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The Effects of Self-Management Training on Academic Performance

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THE EFFECTS OF SELF-MANAGEMENT TRAINING ON ACADEMIC PERFORMANCE

by

Mark R. Dean

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THE EFFECTS OF SELF-MANAGEMENT TRAINING
ON ACADEMIC PERFORMANCE

Mark R. Dean, M.A.

Western Michigan University, 1981

Two studies evaluated the effect of a self-management training program on students' academic performance. In Experiment 1, nine students with low academic scores received an instructional package providing training in self-monitoring, self-recording, and several environmental management techniques designed to increase the duration of studying for quizzes. The students had a median quiz score of low "C" before training and a median quiz score of "B" following training. Follow-up measures indicated that the majority of students were continuing to use these self-management techniques as part of their everyday activities. In Experiment 2, three components of the self-management program were individually evaluated. Three of the six students with initially low academic performance achieved "A" level performance during the self-recording training (Phase 1), with two students achieving "A" level and one achieving "B" level performance when the environmental management procedures were added (Phase 3).
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Mark R. Dean
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TABLE OF CONTENTS

ACKNOWLEDGEMENTS ................................................................. ii
LIST OF FIGURES ................................................................. iv

Chapter

I. INTRODUCTION ............................................................... 1

II. EXPERIMENT I ............................................................. 4

   Method ................................................................. 4

   Subjects .............................................................. 4

   Measures ............................................................. 4

   Experimental materials and procedures .................. 5

   Results ................................................................. 10

   Discussion ............................................................ 14

III. EXPERIMENT 2 .......................................................... 15

   Method ............................................................... 15

   Subjects .............................................................. 15

   Measures ............................................................. 15

   Procedure ........................................................... 16

   Results ................................................................. 16

IV. GENERAL DISCUSSION .............................................. 21

REFERENCE NOTES .......................................................... 24
APPENDICES .............................................................................. 25
BIBLIOGRAPHY ............................................................... 30

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LIST OF FIGURES

Figure 1. (Top) Sample page from the Self-Management Calendar (Sundberg, 1979). The daily columns (e.g., Thursday, Friday, Saturday) were used for hourly activity recording. The far right-hand column, labeled "Non-Recurring Tasks" was used for task listing and prioritizing.
(Bottom) Weekly schedule form. The students used this form for planning hourly and daily activities ........................................... 7

Figures 2 and 3. Percentage of quiz points earned for each quiz of the semester across weeks. The horizontal solid lines indicate the median percentage points earned by an individual student in each phase.
Experiment 1 ......................................................... 12

Figures 4 and 5. Percentage of quiz points earned for each quiz of the semester across weeks. The horizontal solid lines indicate the median percentage points earned by an individual student in each phase.
Experiment 2 ......................................................... 18

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CHAPTER I

Introduction

Each school year there are usually a few students having academic difficulty in most courses, including the courses offered through our Psychology Department, and an instructor is pressed to determine an intervention strategy to improve the students' performance. Many factors may be responsible for this poor academic performance. For example, the students may: Lack the necessary prerequisite skills for current instructional materials (Holland, Soloman, Doran and Frezza, 1976, pp. 171-185); or they may not be motivated to do well because current contingencies are weak or poorly programmed (Skinner, 1969). Some students may need more time than others to prepare for course examinations and meet mastery standards (Keller, 1968), but academic deficiencies may be prevented by an increase in the frequency and duration of studying (see Grant and Keenan, Note 1, for a review of study behavior in college).

Insufficient study preparation may occur for several reasons including the following: (1) Reinforcers inherent in the study materials are weak and infrequent (Michael, 1974), (2) External sources of reinforcement for studying are usually absent (Reese, 1978, pp. 54-58). (3) Test scores are too delayed to effectively reward studying or to punish insufficient studying (Malott, Tillema and Glenn, 1978, pp. 165-184). And, (4) reinforcers for many
behaviors incompatible with studying are numerous and immediately available (Malott, Note 2). For these reasons, students will often postpone studying to engage in a multitude of other activities, and some students will obtain low academic grades as a result.

One source of data useful in devising an intervention for students having academic difficulty comes from the area of self-management. In recent years, researchers have demonstrated that an individual may use various self-management techniques to increase the frequency of a selected behavior (see O'Leary and Dubey, 1979; Rosenbaum and Drabman, 1979; and Jones, Nelson and Kazdin, 1977, for review). Self-management techniques specifically designed to increase the amount of time a student studies have had positive results. Self-monitoring and self-recording of study time led to increments in the amount of time a student spent studying (Miller and Gimpl, 1972; Champlin and Karoly, 1975; Tichenor, 1977), and studying also increased when students used self-reinforcement techniques (e.g., money and covert praise) contingent upon a predetermined amount of studying (Richards, McReynolds, Holt and Sexton, 1976; Greiner and Karoly, 1976).

In many of these experiments, process (i.e., study behavior) measures have been taken, but outcome measures (i.e., quiz scores) have not been taken; or if taken, have shown no effects. The present study includes two experiments: The first experiment involves a combination of self-management procedures, including self-monitoring and self-recording, for students having academic difficulty; the second experiment individually evaluates three self-management
procedures, and provides an extension of the literature to include student-constructed rule statements and environmental management as additional self-management techniques. The utility of these programs is evaluated on the basis of outcome measures of the students' quiz performance.
CHAPTER II

EXPERIMENT I

Method

Subjects

Nine students elected to participate in the first experiment, after an announcement was made in their classroom explaining that, by participating, students having academic difficulty could earn five bonus points (out of at least 450 total course points) and learn self-management skills by participating. The subjects were undergraduate students enrolled in one of two psychology courses at Western Michigan University.

Measures

Quiz scores served as the dependent variable for all subjects. The eight students enrolled in an intermediate level psychology course took two quizzes per week, with the remaining student enrolled in an introductory psychology course taking three quizzes each week.

Intervention involved six independent variables in the form of self-management procedures taught to students during scheduled one-to-one meetings. The experimental sessions followed an "AB" design replicated across individual subjects. Baseline quiz scores were recorded for each student for an average of seven weeks before
self-management training began.

Experimental materials and procedures

The students used a notebook, called the **Self-Management Calendar** (Sundberg, 1979), for all self-management activities (Figure 1). A weekly schedule form (Figure 1) and standard graph paper were attached to the front and back covers of the notebook for additional self-management purposes. Self-management training occurred during each of six meetings.

**Meeting 1.** The students developed a list of the following: (1) personal and career goals related to their school work, (2) positive outcomes, or reinforcers, that might result if they achieved outstanding grades in school, and (3) punishers, or undesirable outcomes, that could result from poor academic performance. They listed these outcomes as rule-statements using an "If/then" format, such as, "If I do this behavior, then I can expect that consequence to follow", entering a copy of their list onto a blank page of their self-management notebook (Appendix A).

**Meeting 2.** The students received instruction in self-monitoring and recording, graphing, and schedule planning. First, the students were instructed to begin self-observations on an hourly basis, recording general activities that they engaged in from waking to retiring each day. As part of this self-recording procedure, the students totaled the number of hours they studied each day and the number of hours they subjectively evaluated as "wasted" (i.e., spent on neither academics nor important non-academic activities), and
Figure 1. (Top) Sample page from the Self-Management Calendar (Sundberg, 1979). The daily columns (e.g., Thursday, Friday, Saturday) were used for hourly activity recording. The far right-hand column labeled "Non-Recurring Tasks" was used for task listing and prioritizing.

(Bottom) Weekly schedule form. The students used this form for planning hourly and daily activities.
listed these amounts at the bottom of each daily column (see Figure 1). Next, the students graphed the number of hours they studied each day. They also began to graph the scores that they received on their weekly quizzes. Finally, they began to use their schedule form (attached to the inside front cover of their calendar notebooks) for planning hourly, daily, and weekly activities (see Figure 1), with special emphasis on establishing regular and reliable study periods.

Meeting 3. The students received instruction in environmental management, which involved the manipulation of study room conditions to increase the probability that they would study. During this meeting, the students engaged in the following activities: They developed a list of those behaviors and events that interfered with studying, and based on this list, they developed a list of changes to be made in their study environment including both an addition of stimuli that might prompt studying, and a removal of stimuli that might set the occasion for behaviors incompatible with studying.

Suggested additions to the study room included the strategic posting of the students' rule-statements (developed during Meeting 1), weekly schedule form, or quiz or study graphs near their desk, in such a location as to make it more likely that they would be seen when studying. Suggested items to remove included magazines, pictures, certain foods or beverages, television sets, or stereos and whatever else that the students had identified as discriminative stimuli for non-studying activities (see Appendix B).

Meeting 4. The students received training in the self-management
technique of constructing and then prioritizing a list of academic and non-academic tasks that they needed to complete on any given day. The area of the self-management calendar notebook labeled "non-recurring tasks" (see Figure 1) was used for the listing of these tasks.

Meeting 5. No new procedures occurred at this time. The experimenter reviewed previous instructions and answered any new questions the students had.

Meeting 6. Further review and clarification. The students signed research termination forms, received their earned bonus points, and were informed that all meetings and self-management activities for the remaining weeks of the semester were now optional. The six experimental meetings took approximately three weeks to complete.

Reliability and bonus points. As part of the bonus point policy, during the three-week intervention period, students would lose one bonus point (out of five) each time their self-management notebooks were incomplete when checked by a reliability observer. The students did not know when their notebooks might be collected, as all checks were unannounced. A student's notebook was categorized as "incomplete" if the student had failed to complete any of the assigned self-management procedures up to 24 hours prior to that check. For example, if the notebook was checked at 1:00 P.M. on Tuesday, a rating of "incomplete" would be scored if the student had failed to complete a self-management procedure prior to 1:00 P.M. on Monday. Only hourly recording records, quiz graph, and study hours graph were included in the assessment of interobserver reliability, with each
student's notebook being checked a minimum of once a week. Reliability between the primary and secondary observers was calculated according to the following formula: reliability = number of agreements/number of agreements plus disagreements, times 100. All reliability figures were above 91%.

Results

Eight of the nine students showed academic improvement as a result of the self-management training, with six demonstrating marked change. Before the training had begun (baseline), the nine students had a median quiz score of 70% (range 50-83), following intervention, they had a median score of 83% (range 77-98), (see Figures 2 and 3).

From a total possible of 45 bonus points (five points per student), the students lost only three points across all weeks of the study due to the non-completion of any of the various self-management exercises (e.g., hourly self-recording, etc.). During the majority of unannounced checks, most students maintained the self-management behaviors consistently.

Follow-up checks conducted at one- and three-month intervals after the termination of the experiment revealed that three students continued all of the self-management procedures: hourly behavior recording, graphing, schedule planning, and list-prioritizing; four other students continued one or more of the self-management procedures, and only two subjects had stopped all self-management activities. Those two students were the students who demonstrated the
Figures 2 and 3. Percentage of quiz points earned for each quiz of the semester across weeks. The horizontal solid lines indicate the median percentage points earned by an individual student in each phase. Experiment 1.
PER CENT QUIZ POINTS EARNED

WEEKS

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FIGURE 3

Baseline Training

PER CENT QUIZ POINTS EARNED

WEEKS

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least improvement in quiz performance (i.e., Subjects 4 and 7).

**Discussion**

Experiment 1 evaluated several self-management procedures as part of the intervention for low-scoring students. The students responded favorably to the self-management program, as indicated by their score improvement, their reliable completion of the assigned self-management exercises, and their maintenance of the self-management procedures after the experiment had concluded.

The results support the utility of self-recording and the behaviors involved in "self-organization", i.e., schedule-planning and list-prioritizing, for students having academic difficulty. To further assess the contributing influence of individual components of this multiple intervention, Experiment 2 was conducted.
CHAPTER III

Experiment 2

A second study evaluated the following individual self-management procedures: (1) hourly self-recording, (2) student-developed rule statements, and (3) environmental management procedures.

Method

Subjects

Six low-performing undergraduate psychology students participated in Experiment 2, involving two psychology courses at Western Michigan University. The students were solicited and informed of the study as described in Experiment 1.

Measures

Again, quiz scores served as the dependent variable. Three students took three quizzes per week and the remaining three students took two quizzes per week. As in Experiment 1, completing the Self-Management Calendar served as a record for all written products of the self-management program.

Based on a multiple-baseline design across subjects with at least one week between intervention dates, the students participated in the training program, as in Experiment 1, through one-to-one meetings.
Procedure

During the first meeting, all six subjects received instructions to begin self-monitoring and self-recording on an hourly basis, totaling at the bottom of each daily column (Figure 1) the number of hours they studied each day and the number of hours they evaluated as "wasted". However, the students did not transfer these data to a graphic display during Experiment 2.

Self-management training interventions occurred for the remainder of the experiment as warranted by a visual inspection of the students' quiz scores. That is, additional self-management procedures were implemented for only those students who did not improve satisfactorily as a result of the first self-management procedure, i.e., the hourly self-recording component. Therefore, only three students received the rule-construction training (Component 2) and the environmental management training (Component 3), in addition to the hourly self-recording training.

Results

Three students (i.e., Subjects 4, 5, and 6) improved their academic scores markedly upon implementation of the hourly recording procedure (Component 1), having a median score of 78% before training and a median score of 91% after intervention (see Figures 4 and 5).

No effects were demonstrated as a result of the second component, i.e., student-constructed rule statements for studying, when the students were merely asked to develop these rules. During the third self-management component, i.e., the environmental management,
Figures 4 and 5. Percentage of quiz points earned for each quiz of the semester across weeks. The horizontal solid lines indicate the median percentage points earned by an individual student in each phase. Experiment 2.
the remaining three students improved their quiz scores substantially, having a median score of 73% before intervention (range 68-83) and a median score of 91% (range 74-99) following this particular self-management training component.

Reliability was conducted as done in Experiment 1, with all reliability checks above 93%. Six bonus (out of 30 total) points were lost by the students as a result of incomplete self-management exercises.
CHAPTER IV

GENERAL DISCUSSION

Self-management training can be an effective method for improving a student's academic performance. In Experiment 1, the median quiz score for the nine students before implementation of the self-management package was one point above the grade of "D" and following training was a solid "B" grade. In Experiment 2, the six students had a median quiz score of "C" before self-management training. Three of the six students achieved "A" level performance during the self-recording phase, with two students achieving "A" level and one achieving "B" level performance when the environmental management procedures were added.

The results of Experiment 1 support the combined efficacy of graphing, schedule-planning, list-prioritizing, environmental management, and self-recording for self-management purposes; Experiment 2 provided further support for the latter two procedures through an individualized implementation of each. An analysis of the role that these procedures may have played in the improvement of students' grades will now be provided.

Hourly self-recording may be an effective self-management procedure for several reasons. If the student had neglected homework during the hour, self-punishing statements might result from the self-recording. The self-recording procedure may have an effect on behavior if, for instance, the student opens a book and begins to study

21
to terminate the punishing self-statements. Self-recording each hour may also, in general, strengthen "self-awareness" and, a self-evaluation repertoire, as the students monitor their behavior; this monitoring might increase the likelihood that they will make self-punishing or reinforcing statements contingent upon responding during the hour. In fact, several students made comments that support this assumption, reporting that they had not previously realized how little time they actually spent studying and commenting further, that they were now more observant and critical of how they spent the hours of the day.

A somewhat different analysis might apply to the environmental management procedures. Often, prevailing stimulus conditions do not support the behavior we would like to engage in. Exercising, dieting, and studying are three examples; the controlling variables for these activities are often outnumbered by incentives for behaviors incompatible with them. Thus, during the environmental-management training, the students acquired the self-management skills of manipulating the physical conditions of their room for studying purposes. After they identified the variables controlling both their studying and non-studying, appropriate physical changes were suggested. Though reliability on such changes was not conducted, unsolicited self-reports from the students indicated that many did take place.

Developing a list of rule-statements for studying did not, by itself, produce academic improvement; this may have been due to a
lack of contact with the rules once they had been constructed (Phase 2 of Experiment 2). Posting these rules in proximity to their study desk as part of the environmental management procedure (Phase 3 of Experiment 2) may have influenced studying if the students evaluated their behavior with respect to the rule. Again, comments by students supported the value of this procedure, as they stated that they then thought of what their parents would do if they didn't do well in school. The geographical distance between parent and student normally attenuates the parent's control over the student's academic behavior so a posted rule statement of parental contingencies might have a desirable influence on studying.

The present research provides further support for the effectiveness of self-monitoring and self-recording as a method to increase the frequency of a selected behavior, and also suggests that extensive environmental management, possibly including student-determined rule-statements, could serve a useful function in self-management programs.

In summary then, the self-management procedures described here seem practical, and the cost of implementing the training is low. Though done on an individual basis for experimental purposes, the entire package could be taught to a group in two to three hours. The procedures appear to have academic generality, as students in five different psychology courses demonstrated improvement. Also, the procedures appear to lead to durable behavior change, as indicated by the maintenance of self-management procedures by the majority of the students for several months after all training had concluded.
REFERENCE NOTES

Note 1. Grant, L. and Keenan, J. B. Studying in college: A review. Manuscript submitted for publication, 1979. (Available from L. Grant, Department of Educational Psychology, West Virginia University.)

APPENDIX A

Developing Rule-Statements
(Positive Consequences)

A. Delayed Rewards
   Goal Statements

I would like you to consider the full-range of positive results that may or will come about if you are successful in achieving high grades in this psychology course and other courses at the University.

In the process of doing this analysis, I would like you to first list the goals that you might have. These goals might include school, career, professional, occupational, or recreational goals. For example, this list might include the job you hope to get, the money you hope to earn, the educational degree you hope to obtain, and others. It might also include more immediate goals such as obtaining a staff position, summer employment, letters or recommendations, etc.

1) Goal Statements: (list on separate sheet)

Next, I would like you to list the delayed rewards that may result if you achieve high grades, and include the following considerations in your analysis:

2) Family: Include any rewards or privileges that will result if you do well. For example, money, use of the family car, or other desirable results. Also include here any social positive results, such as "My parents will treat me nice for a change", etc., etc. Include any rewards that involve your brothers or sisters, or other relatives as well.

3) Friends/Fellow students: Social effects if you do well, listed here. How your friends will react, or treat you as a result.

4) Other rewards: List here any rewards not covered in any of the above categories. List any "great result" or "fantastic reward" that may come about if you start to get high grades and end up getting a high academic grade point average.
5) **Rule-statements:** Lastly, convert your list of delayed rewards and goal-statements into the following format: "If I do ......... (behavior) .........., then I will .......... (state consequences)" (Transfer rules to your notebook)

Developing Rule-Statements
(Aversive Consequences)

B. Delayed Aversives

I would like you to consider the full-range of **negative results** that will come about if you do poorly in your psychology course and obtain a low grade point average here at the University.

In the process of doing this analysis, I would like you to first list the goals that might be unable to be reached, if you score poorly in school. Since this list overlaps with the list of positive goal statements made on the first part of this form, just list the top two or three goals that will be lost if you receive poor grades.

1) Negative effects on all goals: __________________________

Next, I would like you to list the delayed aversive that will come about if you score poorly, and include the following considerations:

2) **Family:** Include any punishment that will result from father or mother; this might include, for example, loss of privileges, loss of money, loss of respect, or any other negative outcomes. Also, include here any negative results that will occur from your brothers, sisters, or other relatives as well.

3) **Friends/Fellow students:** List any adverse social effects that will occur if you score poorly; for example, loss of friends, loss of respect, etc.

4) **Other negative results:** List here any "terrible" outcomes that will result if you get poor grades, not covered in the above categories.

5) **Rule-statements:** Lastly, convert your description of these aversive consequences into rules, using the following format: "If I do, or don't do .........., then ..........". (Transfer rules (consequence) to your self-management notebook.)
APPENDIX B

Environmental Management Instructions

I. Plans to minimize stimulus conditions for behaviors incompatible with studying.

A. First, list all behaviors that occur in your study room that interfere with studying.

1) Examples may include: eating, watching television, reading magazines, listening to your stereo, making phone calls, drinking alcohol, socializing, etc., whatever it is that seems to distract you.

B. Next, develop a list of changes that will be made to reduce or eliminate these "distracting" conditions.

1) Examples may include: remove a portable television to another room, remove your stereo, do not have any alcoholic drinks available when you plan to study, removal of magazines, asking friends to leave, etc.

(For A and B, list on separate sheet ...........NOW)

II. Plans to maximize stimulus conditions for studying.

A. First, list anything and everything that you could include in your study environment that might encourage, or lead to, studying.

1) Post rule-statements, weekly study schedule, quiz graph, study hours graph in the BEST place for being seen for studying.

2) Other additions to the study room might include (a) pictures of your parents, (b) pictures of needy individuals, if related to your goals or interests in psychology, (c) pictures of any individual that is a model to you, i.e., possibly a teacher or famous person, (d) anyone or anything that might encourage you to study.

Note 1: If there has ever been an experience or event that made you especially "motivated" to study, something that was followed by a long study session, then consider how you might recreate the situation as an incentive for studying; posting a picture or statement might help recreate the previous experience.
Note 2: Any pictures or rules placed in your study environment will be most effective if you: (a) make them large and legible, and (b) place them in the most conspicuous location possible, to increase the likelihood that you will see and notice them.

B. Now, list the changes that will be made to maximize the stimulus conditions for studying. (Use a separate sheet of paper.)
BIBLIOGRAPHY


