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Self-monitoring and self-reinforcement applied to junior college study behavior

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SELF-MONITORING AND SELF-REINFORCEMENT APPLIED
TO JUNIOR COLLEGE STUDY BEHAVIOR

A Masters Thesis
Presented to
the Faculty of the Graduate School
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by

Thomas A. Cesa

November, 1974

This thesis, written and submitted by

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ABSTRACT

Although previous research has shown the efficacy of self-control techniques such as self-monitoring and self-reinforcement in changing study behavior, the adequacy of the experimental procedures utilized in many studies may be questioned. This experiment re-examined the effects these operant conditioning procedures had on the study behavior of junior college evening students by using three groups of subjects exposed to different combinations of self-control techniques.

Control Group subjects recorded their new thoughts (ideas relating the course material to their everyday lives) in an attempt to control for the effects of novel procedures, motivation and other non-specific variables. Self-Monitoring Group subjects complied with the control procedure, monitored their study time (by recording study start and stop times) and monitored the number of facts learned (by self-administering quizzes). The Self-Reinforcement Group complied with the self-monitoring procedures and self-reinforced their study behavior (by listing their reinforcers, the cost per reinforcer in minutes of study time and recording the number of reinforcements received). Additional data collected consisted of concurrent weekly quiz scores, final examination scores and the extent to which subjects complied with the treatment procedures.

Results showed no significant differences among the three groups on either concurrent quizzes or on the final examination. The Self-Monitoring and Self-Reinforcement Groups did not differ in amount of study time or number of facts learned. Compliance with the new thoughts and study time procedures was high, it was moderate with the facts learned procedure and low with the self-reinforcement procedure. These results cast doubt on the effectiveness of self-control techniques for changing study behavior and suggest the need for more rigorous experimental designs in future research.

INTRODUCTION

Operant conditioning techniques can be applied by an individual to himself in an objective manner (Skinner, 1953). Such an application, commonly termed behavioral self-control, achieves its objectives by having the subject perform certain behaviors which alter the probabilities of his or her subsequent behaviors. Among the main operant techniques used in behavioral self-control are self-monitoring and self-reinforcement (Thoresen & Mahoney, 1974; Watson & Tharp, 1971). This study tests the effectiveness of self-monitoring and self-reinforcement procedures in helping junior college students increase their study time and amount of facts learned.

Self-monitoring, which consists of the individual measuring and recording his own behavior, has been shown to alter behavior by itself. The process of self-monitoring alone has influenced smoking (McFall, 1970), auditory hallucinations (Rutner & Bugle, 1969), study time (Johnson & White, 1971) and in-class comments of grade school children (Gottman & McFall, 1972). These studies indicate that self-monitoring is an independent variable and does not allow for the collection of data in a nonreactive (historic) manner (Webb, Campbell, Schwartz & Sechrest, 1966).

The literature concerning the concurrent validity of self-monitoring data is controversial. Some studies have

shown a high correlation between self-monitored and externally monitored behavior (Azrin & Powell, 1969; Mahoney, Moore, Wade & Moura, 1973); whereas others have found as much as a 50 per cent discrepancy existing between the two types of monitoring (Fixsen, Phillips & Wolfe, 1972). Increased concurrent validity may be obtained by providing training on the definitions of behaviors being monitored and by making positive reinforcement contingent on agreement between self and externally monitored reports (Fixsen, Phillips & Wolf, 1972). The validity of self-monitored data may also be checked by noting its correlation with a behavioral product (Kanfer, 1970).

Self-reinforcement, which consists of the individual making a self-contract and self-administering reinforcement contingent upon its completion, has also been shown to alter behavior. Rehm & Marston (1968) demonstrated that a group receiving self-reinforcement decreased anxiety concerning heterosexual relationships significantly more than the controls. Bandura and Perloff (1967) found self-reinforcement to work as well as externally administered reinforcement in a crank turning task performed by children. Liebert, Spiegler and Hall (1970) also found that self-reinforcement was as effective as externally administered reinforcement in altering wheel turning behavior of children.

Many studies dealing with the self-control of study behavior have reported positive results, but most suffer from methodological inadequacy. Six principle inadequacies

are considered here:

1. Weak inference. Broden, Hall and Mitts (1971) reported that self-recording resulted in an increase in classroom study. However, the computed correlation between their reported self-reported and externally monitored data is .25, which accounts for less than 7 per cent of the common variance. Such a low value renders their conclusion suspect.
2. Biased sample. One study (Benke & Harris, 1972) reported a conclusion based on 9 of 53 original subjects and another (Harris & Ream, 1972) reported a conclusion based on 1 of 150 original volunteers. After such high rates of attrition it is unlikely that the remaining subjects are representative of the original sample. It would seem that the main point of interest in such studies would be why such a large drop-out rate occurred and its relationship to the self-control procedures employed.
3. Failure of subjects to follow instructions. McReynolds and Church (1973) noted that their self-contract group broke 40 per cent of its total contracts. When a treatment is not followed to such a large extent, it is questionable that the cited variable is the variable responsible for the behavioral changes occurring concurrently with the treatment.
4. Confusing baseline with treatment. Benke and Harris (1972), while collecting baseline data, assumed that recording of study time and making lists of reasons for studying would not affect study behavior. As was pointed out previously, such techniques do influence behavior.

5. Confounded variables. Some studies (Benke & Harris, 1972; Harris & Ream, 1972) treated all subjects sequentially by stimulus control, positive reinforcement and study skills development. Goldiamond (1965) and Fox (1962) used these techniques simultaneously. Such designs do not allow for comparisons of the efficacy of the components of the treatment package. This situation has led Mahoney (1972) to assert that "very little research has been devoted to comparing the relative efficacy of different types of self-imposed techniques" (p. 48).

6. Inappropriate test of a theoretical position. Johnston, Roberts and O'Neill (1972) investigated the measurement and analysis of college student study behavior by using a Study Report Form (SRF) which measured behaviors such as reading time, self-quizzing and making written aids. Their evaluation of the SRF consisted of asking students to mark the extent of their agreement on a scale ranging from strong disagreement to strong agreement on items such as "I usually kept the SRFs in my text" and "I usually estimated my times rather than using a watch or a clock." But a comparison between SRF data and course grades would have provided more objective data concerning its worth.

The present study utilized mandatory participation of students in an introductory psychology course and used three different groups, each treated in a unique manner. The Control Group measured the effects of motivation and structure, variables which have been shown to exert a major

influence in self-control studies (McFall & Hammen, 1971). The Self-Monitoring Group received the Control Group treatment while it self-monitored study time and study effort. The Self-Reinforcement Group received the treatments of the Self-Monitoring Group and in addition received self-reinforcement for study behavior. Weekly quiz grades collected during the experiment were compared among the three groups. By using groups uniquely treated, inferences concerning the worth of self-monitoring versus self-monitoring plus self-reinforcement may be made and thus avoid confounding variables. By making the study mandatory for the class, problems concerning large dropout rates were avoided. By monitoring subjects weekly, failure of subjects to follow instructions was minimized.

METHOD

Subjects

Students in the experimenter's evening junior college introductory psychology class served as subjects. Eleven subjects were randomly assigned both to the Control and Self-Monitoring Groups and 10 subjects were randomly assigned to the Self-Reinforcement Group.

Procedure

The class was told about the mandatory experiment near the beginning of the quarter so that each student could decide whether or not he wanted to enroll. Students were also told that failure to turn in forms weekly during the experiment would result in a course grade of C. The class

was read the following statement:

As part of this class you will be involved in a mandatory experiment involving self-control of study behavior. This will require about 10 minutes of extra time per day starting on May 7 and continuing through June 12. The purpose of this study is to 1) investigate some variables which influence study behavior and 2) to help all of you become better students. If you feel that you do not want to participate in this experiment, then you should not take this class. I will supply you with additional details on May 7 when the experiment begins.

The entire class received an explanation concerning the purpose of the experiment and what they must do. Effects such as subject expectations and motivation were controlled by having the Control Group receive and hand in weekly reports in a manner similar to the other two groups. This was accomplished by having subjects write down their new thoughts concerning the course material. The following instructions to subjects accomplished these objectives:

Today is the first day of a five week experiment involving self-control of study behavior. This experiment is designed to improve your study habits. You should not talk over this experiment with other members of the class because it involves self-control and self-control procedures are personal and unique to the individual. Discussing it would contaminate the self-control. Therefore, later in the evening I am going to ask some of you to leave before others. If you have any questions outside of class you may telephone me at 548-8991 from 5:00 to 6:00 Tuesday and Thursday and Sunday afternoon from 12:00 to 4:00.

First I want to collect some background data on you and then, I will explain the experiment in greater detail. Take out a piece of paper and put on it your name, age, sex, number of college credits completed and college grade point average. When you are done, hand in your papers.

Now I am going to give you a New Thoughts Packet (Appendix A) which will be used to record your original thoughts concerning the course material. The reason for doing this is that psychologists believe that by

thinking about a subject matter in a new and different way it is possible to learn it better. After thinking about something original pertaining to the class, e.g., how to apply a psychological principle to your life, condense the thought into a few words and write it down, as well as the date on which it occurred. Keep this form close to your study area and record your new thoughts shortly after they occur. Are there any questions so far? (E answered questions.) Fine. Now (at this point E read the names of those subjects in the Control Group) must leave.

After the Control Group left, the experimenter distributed the Self-Monitoring Packet to the remaining subjects. It contained 10 copies of a Study Observation Form, a chart on which to plot total study effort (time and number of facts learned), a list of facts to be learned for the entire experiment and self-explanatory instructions in the use of these forms (Appendix B). The instructions and the following statement were read to the subjects:

The dates for submission of all completed Study Observation Forms are May 9, and thereafter every Tuesday. You must submit at least one Study Observation Form per week. If you need any extra Study Observation Forms please ask me at any time during the experiment. If there are no further questions (at this point E reads the names of those subjects in the Self-Monitoring Group) must now leave.

After the Self-Monitoring Group left, the experimenter distributed to the remaining subjects the Self-Reinforcement Packet. It contained six copies of a Weekly Self-Reinforcement Chart and instructions for its use (Appendix C). The instructions and the following statement were read:

On May 9 and thereafter every Tuesday, you must submit a Self-Reinforcement Chart along with other submitted material. If there are no questions you are free to leave now.

Data Collection

1. Biographical data consisting of the subject's age, number of college quarter units completed and grade point average was collected.

2. Periodic quiz scores. Prior to the experiment all subjects were given two quizzes and during the experiment all subjects were given one quiz each Tuesday for five weeks.

The quizzes were with closed book, closed notes. They covered the previous week's readings and class discussions, contained about ten multiple choice questions and emphasized power rather than speed. All quiz questions given during the experiment were related to the facts presented on the weekly fact sheets. The class text was Elementary Principles of Behavior (Whaley & Malott, 1971).

3. A final examination which consisted of 33 multiple choice questions worth one point each and an essay question worth four points was administered at the end of the course and covered material presented during the entire 12 week quarter. The essay question was graded without knowledge of the student's name.

4. Self-control data were collected during the experiment. Subjects in the Control Group were required to turn in a New Thoughts List. Subjects in the Self-Monitoring Group were required to turn in a New Thoughts List and at least one Study Observation Form. Subjects in the Self-Reinforcement Group were required to turn in a New Thoughts List, Study Observation Form(s) and a Self-Reinforcement Chart.

5. Non-compliance. A blank answer on any form indicated non-compliance. In addition a zero score on the Facts Passed portion of the Study Observation Form was interpreted as non-compliance. Non-compliance with a particular procedure was measured by taking the number of instances of non-compliance and dividing it by the total number of responses possible. As non-compliance measures the extent to which a procedure is not performed, it permits inference concerning whether a particular procedure failed to change behavior because it was ineffective or because it was not done.

RESULTS

Of the 52 students registered for the class, 42 attended the first session and 39 attended the second session. The announcement of the class contents and experiment was made at the first class meeting. The ratio of students completing the course to students enrolled after the first week was .67. This compares to a ratio of .57 for the fall quarter of 1973 and a ratio of .56 for the winter quarter of 1974. When the experiment began five weeks later, there were 31 students remaining in the class. The data analysis was performed on the 29 students who completed the class. Of the 11 subjects assigned to the Control Group, 10 completed the course. The subject that dropped terminated his enrollment in the fifth week of the experiment. All 11 subjects assigned to the Self-Monitoring Group completed the class. Of the 10 subjects assigned to the Self-Reinforcement Group, 8

completed the class. Both subjects that dropped completed all of the course work but did not appear for the final examination.

Biographical Data

There were no significant differences between the three groups on any of the biographical measurements, so biographical data are presented for the class as a whole. The mean number of college quarter credits completed was 30.95 with a standard deviation (SD) of 32.12. The mean grade point average on a 0.00 to 4.00 scale was 3.18 with a SD of .63. The mean class age was 27.42 years with a SD of 6.66. Of the 29 students completing the course, 16 were females and 13 were males.

Quiz and Examination Scores

The mean quiz and final examination scores per group are reported as percent of maximum points possible in Fig. 1. Percentages are reported to allow comparability across quizzes, as the maximum number of points possible varied from quiz to quiz. The maximum number of points possible for quizzes 1 to 7 is 5, 7, 10, 11, 11, 10 and 10, respectively. Data analysis was done on the quiz scores and on the final examination.

Analysis of the quiz scores was done by a split plot factorial unweighted means design (Kirk, 1968, p. 277). Such a design was appropriate because the unequal number of subjects per group was not a function of the treatment variables. The treatments were the between subjects variable

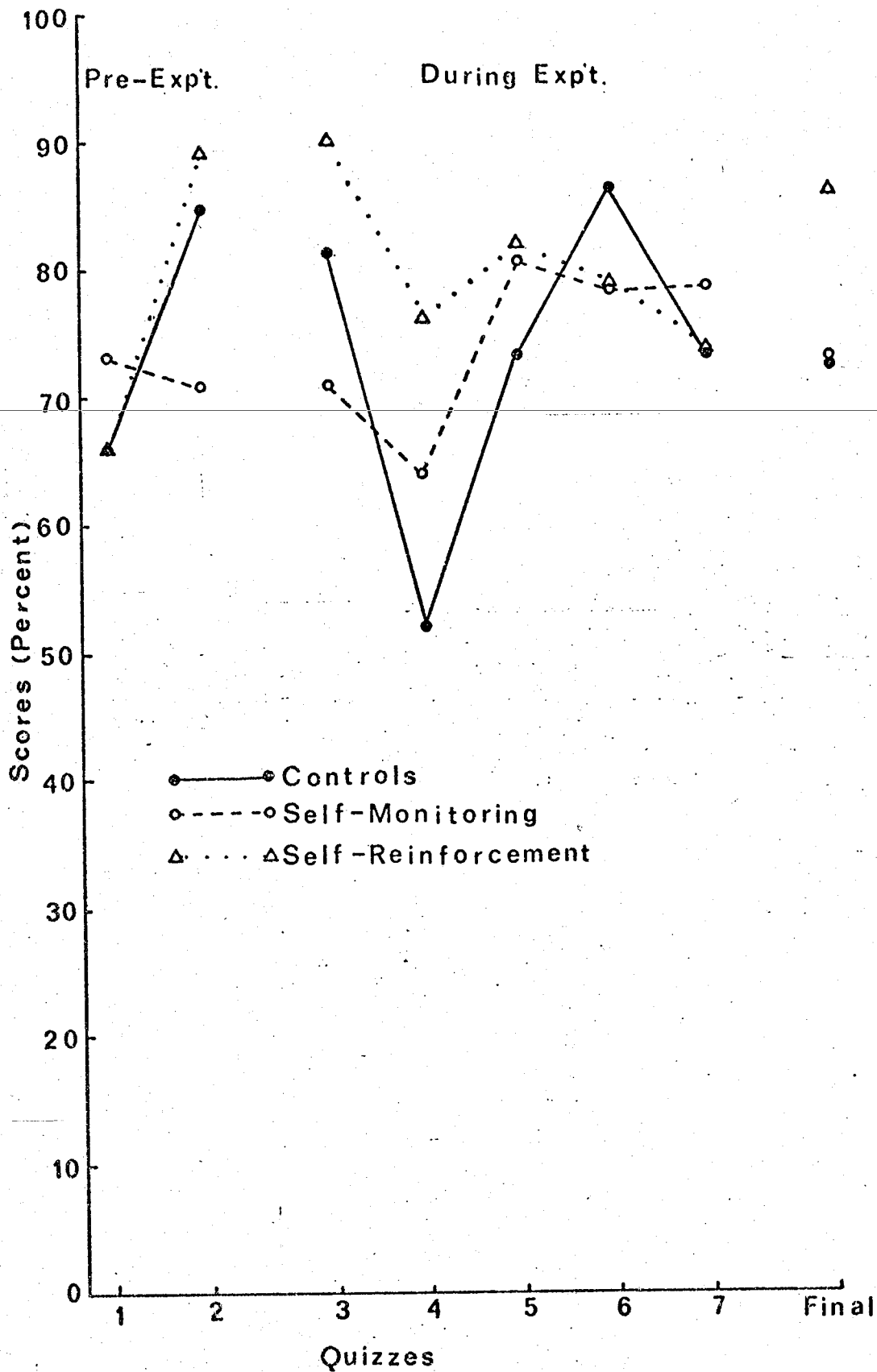


Fig. 1. Mean quiz and final scores within treatment conditions for the three treatment groups.

and quiz number was the within subjects variable. Results of the SPF-3.7 analysis of variance showed that there was no significant difference due to treatment, a significant difference due to quiz number ($F = 4.137$, $df = 6/156$, $p < .01$) and no effect due to interaction of treatment with quiz number. The only significant differences between quiz scores as shown by a Newman-Keuls Test (Kirk, 1968, p. 91) occurred on the comparisons between the scores on quiz 4 and the scores on quizzes 3, 5, 6, and 7. This was caused in part by the experimenter making quizzes 4 through 7 more difficult in order to avoid a ceiling effect. However, as the class average rose after quiz 4, it appears as if the students habituated to the more difficult tests. The SPF-3.7 results are presented in Table 1.

Table 1
Analysis of Variance of Quiz Scores

Source	df	SS	MS	F
A Treatments	2	1438.296	719.148	.391
Subj. w. groups	26	47870.653	1841.179	
B Quizzes	6	8698.531	1449.755	4.137*
AB	12	6368.495	530.708	1.514
B x subj. w. groups	156	54670.724	350.453	

* $p < .01$

Results of a CR-3 unweighted means analysis of variance done on the final examination scores showed no significant differences among treatments. As it was postulated a priori that the Control Group would do worse than either the Self-Monitoring or Self-Reinforcement Groups, modified t ratio tests using Dunn's Multiple Comparison Tables were performed. Neither comparison was significant.

New Thoughts

Results of a CR-3 unweighted means analysis of variance performed on the number of new thoughts per group showed no significant differences among the three treatment groups. The mean number of new thoughts reported weekly per subject was 1.64 with a SD of 3.84. The mean number of new thoughts reported weekly per subject per group is presented in Table 2. Typical new thoughts are reported verbatim in Appendix D.

Study Observation Form

Results of a t test comparing the Self-Monitoring Group with the Self-Reinforcement Group with regard to study time showed no significant difference between the two groups. The mean amount of weekly study time per subject was 2 hours and 22 minutes with a SD of 1 hour 45 minutes. The amount of non-compliance was .08.

Results of a t test comparing the Self-Monitoring Group to the Self-Reinforcement Group with regard to number of facts passed showed no significant difference between the two groups. The mean number of weekly facts passed per subject was 7.62 with a range from 0 to 29. A validity

Table 2
Mean Treatment Value Per Student Per Week

Group	Treatment			
	New Thoughts	Study Time (Hrs:Min)	Facts Passed	Self-Reinforcements
Control	1.48			
Self-Monitor	1.24	2:08	6.34	
Self-Reinforcement	2.38	2:42	9.38	2.95
Mean	1.64	2:22	7.62	2.95

measurement for facts passed was attempted by correlating reported facts passed with the weekly quiz scores. The correlations significantly different from zero were .46 ($t = 2.14$, $df = 17$, $p < .05$) and .41 ($t = 1.85$, $df = 17$, $p < .05$).

The section of the Study Observation Form dealing with the proportion of study time devoted to reading, reviewing, and non-study behavior was filled out by most subjects, even though many did not understand the meaning of the word "proportion." Subjects who recorded the amount of time they spent in these activities had their data converted to proportions. Taking all subjects in the Self-Monitoring and Self-Reinforcement Groups together, the proportion of study time spent in reading was .7, in reviewing .2 and in non-study activity, .1.

The report verification section was ignored by all but two subjects each of whom filled it out once. Obviously it is impossible to evaluate report reliability on the basis of such data.

Weekly Self-Reinforcement Chart

As this was the only group using self-reinforcement, comparisons between groups is impossible. The mean number of weekly self-reinforcements per subject was 2.95 with a SD of 5.3.

Typical self-reinforcement contracts made are as follows:

<u>Reinforcer</u>	<u>Cost (Min. of Study)</u>
Cigarette	30
Date with old lady	30
Bowling	10
\$5.00 earrings	180

Non-compliance per group for each treatment is reported in Table 3. The figure for non-compliance for the

Table 3
Proportion of Non-Compliance

Group	Treatment			
	New Thoughts	Study Time	Facts Passed	Self-Reinforcement
Control	.08			
Self-Monitor	.16	.07	.58	
Self-Reinforcement	.10	.10	.42	.61
Mean	.12	.08	.52	.61

self-reinforcement procedure comes from adding the proportion of times self-reinforcement procedures were not administered, .43, to the proportion of self-reinforcers delivered non-contingently upon the contract, .18.

To see if there was a relationship between compliance and academic performance, Spearman Rank Correlation Coefficients between compliance and final examination

scores were calculated for the two experimental groups. Compliance scores for subjects in the Self-Monitoring Group consisted of adding study time compliance to facts passed compliance. For the Self-Reinforcement Group, compliance was measured by summing compliance with recording study time, facts passed and self-reinforcement. Each correlation coefficient was not significantly different from zero.

DISCUSSION

Effects of Treatment

None of the results indicate that any differences between the three groups were due to the self-monitoring and self-reinforcement treatments. Not only were there no significant differences on quiz or final examination scores, there were no differences among the various groups in number of new thoughts, amount of study time or number of facts passed.

Although it is tempting to try to explain the lack of significant difference between the experimental and control groups on the basis of low compliance with the experimental procedures, the insignificant correlation between the compliance scores and final examination scores for both the Self-Monitoring and the Self-Reinforcement Groups argues against such an explanation.

Another possible explanation is that basically the students had to engage in improving their study behavior as part of the class. Because no other equivalent psychology

night class was available and the class was a prerequisite for psychology majors, many students could not be considered as volunteers.

The results of this experiment indicate that self-monitoring and self-reinforcement do not affect study behavior. As was shown earlier, most studies showing that there is a relationship between self-monitoring, self-reinforcement and study behavior have severe methodological defects. Such a contention, however, will have to be more carefully investigated.

Validity of Subjects' Reports

Two attempts were made to obtain estimates of the validity of the self-monitoring procedures. One attempt consisted of asking subjects to have someone in their study environment check the accuracy of the Study Observation Form and initial it. As this procedure was followed only twice, once by each of two students, it was not useful as a validity check. Another attempt consisted of correlating self-monitored data with a behavioral product as was done by Kanfer (1970). This was done by correlating facts passed with the weekly quiz scores. Since the weekly quiz questions were taken from the weekly fact sheets, there should be a relatively high correlation between the two measurements. Of the five correlations only two were significantly different from zero. Thus, it would appear that subjects' reporting of the amount of facts they passed is not particularly valid.

Design of a Self-Control of Study Behavior Experiment

The present self-control study managed to avoid some methodological inadequacies reported in other studies. The dropout rate in the present study was about 10 per cent which is quite low in comparison to the dropout rate in the Benke and Harris (1972) study of 83 per cent and in the Harris and Ream (1972) study of 99 per cent. By assigning different groups of subjects to self-monitoring and self-reinforcement treatments, it was possible to attempt a comparison concerning their relative worth. Such a comparison was not possible to make in many studies (Benke & Harris, 1972; Fox, 1962; Goldiamond, 1965; Harris & Ream, 1972). By evaluating the effects of the self-control procedures on quiz and examination scores a more direct evaluation of their effects is possible than by surveying students on their opinions concerning their effectiveness. These design characteristics should be retained. The largest defect of this study, lack of student compliance, should be decreased by providing point incentives on a more frequent basis.

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APPENDIX A

Name _____

Date _____

NEW THOUGHTS

This form is used to record original thoughts concerning the course material. After thinking about something original pertaining to the class, e.g., how to apply a psychological principle to your life, condense the thought down to a few words and write it and the date down. Keep this form close to your study area and record your new thoughts shortly after they occur.

Date of Thought	Condensation of the New Thoughts Pertaining to Introductory Psychology
-----------------	--

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

APPENDIX B

INSTRUCTIONS CONCERNING SELF-MONITORING

Study Observation Form (SOF)

When to Fill Out. It is important to fill out the SOF immediately after each study period so accurate time records are made. If you study for a few hours in the morning and a few more hours in the evening, fill out two SOFs.

Name, Date and Time of Report. Put your name, the date and the time when you finish filling out the SOF in the upper left-hand corner.

Study Time. To figure your study time you need a clock, a pencil and the SOF. Whenever you study be sure that these three items are present. When you start studying, write down the start time. When you stop studying, write down the stop time. Then subtract the start time from the stop time to get total study time. If you take a study break, write down the stop time and when you start again write down the start time on another SOF.

Time Per Study Activity (Proportion). The purpose of this section is to determine the proportion of time you spend reading, reviewing and in non-study behaviors. Take the total time figure and estimate what proportion of it you spend reading, what proportion you spend reviewing and what proportion you spend in non-study behavior. These three figures should add to 1.00.

Reading. Refers to learning from printed material (book or class notes).

Reviewing. Refers to quizzing yourself on the material, questioning, associating and trying to apply the information presented in class.

Non-Study. Refers to behaviors not connected to studying such as daydreaming, looking around, and sharpening your pencil.

In Class. Refers to the time you spend in the classroom.

Number of Facts. To figure out how many facts you learn per study period, take the weekly fact list and

try verbally to answer each item. Put the number of facts you attempt after Number of Facts Tested. Put the total number of items answered correctly after Number of Facts Passed.

Report Verification. If someone observes your study behavior and feels that your report is accurate, have them state how accurate they feel the report is and initial the report after Verified by.

When to Hand the SOFs in. Hand in all completed SOFs on Tuesday. If you did not study at all during the previous week, put a 0.00 for total study time and hand in a form. You must hand in an SOF even if you did not study.

Total Study Effort Chart

Study Time per Day. At the end of each day add up your total study time for that day from the SOFs. Plot this value on the upper chart: first notice the appropriate date on the abscissa, then find the total daily time value on the ordinate. Make a dot at the intersection of these two lines. At the end of the week connect the dots.

Number of Facts Passed. At the end of each day add up the total number of facts passed. Plot this value on the lower Total Study Effort Chart in a similar manner.

When to Hand in the Total Study Effort Chart. Turn it in at the end of the experiment.

STUDY OBSERVATION FORM

Name _____

Date _____

Time of Report _____

Study Time

Number of Facts

Stop Time _____

Number of Facts Tested _____

Start Time _____

Number of Facts Passed _____

Total Time _____

Time per Study Activity
(Proportion)

Report Verification

Reading _____

Observer Comments:

Reviewing _____

Non-Study _____

Total 1.00

Verified by _____

In Class Time _____

FACTS FOR THE WEEK FROM MAY 7 THROUGH MAY 13

Introduction to Behaviorism

1. Basic model of behaviorism
2. Empiricism in behaviorism
3. Operational definition

Basic Principles of Behaviorism

4. Positive reinforcement defined
 5. Potential positive reinforcers versus positive reinforcers
 6. Differences between reward and positive reinforcement
 7. Conditioning defined
 8. Differences between conditioning and learning
-
9. The extinction procedure
 10. Behavior under extinction
 11. Side effects of extinction
 12. Extinction versus forgetting

Experimental Design and Behaviorism

13. Baseline data versus experimental data
- 14-17. Independent, dependent, extraneous and intervening variables

Techniques of observing and measuring behavior

18. Automatic Recording
19. Direct measurement of a permanent product

Observational records

20. Continuous recording
21. Event recording
22. Duration recording
23. Time sample recording

Graphing of data

- 24-25. Abscissa and ordinate defined
- 26-27. The relationship between independent and dependent variables and the abscissa and the ordinate
28. Frequency versus time plot
29. Cumulative frequency versus time plot

APPENDIX C

INSTRUCTIONS FOR THE WEEKLY SELF-REINFORCEMENT CHART

Self-Reinforcement Defined. Self-reinforcement refers to giving yourself a reward for studying. The reward is usually something pleasant; it can be either a material good (e.g., buy yourself a candy bar) or an activity (e.g., telephone a friend).

How to Pick a Self-Reinforcer. Write down a list of things that you would like to do or have but which are not absolutely essential to your life. For example, use something (soft drinks, cigarettes, chewing gum, wine); buy something (newspaper, fishing gear, new dress); do something (work on a puzzle, take a walk, read science fiction); not do something (take a nap, relax, sleep in); or use your imagination to think up something that you would like to work to achieve.

Discard the Poor Choices. From the list of self-reinforcers eliminate those that are injurious to yourself or to others, those that are too expensive to be practical or those that take up more time than you have.

Make a Deal with Yourself. Under the self-reinforcer heading list up to seven reinforcers. Put the most rewarding after number 1 and the least rewarding at the bottom. Even the least rewarding self-reinforcer should be rewarding and not punishing. Under the words "Cost (Min. of Study)" write down how many minutes of study time it takes to earn each reinforcer. The deal you make with yourself consists of giving yourself a self-reinforcer after you study for the stated amount of time. Remember you do not get the reinforcer unless you earn it. Treat major reinforcers like this:

Self-Reinforcer	Cost (Min. of Study)
1. Leather jacket	Each time I study 20 minutes I get one reinforcer. It takes 60 reinforcers to get the jacket.

Recording Self-Reinforcement. Every time you earn a reinforcer, put a tally mark "1" after the reinforcer and on the current date. If you gave yourself a reinforcer even though you didn't deserve it, put a "." in the correct location. If you studied for the correct amount of time but did not reinforce yourself, leave the chart blank.

This chart shows only self-reinforcement. The example below shows that someone gave himself three donuts on March 5. Note: Two of them were for following his deal; one donut was illegal.

Self-Reinforcer	Cost (Min. of Study)	Number of Self-Reinforcements				
		3/2	3/3	3/4	3/5	3/6
coke	30					
donut	20				11.	
		3/2	3/3	3/4	3/5	3/6
		Date				

Changing your Self-Contract. You can change the cost per reinforcer on the deal that you made with yourself only between weeks. You cannot change in the middle of the week.

Name _____
 Date _____

WEEKLY SELF-REINFORCEMENT CHART

	Reinforcer	Cost (Min. of Study)	Number of Self-Reinforcements						
			5/7	5/8	5/9	5/10	5/11	5/12	5/13
1									
2									
3									
4									
5									
6									
7									
			5/7	5/8	5/9	5/10	5/11	5/12	5/13
			Date						

APPENDIX D

VERBATIM NEW THOUGHTS

Started this week giving 8 yr old daughter regular weekly allowance . . . She really is very well behaved so I thought this should be reinforced.

Subtle forms of punishment might be used in teaching proper behavior. My daughter's table manners are not always what I would like. I might say to her "If you show bad manners during the meal you will have to eat a bite of vegetables." She dislikes vegetables.

This form of discipline could be very effective. We have used loss of TV viewing as punishment, but had not carried it too much further. I had not considered using small amounts of punishment to shape other desired behavior.

On the other hand using vegetables as a punisher might keep her from liking vegetables, ever. I'll have to come up with something else.

Seriously considering the effects of punishment versus positive reinforcer, I am more and more inclined toward the latter. We have decided that if our daughter exhibits decent manners at meal times, she will receive 5 min. per meal, to be spent playing a game, etc. with one or both of us in the evening. This will accomplish two things. Better manners, we hope, and more positive attention from us, which should help in other areas.

Already getting terrific results from above idea. Not only have her manners improved but the sullen behavior I spoke of in an earlier paper has improved a lot. I'm sure this is due to the "positive" attention and time we are spending with her. So far she has her father & me playing jacks with her. It is sometimes hard to make the time, but we have found it fun too, & the results are reinforcing for us.

Saw temper tantrum reinforced by worried parent.

Our dog was seven months old when we got him from the S.P.C.A. and one command which he didn't obey was "come." One day he got loose and spent considerable time roaming around the neighborhood, ignoring my pleas to "come." Eventually he did come to me but by that time, I was so angry at him that I hit him as soon as he came close to me. I now realize that by reacting in such a manner, I

did in fact punish him for responding to the command, "come." Ever since that incident, the dog has been wary of responding to that command (and I can't say that I blame him.)

However bright a child may be, if punished enough, he or she will tend to find it very difficult to fit into their social environment, the reason being that the early states of socialization were badly impaired.

A good technique for reinforcing academic interest in my children might be a Sat. morning "show & tell" opportunity where each child presents to the family information he has learned during the week.

While reading "A token Economy for Psychotics" it occurred to me that maybe one of the reasons for inefficiency in the military is due to people getting paid without much concern for their work output.

Whaley and Malott over-generalize to such a point that I can't stand to read anymore.

I have problems with my children every night at bedtime. They both take more time than necessary to get ready for bed. So I figured out a reinforcement that is working very well. When they are watching their favorite programs on television during the first or second commercial I have them put on their pajamas. Then on the next commercial they brush their teeth. Commercials are not very long and they don't want to miss any of the program. I have never seen them get ready for bed with such speed.

Fading techniques are used to teach small children to dress themselves.

My mother inadvertantly reinforced crisis behavior in me by giving me additional attention during crisis periods.

Trying to use SD (stimulus discriminative) as a method for my studying.

I tried to use a breakfast at work to see if I would get up on time so I wouldn't have to rush so bad or be late. But it only works 50% of the time. I just do not want to get up but I need something else that I want to use as the reinforcer.

Using extinction possibly could help elderly gentleman next door overcome dependence on family. He acts helpless (so) everyone helps him.

A husband bringing his wife flowers might be a VI schedule. This event could occur at any time, but the wife's response could act as a reinforcer for him.

Andre had put up his coat and I praised him and let him watch my TV which he likes to do. Instead of always yelling hang up your coat.

We have taught or conditioned our dog to lie down, sit, stand, beg, shake hands, roll over, come, bark on command and bark when someone is at the door by using cookies as a positive reinforcer. He will also make a noise resembling "out" by yawning when he needs to go outside. He will get out of the way when I say "excuse me, please." and will go to my son's room when I ask him to do so.

Superstitious reaction occurring--decided to change from low to high number golf balls--true!

I have an elderly aunt who has grand mal epileptic seizures. She is also mentally retarded. She experiences a seizure approximately once a month at about the time her menstrual period would occur. I wonder if it is possible that the seizure brings her the attention she used to receive at the onset of her menstrual cycle.