or not there were any unusual irregularities and by stressing to each subject periodically on the telephone the importance of recording study time as it was operationally defined in the study program booklets. Testing--with respect to use of the SSHA, it is unlikely that this variable was operating because of the long period of time between pre- and post-experimental administrations. On the other hand, self-monitoring as a measuring device

has been found to be reactive (Cronbach, 1960); that is, it has actually caused a change in the behavior being monitored. The way to control for this potential effect in the present study was to provide a sufficiently long baseline of 12 days to allow the effects of self-monitoring, if any, on the dependent variable, to stabilize before instituting the additional self-control procedures. Experimental mortality--the 12 subjects lost may have been different from the ones who remained in the study until its completion. The potential effect upon the research results is considered minimal because the subjects appeared to drop out of the study program on a random basis. Selection biases--internal validity could not be established with respect to selection biases resulting from the differential selection of subjects of the comparison groups. Some subjects were eliminated because of their failure to meet specified reliability criteria. An inspection of the sample will reveal that the sample employed was one of convenience.

In terms of external validity, or generalization, the results of the present investigation were examined via four jeopardizing factors: First, interaction effects of selection and the experimental variable: as was previously mentioned the sample used was one of convenience and therefore biased. Utilizing volunteers in the experiment is not an issue because the experimenter intends to generalize the results to those students within the defined population who volunteer for a self-managed study program.

Second, reactive effects of pre-testing; it was assumed that

the present study could not be faulted on this point because the experimenter intends to utilize the pre-test as part of the study program when generalizing to others in the population of college students.

A third factor is the reactive effect of experimental procedures which will not occur in spontaneous, nonexperimental situations. It was assumed that the experimental variables experienced in the present study (including the reversal of treatment procedures, the experimenter's biases or expectancies, the demands which subjects place on themselves for a directional behavior change, evaluation apprehension, that is, the subject's concern that he or she receive a positive evaluation from the experimenter or at least no grounds for a negative one, the fact that the subjects knew their data was being monitored by the experimenter may have affected their behavior, the demanding requirement of completing lengthy questionnaires, and the motivational influence of social participation based on the awareness that peers were also in the study program) were contrived and a Hawthorne effect was considered a possibility. Two ways the present experiment attempted to deal with this factor were by minimizing experimenter's contact with the subjects and by reducing the feedback to the subjects during the experiment to a minimum. For example, the experimenter refrained from giving subjects results of their pre-experimental Survey of Study Habits and Attitudes and did not praise or criticize them for their amount of studying during the study program. The experimenter's role remained informational in terms of giving or

clarifying instructions only. In addition, following Orne's (1969) suggestion that post-experimental inquiry (ie. debriefing) could be utilized as a solution to demand characteristics, the experimenter questioned the subjects subsequent to the completion of the post-experimental SSHA and found unanimous perceptions that the study program had improved their studying behavior.

The reactivity of self-monitoring and other self-control techniques is not an issue that need be defended in the present study because the goal is to find a workable treatment to increase studying behavior. One cannot separate the demand characteristics of the procedures in such a study. Because of its applied research orientation, subjects cannot help but be aware of the desired direction of behavior change. The experimenter intends to generalize the results of this study only to situations in which students are utilizing self-management procedures which include an underlying self-monitoring component.

A fourth factor in evaluating external validity of the study is the multiple-treatment interference effect; this is due to multiple treatments applied to the same subject where prior treatments influence subsequent treatments in the series because their effects are not erasable. The present investigation could not control for prior treatment influences.

External validity of the present study is further supported by the fact that there were no detectable significant interactions between conditions and experimental groups (Keppel, 1973).

In summary, with respect to internal validity the experimenter

was reasonably confident in stating that the manipulation of the independent variable resulted in the obtained dependent variable. In terms of external validity, the results are applicable to a specific population (that is, undergraduate or graduate college students in the Chicago, Illinois, and Madison, Wisconsin metropolitan areas of ages 17-52, with a grade point average of "C" or higher, who volunteer for a study program which suggests that they can improve their study habits and increase their studying time using self-help techniques).

Before a statement can be made on the relative utility of different self-control techniques for improving study habits and increasing studying behavior, it is necessary to incorporate the results of current ongoing research. When the results of this research are complete an empirical statement can be made on the role of different self-management strategies for improving and increasing study behavior.

In conclusion, the present study supports Richards (1975, 1976), Groveman et al. (1975), and Van Zoost and Jackson (1973) that self-control strategies are an effective alternative to group-oriented or individual counseling approaches to the improvement of study habits and increase in studying behavior. Self-management techniques including stimulus control and/or self-reinforcement, in addition to self-monitoring of study time were found to be more effective in increasing study time than self-monitoring of study time alone.

Overall study time was related to self-reported perception of

improvement of study habits. The speculative inferences can be drawn that improving study habits permitted the students to experience an increase in study time due to more organization and motivation, or increased studying led the students to the perception that their study habits had improved.

Educational Implications

From the results of this study it appears that participation in self-managed study programs is a viable alternative to externally-managed treatment of motivational and organizational aspects of studying behavior such as found in group and individual counseling or in courses on study skills. In using self-management techniques to increase study time, students will note a reduction in procrastination and inefficiency, and an increase in use of how-to-study skills and promptness in completing academic work.

Demonstration of behavioral control via self-control has obvious practical ramifications in terms of cost, efficiency, and convenience. In addition, successful use of self-control techniques is promising for applications of other strategies in which people are helped to develop problem-solving skills and acquire the skills to change themselves.

The results of the present investigation lend support to the conclusion that increasing the number of self-control procedures for the increase of study time will be associated with an improvement in study habits and an increase in academic achievement. This is based

on the information that amount of studying time increases as the degree of improvement in study habits increases, the number of self-control procedures is positively related to the amount of time spent studying, and academic achievement is positively related to the amount of time spent studying.

Analysis of the study time data provides evidence which suggests that the success of study programs (which utilize a sequence of several self-control treatment procedures) in terms of increase in study behavior may be enhanced if they do not repeat treatment procedures in later time intervals of the study program but, instead, employ different treatment procedures. The speculation is drawn that the introduction of novel treatment procedures increases students' motivation to adhere to them. This possibly results in an increase in study behavior. Study programs designed in the future should consider the possibility that a sequence of different treatments would increase study behavior more than a sequence of treatments which include repetitions (or reversals) of treatments.

Recommendations for Further Research

The need for further studies is recognized. In view of the fact that this was an exploratory study, it helped establish some directions in which future research should be undertaken to clarify some of the present findings and elaborate on others. On the basis of the findings of this study, the following recommendations for further research are set forth:

1. Several of the possible explanations for the obtained SSHA difference scores and differences in study time discussed earlier in this chapter might be investigated. The research might assess the effects of extraneous variables including test schedules, courses, type of university attending (e.g. private, etc.), age, sex, race, grade point average, IQ, motivation level. Subjects should be matched on these variables and control groups could be incorporated in the experimental design (e.g. a no-contact control group, a pre-test: post-test only group, a self-monitoring group only, an information only group) to eliminate plausible rival hypotheses.

2. An investigation could be undertaken to compare the outcomes of three primary treatment modes for encouraging study behavior. One treatment should utilize a package of self-control methods. The second treatment should provide study skills advice to provide information on how to study (e.g. how to take notes, how to prepare for tests, how to read faster, how to outline). The third treatment should be group academic counseling to consist of students and a group leader talking about methods of study, vocational goals, individual academic difficulties, and relations with the professors, both in the classroom and on the campus. McReynolds and Church (1973) made a limited comparison among the three approaches using grade point averages and scores on the SSHA, but research in this area needs expansion.

In addition, systematic research should be done emphasizing both study skills approaches and self-control techniques or comparing

the relative efficiency and effectiveness of the two methods.

3. A more detailed investigation utilizing a smaller number of groups but more subjects in each group should be conducted. Course grades and change in grade point average could be the dependent variables; students should have been enrolled for three consecutive semesters to establish a reasonably stable grade point average.

4. Follow-up measures of subjects' grade point averages and maintenance of treatment procedures should be conducted because of the acknowledged difficulty in getting subjects to persist in their use of treatment techniques (Groveman et al., 1975; Richards, Perri, & Gortney, 1976).

5. Additional self-management studies with a variety of well-defined samples from different areas of the country, age groups, academic levels, and type of school (junior college, college, university, high school, and junior high school) are necessary before questions relating to the utility of self-monitoring, stimulus control, and self-reinforcement for improving study habits and increasing study time can be answered conclusively for students in general.

6. Intensive case studies on single subjects with independent observer(s) should be conducted to provide reliability checks on self-monitoring data and to ascertain whether subjects are following prescribed experimental procedures. Independent observation can potentially clarify the role of self-monitoring unconfounded by

other behavior-change procedures. The study of individual student's studying behavior by independent observers can explore and possibly identify other relevant variables (e.g. personality variables) which influence study behavior. Data may be discovered which can provide the basis for formulating new research questions as well as launch new studies to isolate and control for other relevant variables.

7. Future investigations could examine the effect of varying lengths of study programs as well as the duration of treatment procedures within the study program on the studying behavior of students. Additional research is needed to analyze the influence of novelty on the effectiveness of study programs. A comparison could be made of study programs comprised of a sequence of unrepeated treatment procedures and other study programs which repeat procedures later in the sequence of presented treatments.

CHAPTER VI

SUMMARY

College student underachievement is a critical problem manifested in low academic grades, student dropout rates, and declining college entrance test scores (e.g. SAT scores). Students' lack of motivation and organization may be partially responsible for the problem.

Traditionally, colleges and universities have approached studying problems of their students through individual or group counseling by a psychologist or counselor, enrollment in study skills courses, or providing literature on how to improve study habits. However, these approaches appear to inadequately address organizational and motivational variables of studying, and the treatment delivery via individual or group counseling is expensive and inefficient.

More recently, behavioral self-control techniques including self-monitoring, stimulus control, and self-reinforcement have been introduced as an alternative approach to facilitating study behavior. The purpose of the present exploratory study was to investigate the efficacy of different self-control techniques (e.g. recording and/or graphing daily study time, rewarding oneself verbally, socially, or materially for studying a planned amount of time, studying in the same place and/or at the same time of day) for encouraging

student studying behavior and improving study habits.

Thirty-two volunteer undergraduate and graduate college students participated in a program for the purpose of improving their study habits and increasing their study time. A between-groups experimental design was utilized; eight experimental groups were involved. Each study program consisted of self-control treatment procedures in a sequence of five conditions (ie. time intervals of 10 or 12 days each), in an ABABC time-sample reversal design. As a dependent variable, students recorded their study time during the study program. The Survey of Study Habits and Attitudes (SSHA) questionnaire (Brown & Holtzman, 1965) was administered before and after the study program to provide an additional measure of change in study habits.

Comparisons among self-control treatment procedures were made to determine whether or not one treatment or a combination of treatments would emerge as more effective than others for increasing study time. An 8 x 5 two way analysis of variance with repeated measures in the second factor was computed using the students' recorded study time as the dependent variable. The results indicated that subjects significantly ($p < .05$) increased their study behavior when treatment procedures were introduced that had not been previously utilized in the experiment. They did not increase their study behavior when they returned to previous treatment procedures. Results from four one-way analyses of variance as well as t tests for correlated pairs between pre- and post-experimental administrations of the SSHA

failed to demonstrate significant differences between the eight experimental groups, but post-experimental study habits scores on the SSHA were significantly ($p < .05$) improved over the pre-experimental scores. A Pearson product moment statistic yielded a significant ($p < .05$) correlation between the students' overall amount of study time and improvement in study habits (according to difference scores on the SSHA).

From the results of this study the following conclusions were drawn: Firstly, self-managed study programs are a productive alternative to externally-managed treatments of studying behavior such as student counseling or study skills courses. Secondly, participants in self-managed study programs will perceive an increase in their use of study skills and promptness in completing academic work and a reduction in procrastination and inefficiency. Thirdly, as the number of self-control procedures utilized is increased, students will more likely increase their amount of studying time. In addition, the more time that the students study, the more likely they will note an improvement in study habits (in terms of the SSHA). Fifthly, in designing study programs, repetition (or reversal) of treatment procedures should be avoided because it appears that study behavior is positively influenced by the periodic introduction of novel treatment procedures. Seven recommendations for further research were discussed. This exploratory investigation of procedures to encourage student studying behavior supports the conclusion that self-management of behavior is a promising area for productive research and meaningful applications to solving human problems.

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APPENDIX A

APPENDIX A

Instructions for Self-Reinforcement I

1. Determine your average amount of studying for a single day. First, add up all of the time you spent studying from day 1 through day _. Secondly, divide this sum by the total number of days spent studying. (Note: In calculating average daily study time, do not include days in which you did not study at all.) The result of the above computation will be your daily average of study time.

2. Set high study goals so you can get all of your studying done. Try to study about 25% more than your average study time.

Guidelines:

If your average daily study time is less than one hour, try to study at least 15 minutes more each day.

If your average daily study time is nearly two hours, try to study at least 30 minutes more each day.

If your average daily study time is nearly three hours, try to study at least 45 minutes more each day.

If your average daily study time is nearly four hours, try to study at least one hour more each day.

If your average daily study time is nearly five hours, try to study at least one hour and 15 minutes more each day.

If your average daily study time is nearly six hours, try to study at least one hour and 30 minutes more each day.

Note: The above recommendations are offered as minimum amounts by which you should increase your studying time. If you require more studying time to complete your course assignments, select a higher goal for yourself and study gradually more each day to attain it.

3. Total the amount of time spent studying each day. Compare your performance with your selected goal of study time. If you attained your goal, praise yourself (e.g. "Nice going!", "You did a good job!", "Keep up the good work!"). If you did not reach your study goal, do not praise yourself.

APPENDIX B

APPENDIX B

Instructions for Stimulus Control I (Time)

1. Make a college schedule for yourself!

2. Regard your college work as you would any job for which you would agree to work certain scheduled hours.

3. Map out a weekly schedule based on the time you spend in classes and the time you require for accomplishing your assignments and preparing for exams.

4. Put in hours spent in sleep.

5. Schedule the hours spent in necessary activities, such as meals, labs, and work for pay. Cross hatch or lightly fill-in these squares.

6. Plan your study periods.

7. Adapt the length of each study period to the type and difficulty of the material to be studied. Most students find it best in textbook studying to work intensively for from forty minutes to an hour and then rest for a few minutes. During the rest period, get a drink, walk around, avoid any activity such as conversation which would make it difficult to return to whatever you were doing.

8. Place each study period as close to its class recitation as possible. Do not waste the hours between classes.

9. Do not change directly from the study of one course to another which is similar to it.

10. Study your most difficult courses during the time of study when you work most efficiently.

11. Maintain a steady rate of work from day to day. You will accomplish more this way than by cramming or working in spurts.

12. Follow the schedule. Make changes whenever necessary. Your schedule will need to be revised, and at times broken.

13. Place a copy of your schedule on the wall in the front of your desk.

APPENDIX C

APPENDIX C

Instructions for Stimulus Control II (Place)

1. Develop habits of studying regularly in certain places.

a. Try to study the same subject in the same place at the same time. Loaf and do your recreational reading somewhere else.

b. Work in a place where noise and distractions are at a minimum. Keep your desk facing the wall.

c. Study at a table or a desk in a chair that is not too relaxing. Sit up straight.

d. Keep on your desk only those things necessary for study. Have suitable materials available. When you return to your studying, the sight of your study tools will stimulate studying.

e. Do not study in an overheated room. Better if it is a little cool.

f. Decide the order in which your jobs will be done.

g. Begin working immediately. Even if you don't like studying at your regular time, go through the motions and concentration will follow.

h. Make sure there is sufficient lighting and ventilation in your study area.

i. If you're distracted by little things which you think of to do while studying, jot them down and do them later.

2. Guard your health!

a. Never attempt to study when excessively fatigued.

b. Sleep your normal amount every night (seven to eight hours).

c. Get some relaxation every day.

d. Take some form of exercise with fair regularity.

APPROVAL SHEET

The thesis submitted by Calvin Hainzinger has been read and approved by the following committee:

Dr. Ronald R. Morgan, Director
Assistant Professor, Educational Foundations, Loyola

Dr. Pedro J. Saavedra
Assistant Professor, Educational Foundations, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

7/12/77
Date

Ronald R. Morgan
Director's Signature