To the Graduate Council:

I am submitting herewith a thesis written by Allen B. Hendry entitled "Behavioral Self-Management of On-Task Behavior In a Sheltered Workshop Setting." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Educational Psychology.

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BEHAVIORAL SELF-MANAGEMENT OF ON-TASK BEHAVIOR IN A SHELTERED WORKSHOP SETTING

A Thesis

Presented for the

Master of Science

Degree

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Allen B. Hendry

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Anyone who ever described a thesis or dissertation as an individual academic undertaking obviously has never done a thesis or dissertation. The opinion of this writer is that in fact a thesis is the coordinated effort of many individuals to make a scholarly investigation into some aspect of the environment for which there exist no clear-cut answers.

For this reason, I would like to express my appreciation and give recognition to all those who have helped me achieve this writing. Certainly, I am grateful to Dr. Robert Williams for his help, ideas, criticism, and encouragement throughout the process. Likewise, Drs. Kindall and Benner have provided assistance along the way.

Other individuals who assisted in this research effort include: the staff of Helping Hands, Inc. in Rogersville and the staff, clients, and board of directors of Community Services for Exceptional Citizens, Inc. in Oak Ridge.

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ABSTRACT

The present study involved the use of a self-management model of behavior training to increase the productivity of adult mentally retarded subjects in a sheltered workshop setting. Five subjects were randomly selected for the experimental group and five subjects were likewise selected for the control group. Experimental subjects designed their own self-management programs for increased productivity and received training in self-monitoring, self-recording, and related procedures. On-task behavior performance was the specific target behavior which was considered. It was assumed that an increase in this variable would yield a corresponding increase in overall productivity.

A systematic time-sampling technique was used by observers to estimate the individual rates of on-task performance of the subjects. Concurrently, subjects individually self-recorded their own rates of on-task behavior according to a different type of time-sampling technique which involved the use of audible cues presented at variable intervals. The results of the two types of data collection techniques appeared to correlate highly.

Results of the study were presented utilizing tables and graphs, as well as discussions of the measures of central tendency and variability among the control and the

experimental groupss. The findings of the study supported the use of self-management techniques in the vocational habilitation of individuals who are assumed to be mentally retarded.

More specifically, the study concluded (1) that individual rates of on-task performance as well as consistency of performance could be influenced through the use of self-management procedures, (2) that the mentally retarded subjects of this study worked at a more consistent pace when their work assignments appeared to be more stimulating and less routine, and (3) that the subjects were finding the self-management procedures inordinately stress producing. The latter observation led to additional investigation and the subsequent supposition that our current system of services for the retarded may not foster the degree of responsibility acceptance for self-management of which these individuals appear capable. More research is needed on this point.

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I. INTRODUCTION

Support for the efficacy of behavioral self-management is abundantly provided in the recent literature (e.g., Goldfried & Merbaum, 1973; Kanfer, 1980; Kanfer & Karoly, 1972; Mahoney & Thoresen, 1974; Watson & Tharp, 1977; Williams & Long, 1979). Some writers, such as Thoresen and Mahoney (1974) consider behavioral self-control to be perhaps the most pragmatic of all the available coping paradigms. These authors contend that programmed self-control is inexpensive, most portable, and readily generalizable. Once a client learns to self-manage in a few situations, then the client may gradually come to self-manage in many other areas of his/her life. The client becomes more independent and requires a decreasing amount of professional guidance in an increasing variety of enviornmental situations.

In recent years, the study of self-management has been undertaken with mentally retarded subjects. This has been done for good reason, for the overriding goal in retardation habilitation, as propounded by the Accreditation Council for Services for the Mentally Retarded and Other Developmentally Disabled Persons (AC-MR/DD) (1981), is to enable mentally retarded individuals to become more personally effective in their environments. Just as research (Goldfried & Merbaum,

1973; Kanfer & Karoly, 1972; Thoresen & Mahoney, 1974; Schmidt, 1976) has shown that the ability of "normal" individuals to deal more effectively with their environment may be enhanced through self-management training, it follows that, given appropriate training and experience in self-management, individuals who are said to be mentally retarded might, likewise, become more adept in coping with their worlds through the techniques of self-management.

Even so, the experience of this writer is that, at least in the State of Tennessee, little to no effort is being undertaken to instruct mentally retarded individuals in programmed self-management. The reasons for this appear to involve a general lack of familiarity of the self-management concept among professionals in the area of mental retardation. Also, a feeling seems to exist among retardation service providers that mentally retarded individuals lack the requisite skills to self-manage or that, in the least, the teaching of self-management techniques to the retarded would be too staff intensive to be especially efficient in the total habilitative process. In addition, the AC-MR/DD standards (1981) mentioned above detail the form which behavioral programming should follow, and that form is most often interpreted to involve externally administered programming.

Although self-management presently is not a widely employed technique, researchers in the area of mental

retardation habilitation are, nonetheless, showing that self-administered behavioral programs may be effective in promoting the growth of mentally retarded subjects in a variety of both behavioral and life skill areas. For example, Nelson, Lipinski, and Black (1976) found that self-recording tended to increase the frequency of positive behaviors, while reducing the frequency of more negatively evaluated behaviors among mentally retarded adult subjects. Marr and Means (1980) observed the control of malingering behavior in adult rehabilitation clients through the use of self-instruction and self-monitoring. Swanson (1981) reported improvement in reading skills in learning disabled children and teens who were taught to self-monitor. Bauman and Iwata (1977) showed that mentally retarded adults were able to maintain their skills in housekeeping through self-scheduling and self-recording, and Rotatori and Fox (1981) suggested using self-management as a means of weight reduction and control in retarded adults. Also, several authors have recently cited evidence which indicates that mentally retarded individuals may successfully increase on-task behavior through the use of the various self-management techniques (Coleman & Blampied, 1977; Glynn, Thomas, & Shea, 1973; Hallahan, Lloyd, Kneedler, & Marshall, 1982; Horner & Bringham, 1979; Shapiro & Klein, 1980).

The present study considers the efficacy of a self-management model in increasing on-task behavior among

mentally retarded subjects. Many studies in the area of self-management of the retarded have dealt with only one or two components of a specified self-management paradigm. Coleman and Blampied (1977), for instance, were interested primarily in the aspect of self-monitoring in behavioral programs that were otherwise essentially externally administered. Looking only at this one aspect of a self-management model, the Coleman and Blampied study is typical of many such studies in the literature which deal with mentally retarded subjects (see also Horner & Bringham, 1979; Shapiro & Klein, 1980).

However, the earlier study by Glynn et al. (1973) considers all the elements of a specified conceptual model of self-management. The self-management model which Glynn used was similar to the model originally proposed by Bandura and Perloff (1967). That model included: (a) self-assessment, (b) self-recording, (c) self-determination of reinforcement, and (d) self-administration of reinforcement.

The present study likewise considers all the elements of a conceptual model of self-management. While the model presented herein contains elements similar to those designed by Bandura and Perloff (1967), this model expands the concept of self-management to include additional elements, and it considers self-management from a broader base. The model

employed herein was offered by Williams and Long (1979). It includes: (a) selecting a goal, (b) monitoring target behavior, (c) changing setting events, (d) establishing effective consequences, and (e) consolidating gains. The model was chosen not only for its broad approach, but also for its applicability to the prevailing philosophy and general methodology in present day retardation programming.

Since the promulgation of the AC-MR/DD standards (circa 1977), all agencies attempting to follow these standards utilize the interdisciplinary team approach to individual client programming. This means that all relevant agency personnel at least annually meet with each client and together formulate and implement a set of written goals, as well as methods and time frames for attaining those goals. The resulting program plans are maintained by appropriate agency staff and are used to guide the individual client programs for a year. The plans are reviewed often with the clients and are revised only with the foreknowledge and approval of the respective clients. The result of this philosophy in programming is that the clients, such as those involved in the present study, become somewhat knowledgeable in the areas of contingency programming, program monitoring, setting event modification, and so forth. The Williams and Long model employs many of these same general behavioral techniques in which the subjects of this study have become

familiar through the standard externally administered programs. Consequently, the assumption was made that the transition to self-administered programming, utilizing the Williams and Long model, should be a natural, evolutionary occurrence. It was further assumed that the related experience of the involved subjects should place them in a relatively good position to take the responsibility for the design and implementation of their own programs.

Another, and perhaps the most important, reason the Williams and Long model was selected was because it appears to be a model which is rather easily generalizable across a variety of behavioral and environmental situations. Litrownik (1982) is of the opinion that many developmentally handicapped individuals are actually hindered in their overall growth by the rigidly applied operant training techniques which are the mainstay of most of today's habilitation programming. Litrownik believes that such rote training leads to specific modes of responding to specific environmental cues in specific situations. Consequently, the already handicapped individual is further handicapped by the common lack of generalization training. This author further states that the entire focus of programming for the developmentally disabled should shift to methods which foster the acquisition of skills and attitudes which enhance the ability of the individual to deal effectively with his/her environment across a variety of situations.

Other writers (e.g., Epstein & Peterson, 1973; Kanfer, 1980; Thoresen & Mahoney, 1974) support the notion that by instructing individuals in the essentials of self-management procedures, the probability that such individuals will cope more successfully and independently with future situational problems may be increased. Since this sort of general self-reliance is a major goal in retardation programming, then training models which foster successful independent functioning seem especially expedient and appropriate to employ. The Williams and Long model appears to be such a model.

II. METHOD

Subjects

The subjects of the present study were adult mentally retarded employees of an accredited (AC-MR/DD, 1981) sheltered workshop. While the backgrounds of these individuals were rather diverse, all had been employees of the workshop for at least six months prior to the study and the attendance of each had been regular, as defined by being present at least 85% of all the working days in the three months just prior to the study. In addition, each of the subjects were determined to meet the criteria for Extended Employment Situation (E.E.S.) participation as set forth by the State of Tennessee, TDMH/MR Policies and Procedures for Contracting with Grantees (1982). Such criteria include: (a) diagnosed as mentally retarded according to the definition listed by the 1973 revision of the Manual of Terminology and Classification in Mental Retardation (p. 5), (b) at least eighteen years of age, and (c) capable of work productivity as documented by standardized evaluation and agreement by the interdisciplinary team of the sponsoring agency. The standardized evaluation used by the workshop in which the present study was conducted was the Prevocational Assessment and Curriculum Guide (Mithaug, Mar, & Stewart, 1978).

The total population available for this study was thirty mentally retarded individuals. Of that number, five were randomly selected for the experimental group and five for the control group. A table of random numbers was utilized in the selection process. Consent was obtained from each subject prior to undertaking any experimental procedures (see Appendix A).

Dependent Variable

The goal of this study was to determine if behavioral self-management techniques could be used successfully by mentally retarded subjects to bring about an improvement in their work habits and, consequently, an increase in their productivity rates. On-task behavior across a variety of production oriented activities was the dependent variable. The assumption was that an increase in this variable would foster a concomitant increase in the overall levels of individual productivity.

A process assessment of productivity involving on-task behavior was chosen for this study, because a more quantitative product assessment of work behavior was not feasible. In the workshop setting, the client workers were involved in a variety of tasks which differed from person to person and from day to day. Therefore, no product assessment technique could be devised which would be equivalent across days and subjects.

On-task behavior was operationalized in terms of specified criteria. Behaviors involving each subject sitting in his/her seat with assigned work before him/her, eyes on that work, and, in some production oriented manner, manipulating that work, were considered on-task. Other behaviors, such as leaving the work station for some reason not associated with work, "horseplaying" with another worker, or sitting and not working, were considered off-task behavior. A further delineation of on-task versus off-task behavior may be found in Appendix B, "Instructions for Observers."

Observation Procedure

Observer Training and Reliability. In order to ensure that an observer would be available for each day of the experimental phase, five individuals were selected and trained as observers. These individuals were staff of the agency where the experiment was conducted, and, consequently, they were familiar with both the subjects and with the operation of the sheltered workshop. In addition, observers had educational and experiential backgrounds in human services so that they were somewhat familiar with the techniques and procedures of research in this area.

The pre-experimental observer training was conducted in two phases and required about one week to complete. First, each observer received written observation instructions

(Appendix B) and was asked to study these. After about two or three days, the observers met with this experimenter to discuss the contents of the instructions and to clear up any ambiguities. Then the observers were individually allowed to practice observing in the actual workshop situation, and they likewise practiced recording their observations (via Figure 1). This was done in order to ensure that each observer had achieved an adequate understanding of the observation technique.

The method employed by Lane (1976) was used in evaluating observer reliability. That is, one of the observers was designated to make the reliability checks by simultaneously observing with each of the four remaining observers. This designated observer, then, became the standard against which the records of the other observers were compared. In this manner, recorded high levels of inter-observer agreement would indicate that each observer had the same understanding of the dependent variable and of the observation procedure. The minimum accepted level of pre-experimental inter-observer agreement was established at 85%, based on at least one hundred individual behavior observations of the type utilized in the actual treatment phases of the study.

Reliability checks were conducted not only initially but at different times throughout the study. This was done to ensure that reliability was maintained at no less than

ON-TASK BEHAVIOR OBSERVATION SHEET

OBSERVER _____

OBSERVATION DATE _____

EXPERIMENTAL PHASE _____

SUBJECT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	EXPLAIN X	% A
1.																						
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

A - ON-TASK
O - OFF-TASK
X - OTHER
N - UNABLE TO OBSERVE

EXPERIMENTAL GROUP %A _____

CONTROL GROUP %A _____

Figure 1. On-Task Behavior Observation Sheet.

the accepted level. The percentage of the inter-observer agreement was determined by dividing the number of observer agreements by the number of agreements plus the number of disagreements, or:

$$\text{Reliability \%} = \frac{\text{number of agreements}}{\text{number of agreements} + \text{number of disagreements}}$$

Watson and Tharp (1977) describe this method of determining inter-observer reliability as simple and widely used. The precise procedures followed in monitoring inter-observer reliability may be found in Appendix C, and Figure 2 was used to record the results of the reliability checks.

ASSESSMENT OF RATER RELIABILITY

PRIMARY OBSERVER_____

CHECKING OBSERVER_____

DATE_____

$$\frac{\text{NUMBER OF AGREEMENTS}}{\text{NUMBER OF AGREEMENTS + NUMBER OF DISAGREEMENTS}} = \text{_____} \times 100 = \text{___}\%$$

Figure 2. Assessment of Rater Reliability

Observation Technique. During the course of the study, observers unobtrusively observed the ten subjects and recorded the on-task behavior rate of each on prepared

observation sheets (Figure 1). At the start of each observation period, observers were given a stopwatch, a pencil, and an observation sheet (Figure 1) on which the names of the subjects were listed in the order in which the observations were to be made. The order of subjects on the sheets was assigned randomly in advance via a table of random numbers.

At 10:30 a.m. each morning during the experimental phases, the observer took his/her place in the workshop area and, at once, determined the physical location of each of the ten subjects. The observer then started his/her stopwatch and made the first observation. This observation was done by monitoring the activity of the first client listed on Figure 1 and recording "A" if the client was on-task and "O" if the client was off-task. Then immediately the activity of the second client was monitored and recorded in the same manner. The activity of each consecutive client on the observation sheet was recorded likewise. The observer was instructed to record the major activity of each client at the precise moment the client was observed. Observers were to make their observations as quickly, yet carefully, as possible.

When the observer completed the first round of observations, that is, when all ten subjects had been observed once, the observer was instructed to check the

time on the running stopwatch. The observer was to do no further observation until two and one-half minutes had elapsed from the beginning of the initial observation. When the sweep hand of the stopwatch indicated the two and one-half minute interval had passed, the observer was immediately to start the second round of observations in a manner consistent with that of the first; that is, the first subject was to be observed, then the second, then the third, and so forth. Observations continued at two and one-half minute intervals until twenty (20) full rounds of observation, or two hundred (200) individual observations, were completed. All recording was done according to the observers' instructions described in Appendix B.

Experimental Phases

The progress of each subject toward meeting the goal of increased productivity was monitored and charted across each successive phase of the total Williams and Long self-management model. This was done in order to demonstrate which, if any, of the component phases of the model was particularly efficacious in bringing about the desired behavior changes.

The reader should note that each phase of this model was presented to the subjects not only successively, but cumulatively, as well. That is, starting with the baseline condition, each phase was added (see Figure 3) in a manner

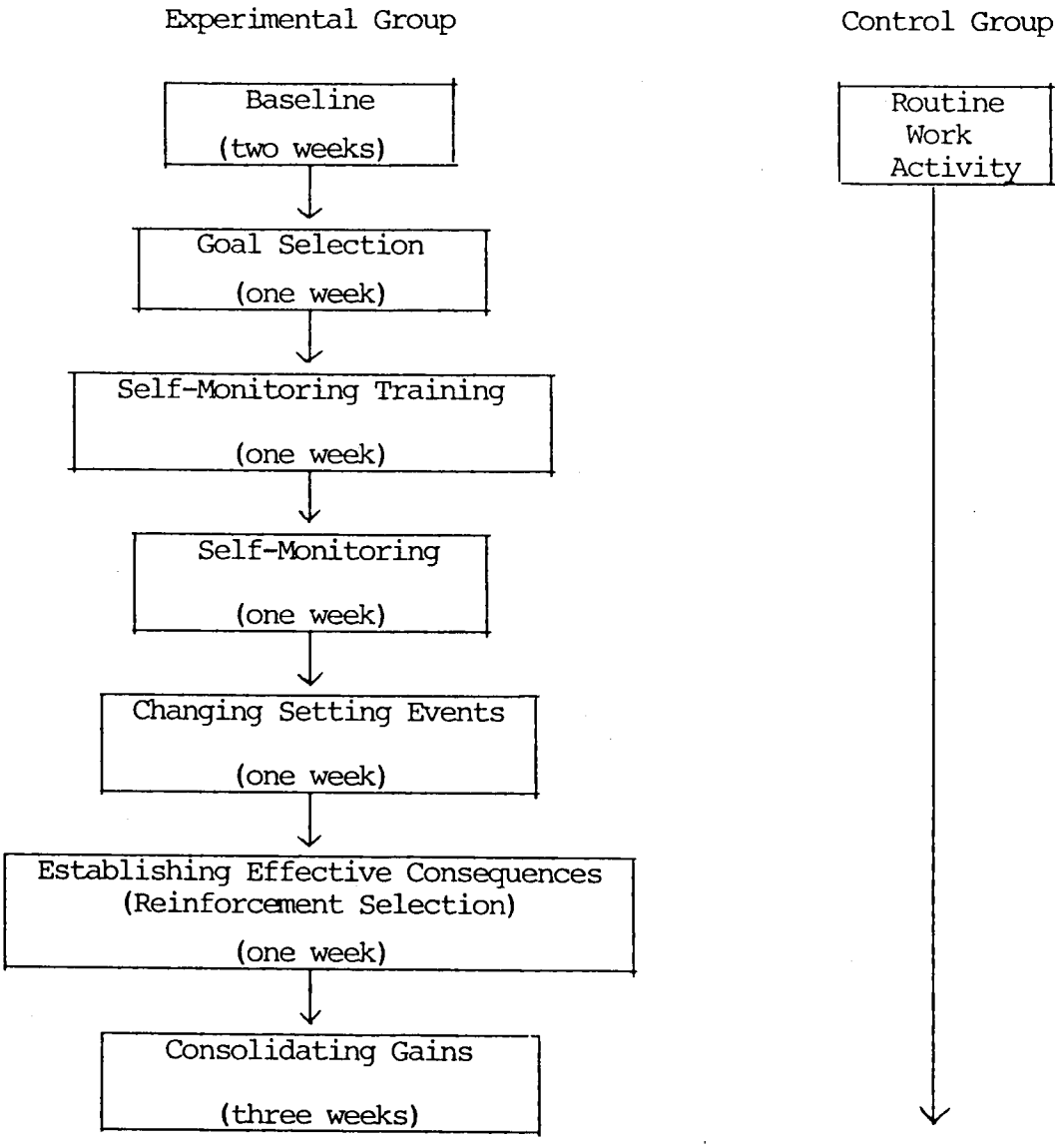


Figure 3. Experimental Phases.

which allowed the benefits of prior phases to remain in place and be built upon by subsequent programmed additions.

During the course of the study, the experimental subjects were involved in routine work activity and, at the same time, in each of the conditions described below. The control subjects were engaged only in routine work activity. The experimental phases and observations were conducted concurrently each workday morning for approximately 50 minutes.

Baseline. The first task of this study was to establish a baseline of on-task behavior for the two groups. This procedure required approximately two weeks and was conducted in a manner consistent with that described in the preceding sections. Appropriate consent was obtained from each of the ten subjects prior to conducting the baseline observation.

Goal Selection. The next phase of the study, consistent with Williams and Long, was for the experimenter to consult with each client in the experimental group concerning the baseline data. The concepts of on-task and off-task behavior were explained in concrete terms, and each subject was reminded that an increase in on-task behavior should result in an increase in productivity and in a consequent increase in pay. The subjects then were asked individually to decide if they wished to pursue the goal of increasing their level

of on-task behavior. Each subject agreed to pursue this goal. Had any subject elected not to pursue the goal, then his/her wishes would have been honored. Having committed to the goal of increased performance of on-task behavior, each subject returned to his/her work station and resumed routing work activity. During the daily trial periods, each was observed as in the baseline condition. This continued for one week before self-monitoring training began.

Self-Monitoring Training. During the week following the goal selection phase, the five members of the experimental group received training in self-monitoring and recording. The first step of this training involved the experimenter reviewing and demonstrating the terms on-task ("working") and off-task ("not working") behavior. Then the subjects, as a group, observed a model engaged in production activities such as that conducted in the actual workshop setting. At the sound of a tone (the same which was used in the later experimental periods), the experimenter asked, "Is the model working or not working?" The subjects then discussed the situation and together offered the answer. During this training step, as in all others, subjects observed models emitting both on-task and off-task behavior.

When the subjects, as a group, were at least 80% accurate in judging on-task versus off-task behavior in ten consecutive trials, each was handed a counter on which individually to

record observations of the model. This counter was also the same type which was used in subsequent experimental phases of the study. Again, as a group, the subjects observed the model, and, upon hearing the tone, together discussed with the experimenter whether the model was working or not working. Once the joint decision was reached, each subject was shown individually how to record the decision on his/her counter. When the subjects observed the model emitting on-task (working) behaviors, the subjects were instructed to register a point on the counter. When the model was off-task (not working), no points were registered. Data concerning the progress of each subject in this training procedure was documented on Figure 4. This form was used throughout the self-monitoring training procedure.

At this point in the training procedure, the subjects were introduced to graphing. This graphing used in connection with self-monitoring, was suggested by Marr (1981) as a means of more clearly conveying program progress, or lack thereof, to handicapped clients. However, since most of the subjects in this study were functionally illiterate and consequently had had little or no experience with graphs, the graphing procedure had to be thoroughly explained and demonstrated. The procedure was introduced early in the self-monitoring training phase, so that subjects could have adequate experience using it prior to actual self-monitoring.

RECORD OF SELF-MONITORING TRAINING

Subject _____

Date _____

TRIAL	MODEL ACTUAL[a]	SUBJECT CODED	CORRECT	INCORRECT

[a]As determined by experimenter

TOTAL AGREEMENT _____% (Accuracy)

Figure 4. Record of Self-Monitoring Training.

The type graph employed was the simple histogram, or bar graph. The histogram was selected because the subjects were able to understand that the bigger, taller bars represented an increase or "more-of" a behavior, while the shorter bars represented "less of" the target behavior. The bar graphs were drawn very simply on pages (Figure 5) so that each page represented a full work week. The columns were labeled Monday-Friday, and each column contained the numbers 1-10 to represent the number of individual trials available during respective trial periods.

Throughout the self-monitoring training, subjects charted on individual graphs the numbers registered on their counters at the end of each session. They did this by drawing a line with a marker pencil from the proper column number down to the horizontal axis of their graphs. Each day, the experimenter discussed with the subjects whether that day's charting seemed to indicate more frequent or less frequent occurrence of on-task behavior than the previous day's charting. Verbal responses from the subjects indicated that each had developed the ability not only to chart his or her behavior performance on the bar graph, but also that each subject could adequately differentiate and assign meaning to the resultant bars. That is, each subject became sufficiently skilled in the graphing procedure that he/she was able to recognize from the graph if levels of

CHARTING OF WORK BEHAVIOR

TIMES WORKING

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
10●	10●	10●	10●	10●
9●	9●	9●	9●	9●
8●	8●	8●	8●	8●
7●	7●	7●	7●	7●
6●	6●	6●	6●	6●
5●	5●	5●	5●	5●
4●	4●	4●	4●	4●
3●	3●	3●	3●	3●
2●	2●	2●	2●	2●
1●	1●	1●	1●	1●

NAME_____ DATE_____

EXPERIMENTAL PHASE_____

Figure 5. Charting of Work Behavior.

on-task performance were increasing, decreasing, or not changing.

Once each client became proficient in using the counters and recording the collected data on the bar graphs (as judged by doing so correctly eight of ten consecutive trials), the next phase of the self-management training commenced. Subjects were asked to observe the model in production activity and, at the sound of the tone, individually make a judgment as to whether the model was on-task or off-task. Each subject was to register his/her judgment on the counter. Unlike other phases of self-management training, subjects at this point were physically isolated from each other so as to avoid their cueing off one another in registering individual observations. This was done to ensure that each subject learned to make and to register his/her own decision. This phase was completed as each subject reached the 80% accuracy criterion for ten consecutive trials.

The final step in the self-monitoring training involved the subjects themselves performing simulated production activity. At the sound of the tone (presented at variable intervals), each was asked to note if he/she was engaged in on-task or off-task behavior and to register his/her individual judgment. This was done in a group setting, and at each tone, the instructor provided feedback to the subjects concerning the correctness of their individual

self-monitoring. Group discussions were held concerning the reasons an individual might be considered on-task or off-task, especially when there was disagreement between the experimenter and any of the subjects in training. The accuracy criterion each subject was required to reach was again 80% for ten consecutive trials. When each subject met this criterion, he/she graduated from the training and received 15¢ (which would buy a cup of coffee from the coffee machine) as reinforcement for accurate self-monitoring. Additionally, each was told that similar reinforcement would be forthcoming for continued accuracy in the experimental setting. Such on-going accuracy was monitored daily by the experimenter (via Figure 6).

This training procedure was conducted for one hour per day for approximately one week. Otherwise, subjects continued to engage in their routine work activity and observers continued to record their observations as in the previous conditions of the program.

Self-Monitoring. Having satisfactorily completed the self-monitoring training, the five experimental group subjects commenced the actual self-monitoring procedure. Each morning, subjects assumed their usual work stations, and observers were on hand as in previous training conditions. The control group of subjects, as well as the other workshop clients, likewise, were in their usual work

ESTIMATED ACCURACY OF SELF-RECORDED DATA

DATE _____

EXPERIMENTAL PHASE _____

OBSERVER _____

SUBJECT	ON-TASK (S-SCORED)	ON-TASK (O-SCORED)[a]	DIFFERENCE	REWARDED FOR ACCURACY	
				YES	NO

[a]THE SCORE RECORDED HERE WILL BE THE NUMBER OF ACTUAL ON-TASK OBSERVATIONS DIVIDED BY TWO TO ADJUST FOR THE VARIANCE IN THE NUMBER OF SUBJECT SELF-OBSERVATIONS VERSUS THE NUMBER OF OBSERVER OBSERVATIONS.

Figure 6. Estimated Accuracy of Self-Recorded Data.

locations. Beginning near 10:30 a.m. and ten times during the next 50 minutes at variable intervals, a tone was sounded on the intercom. At each sounding of the tone, the experimental group subjects self-recorded whether they were on-task or off-task. As in the training phase, if the subjects considered themselves to be on-task, then they registered a point on the counter. They registered no points for off-task behavior. The control group likewise heard the tone, since it was presented on the intercom, but they took no prescribed action. Throughout the self-management phase, observers continued to record the behavior of both the experimental subjects and the control subjects in the manner described.

Daily, at the end of the trial period, each experimental group subject received individual feedback concerning the accuracy of his/her self-recording, as assessed by agreement with the observers' recordings. Since there was a necessity for subjects and observers to employ different time sampling procedures, some interpolation had to occur in order to give appropriate feedback to the subjects. As described earlier in this writing, observers used an observation procedure which involved monitoring the on-task behavior of individual subjects at fixed intervals established prior to the undertaking of the study. This was required because of the physical separation of the subjects in the experimental situation. All the subjects could not be observed

simultaneously, and, in fact, almost one minute was required to make observations of all ten subjects. The subjects, on the other hand, simultaneously self-monitored at variable intervals signaled by an audible cue. To keep the procedure simple for the handicapped subjects, they were cued to self-monitor at only ten points during the fifty minute treatment periods. However, observers monitored the behavior of each subject twenty times at intervals of approximately two and one-half minutes. Since observers made twice as many observations as did the subjects during each trial period, for purposes of evaluating the observation agreement, the number of individual observations the observers marked "on-task" had to be divided by two to be equivalent to the scores recorded by the subjects. If the resultant agreement was within two registered points, the subject received the standard 15¢ reinforcement for accuracy. This feedback and reinforcement were administered by the experimenter (see Appendix B).

Also, at the end of each trial period, subjects individually charted their on-task frequency on bar graphs (Figure 5). The subjects charted only the data which were accumulated through self-monitoring. If the data collected by the subjects did not meet the specified observer agreement criterion and hence were assumed less than reliable, the subject charted them nonetheless. Observers who assisted

the subjects in charting were asked to do so in a very businesslike and nonevaluative manner. They were asked to make no comment concerning the accuracy of the self-recording. The point here was not necessarily accuracy in recording, but rather the perception of the subjects regarding their individual behavior performance. However, the observers were asked to ensure that each subject understood what the charted data indicated; that is, whether the on-task behavior seemed to be increasing or decreasing in frequency of occurrence.

Thus, accuracy and behavior performance were dealt with as separate issues. This separation of the two was intended to diminish the social reinforcement which could contaminate the self-monitoring phase at the point of individual feedback and charting. The self-monitoring condition continued for one week.

Changing Setting Events. Having selected a goal and having completed at least one week of self-observation and recording, each subject was consulted concerning the possible need for a change of setting events. That is, subjects were asked, "Is there anything about your work area which you might like to change in order to help you work steadier or faster?"

Whenever feasible, the changes suggested by the subjects were made. In some cases, the subjects made the changes

themselves. In other cases, the workshop staff was required to assist with the changes. Once the necessary changes were effected, subjects resumed their work activity, and the self-management program continued involving all the steps and procedures heretofore described.

Establishing Effective Consequences (Reinforcement Selection). Approximately one week after setting events were changed to suit the wishes of the subjects, each subject was asked individually to establish a set of consequences to occur contingent upon his/her on-task behavior performance. Since response contingent rewards have been shown to be extremely effective in bringing about simple behavior changes, the more restrictive procedures such as punishment or even negative reinforcement were discouraged. Rather, the subjects were encouraged to design reward contingencies. Subjects chose potential reinforcers from a list of available rewards (see Appendix D), and these were logged on Figure 7. It was explained to the subjects that they were to indulge in the selected rewards only if their individual rates of on-task behavior seemed to show improvement from day to day or to maintain at high levels, as determined through the use of the charting procedure heretofore described. Again, the observers who assisted the subjects with the charting were instructed to do so in as nonevaluative manner as possible, so as to avoid contamination by external rewards

CHOSEN REWARD CONTINGENCIES

SUBJECT _____

DATE _____

REWARD(S) SELECTED FROM TABLE 1.

ADDITIONAL/ALTERNATE REWARDS.

COMMENTS/SPECIAL INSTRUCTIONS.

I AGREE THAT I WILL TAKE MY REWARD ONLY IF I SEEM TO BE WORKING HARDER FROM DAY TO DAY.

_____

SUBJECT'S SIGNATURE

Figure 7. Chosen Reward Contingencies.

(i.e., praise). The decision regarding whether to partake in the selected rewards was to be made solely by the subject, based on the charted data. The rewards selected by each subject were immediately available at the end of the trial period, should subjects decide their behavior merited such rewards.

This phase of self-management training was conducted in a manner similar to the other phases, only with the reward contingency added. Data were recorded for one week.

Consolidating Gains. Upon completion of the reinforcement period, subjects were individually counseled concerning the progress they had made during the experimental phases. A suggestion was made to the subjects that they might continue to be aware of their on-task versus off-task behavior during work times. The importance of their doing so was discussed in terms of increased productivity, increased pay, and general vocational aptitude.

During the first week of this period of consolidating gains, observers continued to record the subjects' behavior as in the baseline period. However, the subjects conducted their formal self-management programs (i.e., self-recording, self-reinforcement, etc.) only on Monday and Thursday of that week. During the second week, observers likewise continued to record, but subjects conducted the self-management programs only on Wednesday. By the third week,

subjects discontinued the programs altogether, although observers continued to record as before. At the end of the third week of the consolidating gains period, each subject who participated in the self-management program was given complete data about his/her individual progress and likewise received a "certificate of achievement" to indicate successful completion of the training procedure.

Follow-Up Period. A three-day follow-up period was undertaken approximately thirty days after the end of the third week of the consolidating gains period. The purpose of this follow-up was to ascertain if any on-task behavior changes which occurred during the treatment periods had been maintained over time.

III. RESULTS

While the data collected by the subjects and that collected by the observers did not vary significantly (see Table 1), the data to be considered for analysis are the on-task performance data collected by the observers. Where differences occurred, the observer-collected data are assumed to be more objective, more reliable, and, consequently, more appropriate for presentation.

Table 1

Mean Percentage Agreement of Subject Collected Data Compared to Observer Collected Data

Subjects	SM	CSC	EEC	CG[a]	Average
E-GF	99	99	99	70	99
E-GM	93.9	99	100	81.7	97.6
E-N	97.9	97	99	95	97.2
E-CB	91	93	94	98.3	94.1
E-MR	88	93	89	96.7	91.7

[a]The first two percentage figures in this column were skewed by an unfortunate delay in work assignments. They were therefore not considered in the average agreement computation.

Although there were observation periods where the observers and the subjects did not agree on actual on-task performance, this disagreement was not viewed as problematic.

This is because (1) in general, disagreement fell within the two point allowance established at the onset of the study, and (2) the thesis of this paper deals with the entire range of the specified paradigm for behavioral self-management. No particular emphasis was placed on the accuracy of self-monitoring, in terms of the overall effectiveness of the program. Many writers (e.g., Broden, Hall, & Mitts, 1971; Jeffrey, 1974; Kanfer, 1980; Kazdin, 1974; Williams & Long, 1979) imply that the reliability of self-recording is not crucial to self-change. Rather, the entire self-management procedure with emphasis on self-observation and self-understanding should be considered in total as one strives for behavior change.

Indeed, following the lead of Williams and Long (1979), this writer views self-management as a series of skills leading to a higher level of self-control. However, for purposes of analysis, individual data were considered for each of the six treatment phases of the paradigm, as well as for the baseline period (B) and a follow-up period. Data are presented for the one week phases of goal selection (GS), self-monitoring training (SMT), self-monitoring (SM), changing setting events (CSE), and establishing effective consequences (EEC). Data are presented also for the three one-week periods of consolidating gains [CG(1), CG(2), CG(3), respectively]. Both tables and graphs are used in the analysis and presentation of the collected data.

Control Subject Data and Results

C-D (Figure 8). This subject was female, age 55. She had a diagnosis of mild mental retardation [IQ = 67 on the Wechsler Adult Intelligence Scale—Revised (WAIS-R)]. Although she had spent a majority of her life in one form of public institution or another, she had nonetheless achieved a comparatively high level of independent functioning. At the time of the study, she resided with two other ladies in a supervised, sheltered apartment.

The baseline on-task rate for C-D was approximately 88.1%. At the end of the study, her rate was 93.3%. However, during the course of the study her rate fluctuated, ranging from a high of 96.8% during the goal selection phase to a low of 66.3% during the second week of the consolidating gains period. As can be seen from Figure 8 and from the additional information in Appendix E, C-D's pattern throughout the study was one of considerable fluctuation in terms of on-task percentage rate.

C-J (Figure 9). C-J was female, age 29. Her IQ was 52 on the Wechsler Adult Intelligence Scale (WAIS) and, in addition to mental retardation, she had experienced emotional problems which caused her to confuse reality and fantasy. Occasionally, she experienced acute emotional episodes in which she withdrew completely from her environment for

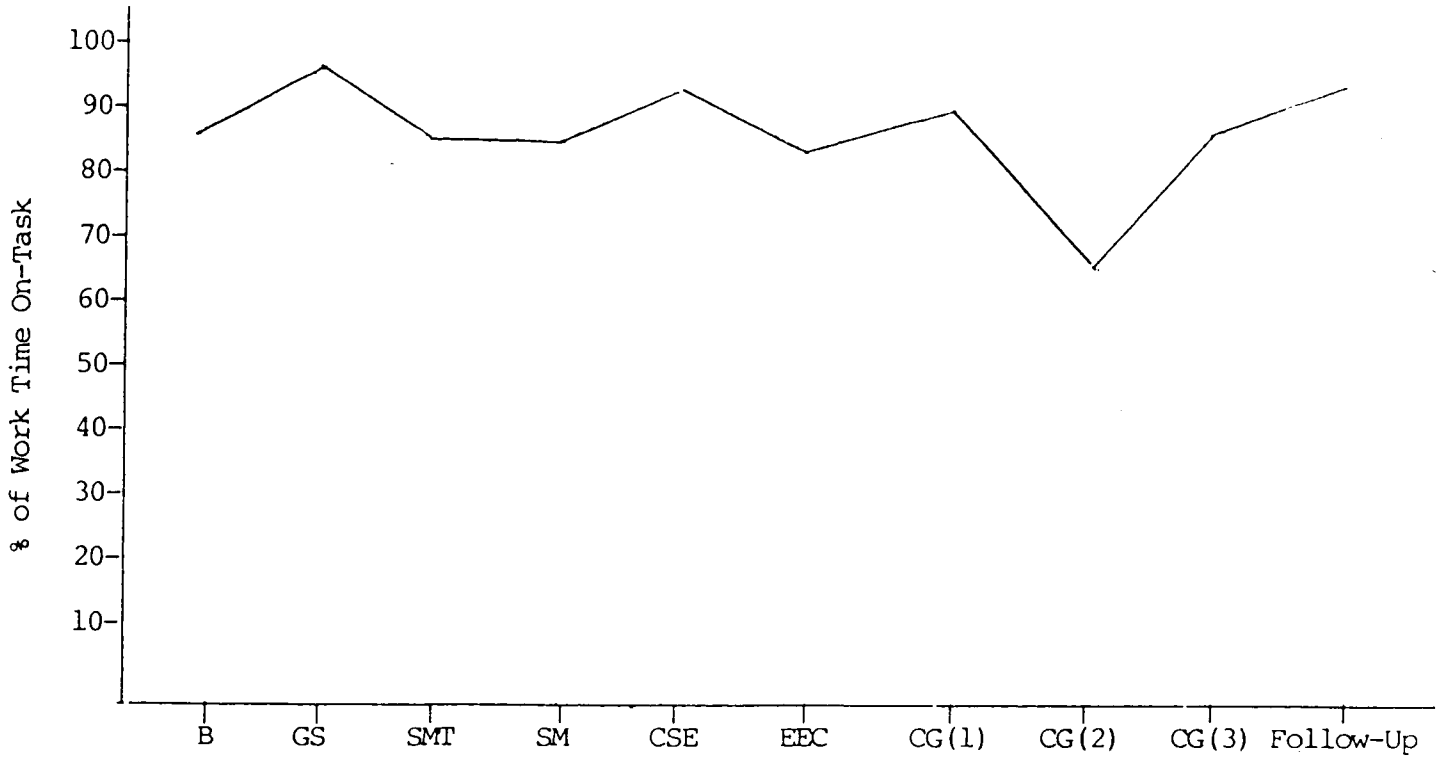


Figure 8. Levels of On-Task Performance at Each Phase of Self-Management Training for C-D.

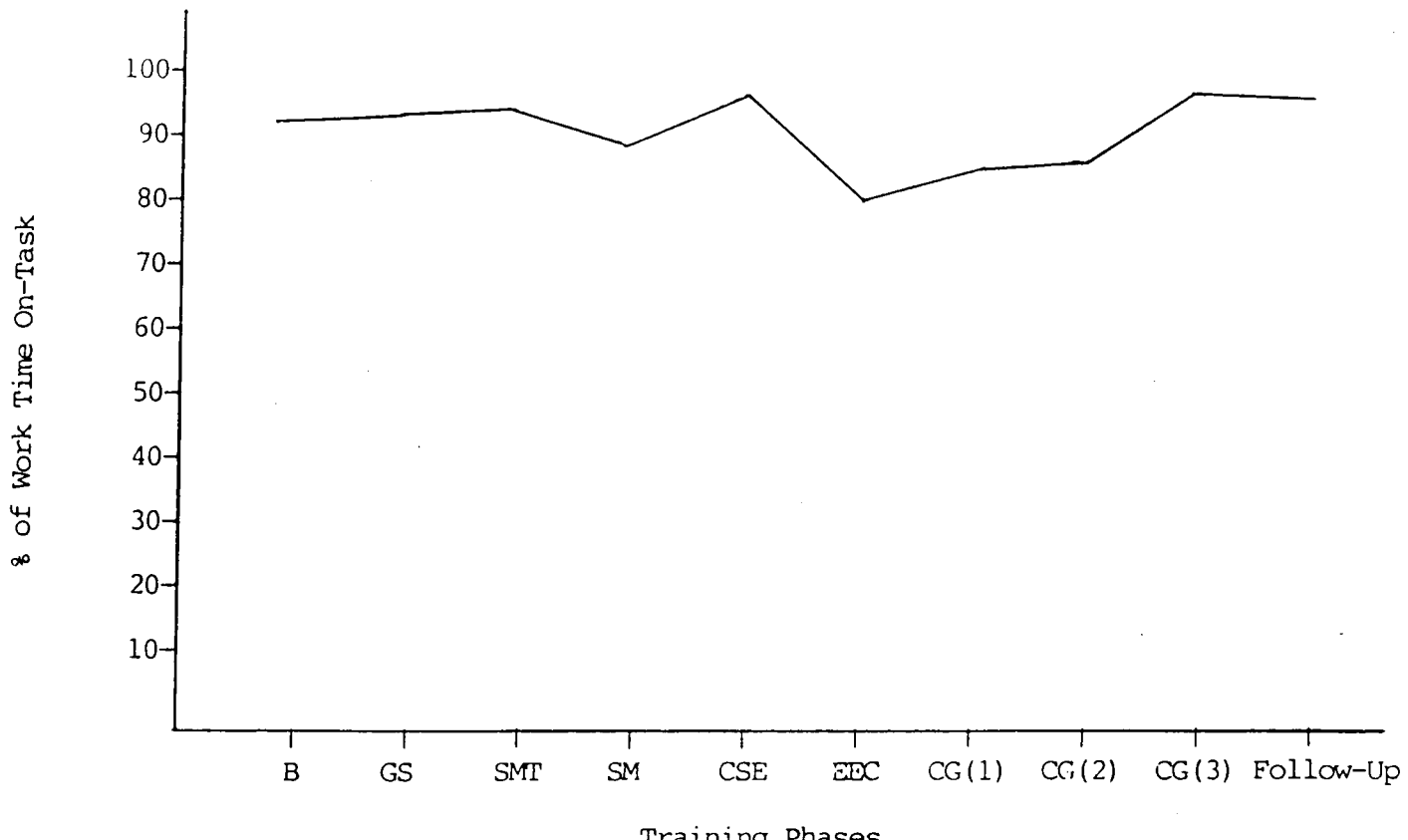


Figure 9. Levels of On-Task Performance at Each Phase of Self-Management Training for C-J.

several hours at a time. The frequency of the occurrence of these episodes was approximately once in six weeks. C-J spent her childhood and adolescence in her parents' home. At the time of the study, she resided in a group home.

This subject had a baseline on-task percentage of 91%. At the end of the study, that score was 93.3%. The range in scores for C-J was from 95%, achieved in both the changing setting events phase and in the third week of consolidating gains, to 80% scored during the establishing effective consequences period. The daily scores of this subject were typically high, although she had several "bad days," which lowered her overall on-task scores.

C-MF (Figure 10). This subject was male, age 39, and his IQ was 61, as determined by the Bender Gestalt and Peabody Picture Vocabulary Test. C-MF had fairly good social skills and adequate independent living skills so that he was able to reside in a supervised, sheltered apartment with two other men. Formerly, this man had lived for several years in various group living situations with seven to nine other retarded individuals.

C-MF had the lowest baseline score of any of the subjects. Also, his daily performance showed a high degree of fluctuation and lack of pattern (see Appendix E). His highest average score was 86.7% achieved during the week of changing setting events, and his lowest score occurred only

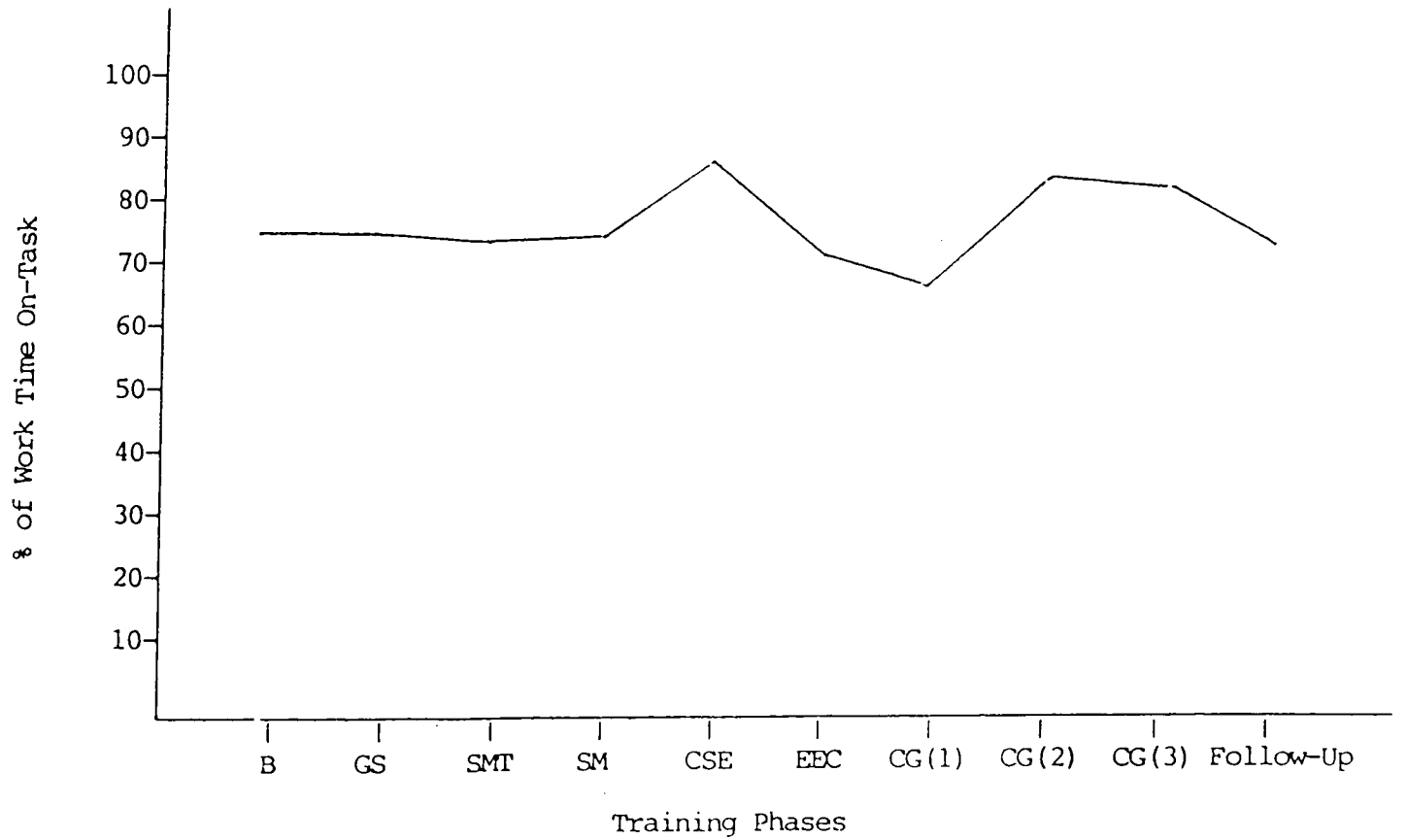


Figure 10. Levels of On-Task Performance at Each Phase of Self-Management Training for C-MF.

two weeks later during the first week of the consolidating gains period. Although the daily scores and mean scores for this client varied widely, his performance score recorded during the follow-up period, 73.3%, was consistent with his baseline score of 74.8%.

C-L (Figure 11). This client was 34 years of age, male and had an IQ of 64 on the WAIS-R. He also had cerebral palsy, but was basically ambulatory. At the time of the study, C-L resided in the home of his parents.

C-L had a baseline of 82.1% on-task, as recorded by the observers. Figure 11 shows a fair degree of fluctuation in performance from baseline to the establishing effective consequences period, then the curve becomes level at near the baseline rate. The daily scores in Appendix E, however, show much variation on a day-to-day basis.

C-CR (Figure 12). This subject was female, age 29. She had Down's Syndrome and an IQ of 59, according to the WAIS. Of all the subjects in the experiment, C-CR was, perhaps, the most sociable and appeared to be the best adjusted to her particular situation. She grew up in the home of her parents and resided there at the time of the study.

C-CR performed at 98.8% on-task during the two-week baseline period. Her work was generally steady from

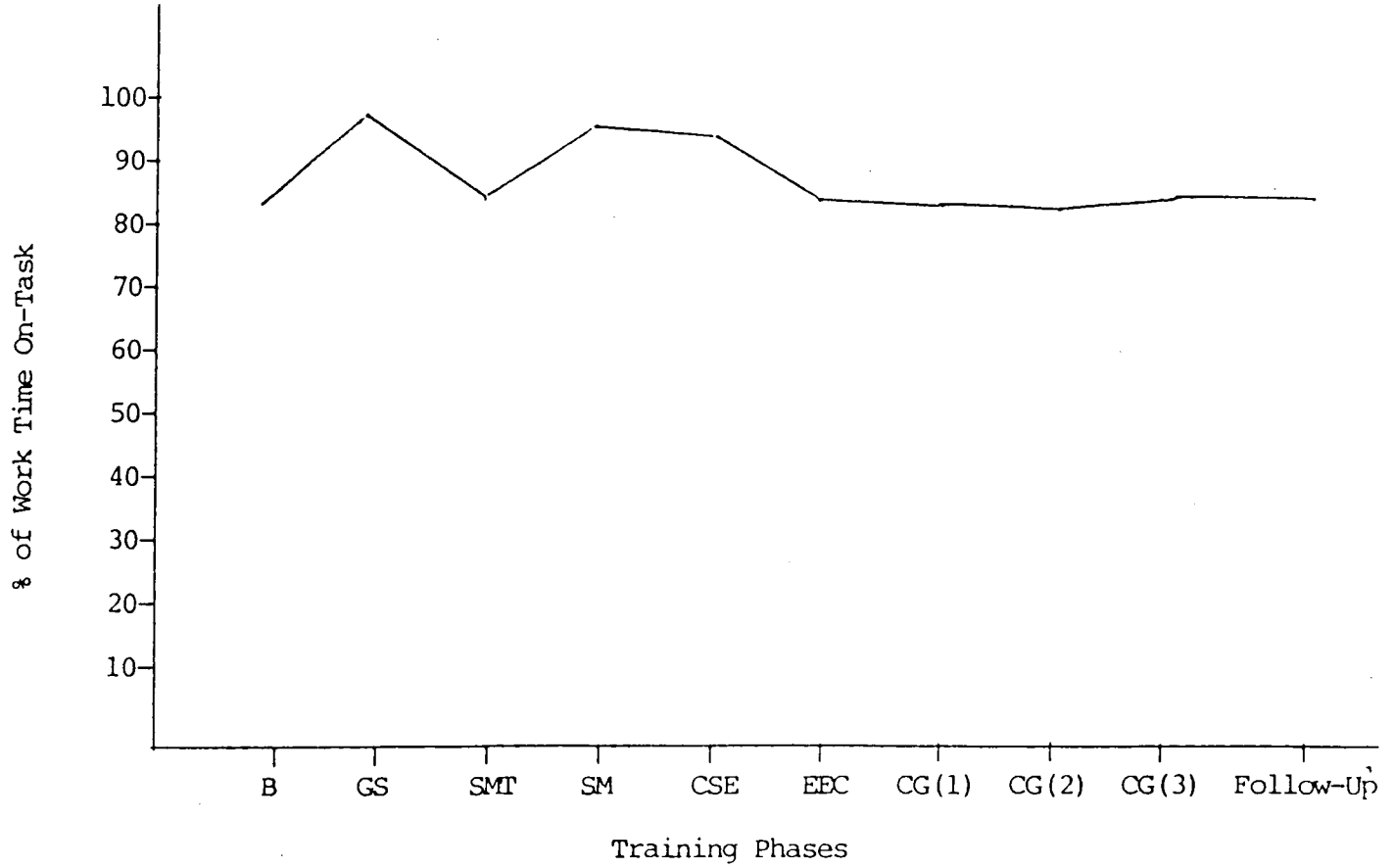


Figure 11. Levels of On-Task Performance at Each Phase of Self-Management Training for C-L.

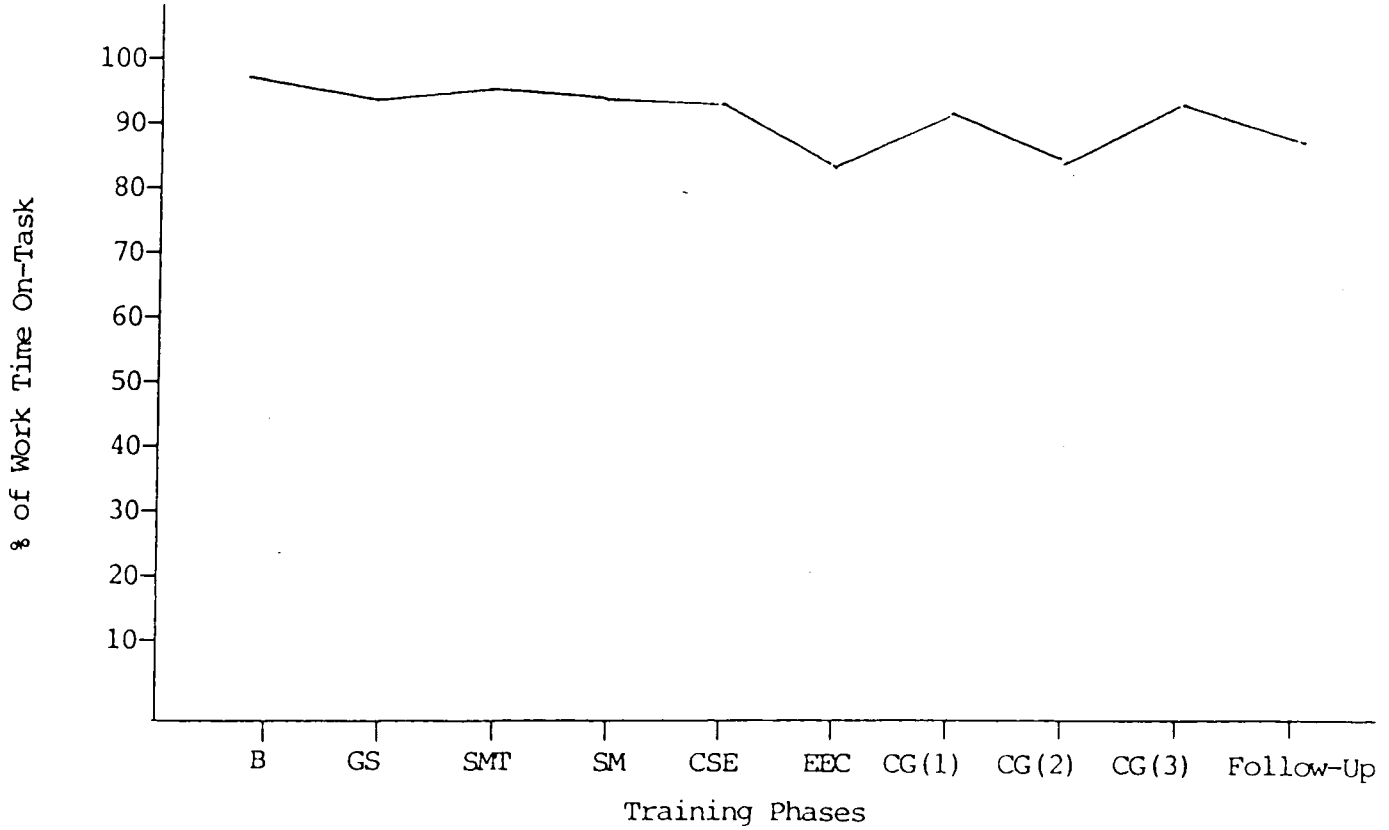


Figure 12. Levels of On-Task Performance at Each Phase of Self-Management Training for C-CR.

day-to-day, with the range of her scores being from a high at baseline to a low of 83.8% during the establishing effective consequences phase. Neither the level of her on-task performance nor the fluctuation in that performance showed significant variation as the experiment proceeded.

Experimental Subject Data and Results

E-GM (Figure 13). E-GM was male, age 28, and had an IQ of 48, as indicated by the WAIS. E-GM was particularly adept at using hand tools and in woodworking. E-GM was the only subject of this study who had a part-time job away from the sheltered workshop. He independently performed janitorial duties at a nearby restaurant. E-GM was raised in the home of his parents and lived with them at the time of the study.

The baseline for this subject was 89.2% on-task performance, and this increased to near 100% by the changing setting events phase. A near 100% on-task level was maintained throughout the remainder of the experimental phase and through the follow-up period. Although there was some fluctuation in the daily scores of this subject in the early phases of the study (see Appendix E), by the changing setting events phase, the scores showed little day-to-day variation. E-GM exhibited high levels of on-task behavior throughout the study.

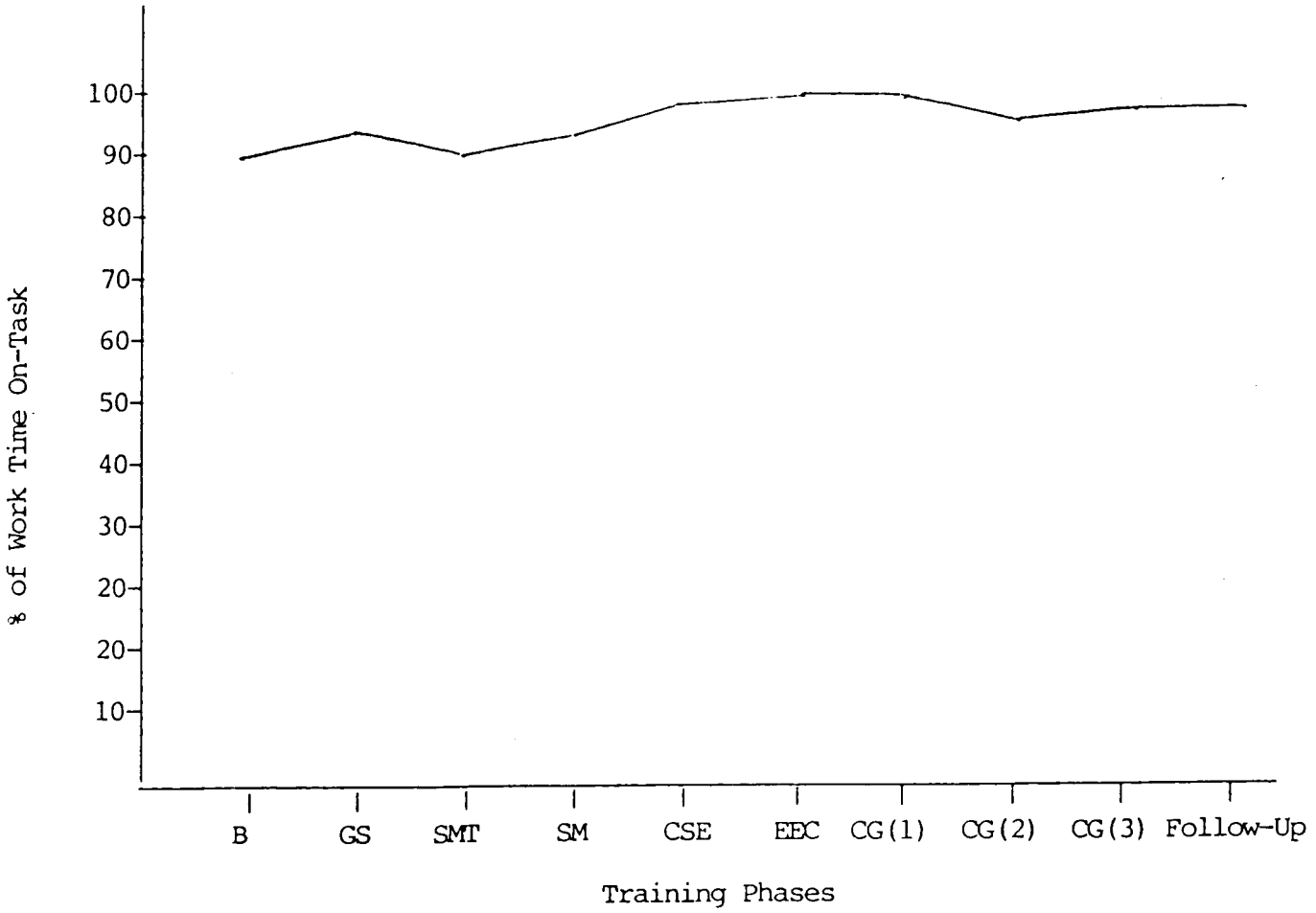


Figure 13. Levels of On-Task Performance at Each Phase of Self-Management Training for E-GM.

E-N (Figure 14). This subject was male, age 33. He was borderline mentally retarded (IQ = 78 on the WAIS), and he was totally blind. While he had not been diagnosed as having emotional problems, he nonetheless spent a considerable amount of time performing stereotypic behaviors (i.e., smelling hands, leaning his head back), "talking to himself," and other similar self-stimulating activities. E-N had resided with his mother all of his life.

E-N had a very high baseline score of 98.9%, and this was followed the next week during the goal selection period by a recording of 100% [though this latter recording was based on only one day of observation]. His level of on-task performance then fell to 92.5% during the week of self-management training, but rose to 94% by the self-monitoring phase and remained steady in the mid and upper 90%'s throughout the remainder of the experimental phases. The daily data charts (Appendix E) indicate consistent performance for this subject from day-to-day.

E-GF (Figure 15). This subject was 38 years old, female, and mentally retarded according to an IQ score of 59 on the WAIS. She was from a rather large matriarchal family and had two retarded brothers. She was living at home.

E-GF had a baseline of 97.7% and her mean scores for each experimental phase held consistently at about that level. Her lowest on-task score was observed during the follow-up

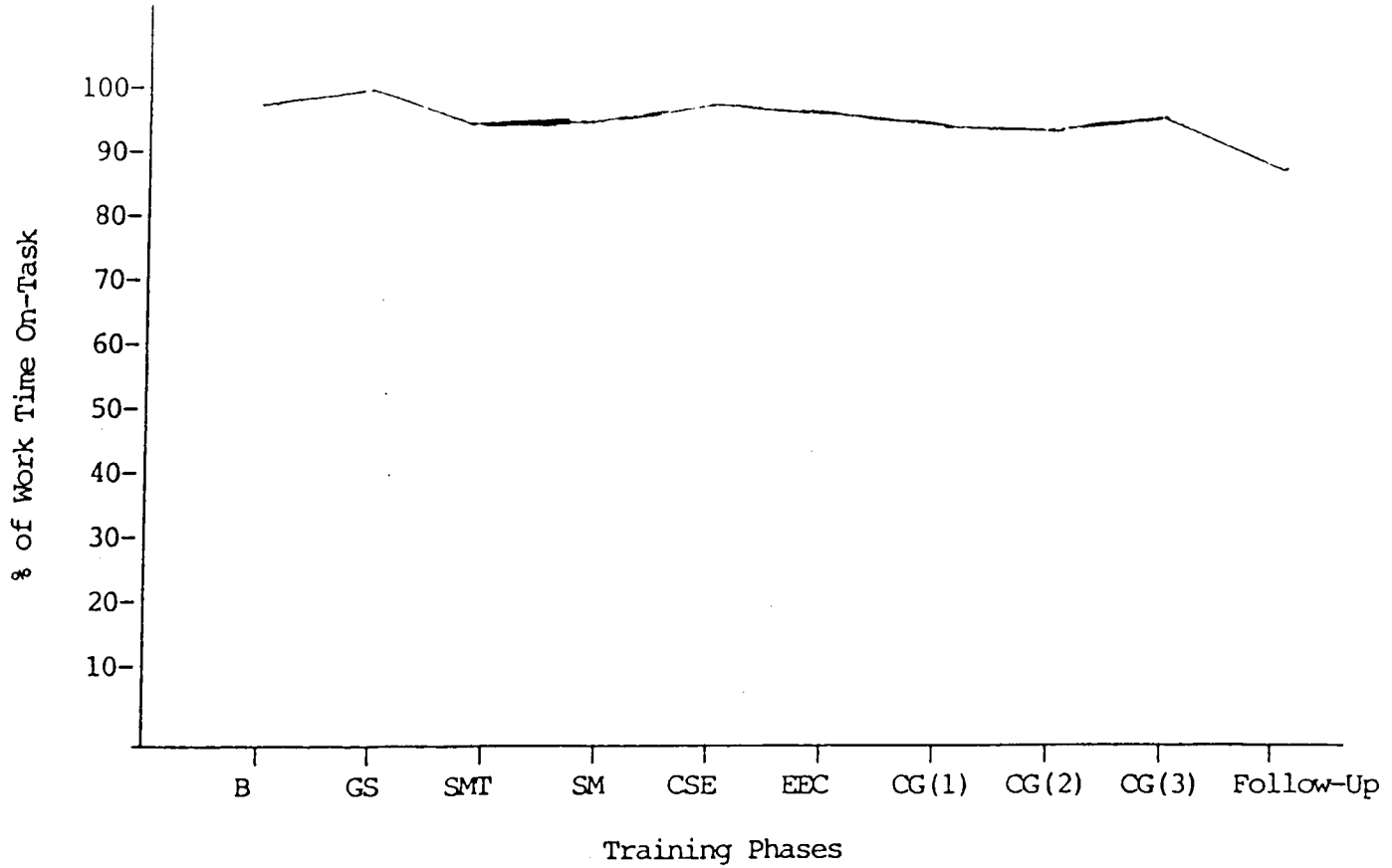


Figure 14. Levels of On-Task Performance at Each Phase of Self-Management Training for E-N.

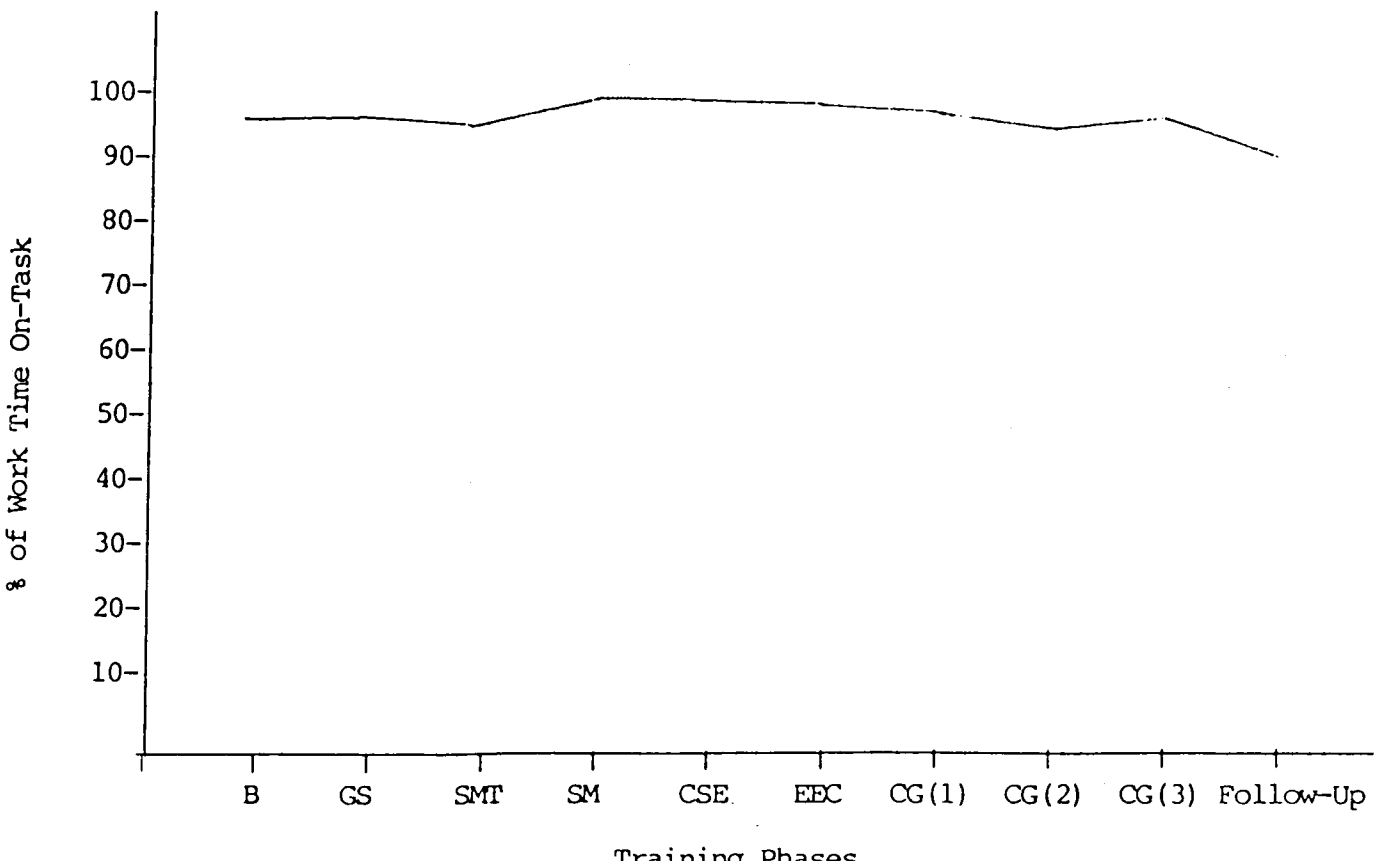


Figure 15. Levels of On-Task Performance at Each Phase of Self-Management Training for E-GF.

period, at which time her score was 90%. As indicated by Figure 15, her performance level was consistent throughout the study. Appendix E indicates a steady level of day-to-day performance, with E-GF scarcely scoring less than 95% prior to the follow-up observation.

E-CB (Figure 16). This subject was male, 20 years old and mentally retarded according to an IQ of 62 on the WAIS. E-CB had well-developed social skills, but he talked incessantly, rapidly, and redundantly. Further E-CB could accurately be described as somewhat hyperactive, and he had difficulty maintaining attention to task. E-CB grew up in the home of elderly parents, but had participated in group home living for approximately two years.

E-CB had a baseline on-task percentage score of 82.9%. This score improved throughout the experimental phases, but dropped to 86.3% on the second week of the consolidating gains period. However, during the follow-up period, the scores were back up to a mean of 93.3% which was consistent with what his score had been from the self-monitoring phase throughout the study, with the exception of the CG(2) phase. As for fluctuations in day-to-day on-task performance, the data in Appendix E tend to show that wide swings in performance (e.g., 55 to 100% during the baseline period) became less marked as the experimental phases progressed and on-task performance was maintained at a high level.

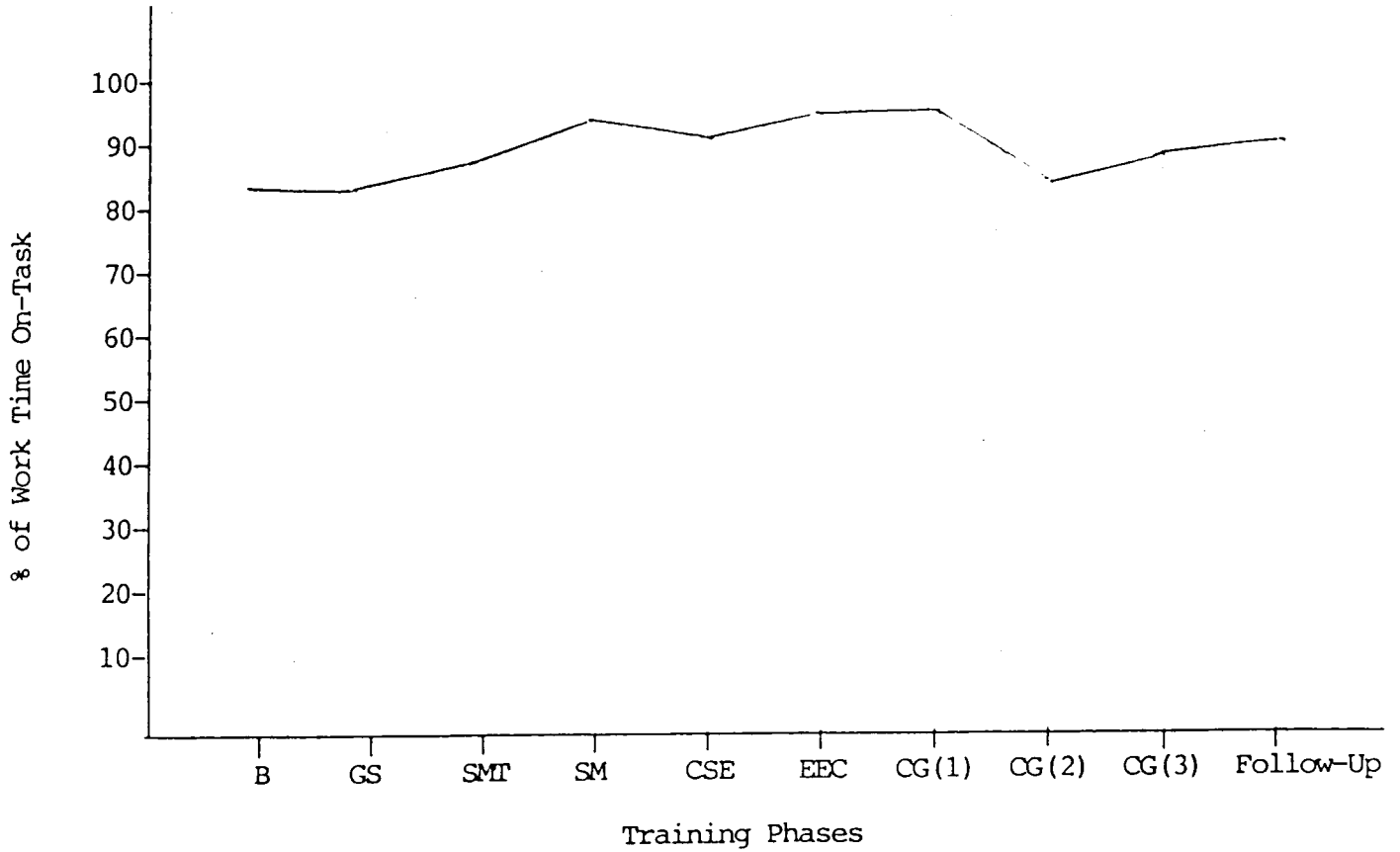


Figure 16. Levels of On-Task Performance at Each Phase of Self-Management Training for E-CB.

E-MR (Figure 17). E-MR was a 39 year old male whose IQ was 62 as measured by the WAIS-R. This subject conversed with others appropriately, but was somewhat of a loner. According to his program plan, he had serious difficulty attending to task. This difficulty was so extreme that staff of the group home where he resided had been cautioned about letting him cross the street unattended. E-MR had a background of living "on the streets" and had had serious medical complications in the form of high blood pressure and diabetes. It was suspected that the high levels of medication which E-MR consumed for control of his medical difficulties might be a causal factor in his low level of task attendance.

E-MR scored 78.9% on-task baseline, but then fell steadily to 56.3% by the self-monitoring training phase. Through baseline, goal selection, and self-monitoring training, E-MR was also most inconsistent in day-to-day scoring (see Appendix E) and generally seemed to have great difficulty attending to task.

However, with the implementation of the self-monitoring phase, the on-task performance score of E-MR went ten points above the baseline level and stayed steady throughout most of the balance of the study. The score dropped to near baseline during the second week of the consolidating gains period, but returned to over 90% for the third week of that period and was maintained at that level during the

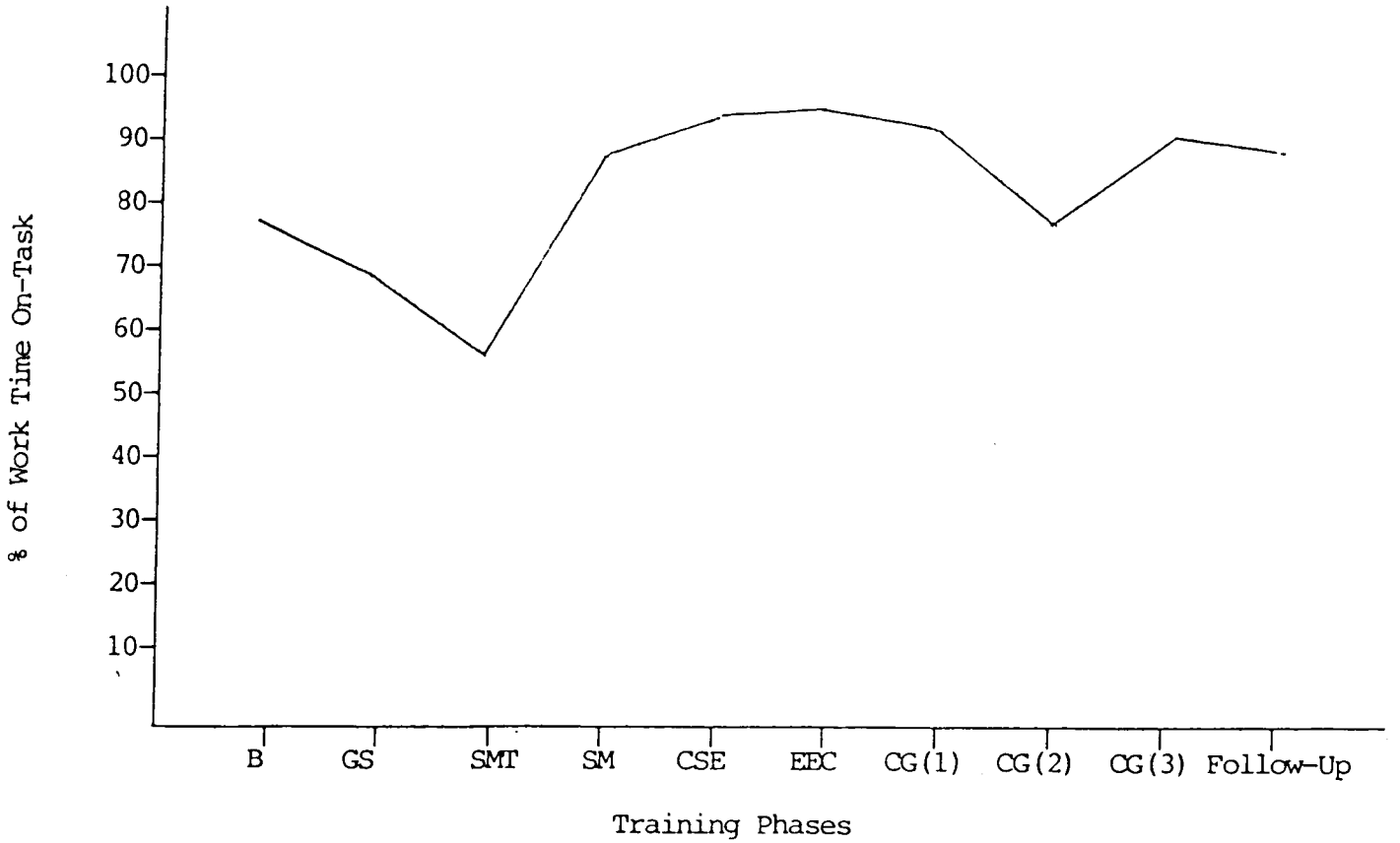


Figure 17. Levels of On-Task Performance at Each Phase of Self-Management Training for E-MR.

follow-up. The daily data in Appendix E show that the day-to-day performance became consistent by the self-monitoring phase and remained so for the duration of the study period.

Comparison of the Performance of the Experimental Group with That of the Control Group

The comparison between the results obtained from the observation of the two groups were handled in two ways, statistically and graphically. While the statistical data presented appear consistent with the data shown on the tables and graphs, the reader is cautioned to bear in mind that small samples were used in obtaining the data. Such small samples can be misleading when analyzed statistically for such samples do not necessarily represent a normal distribution (Lynch & Huntsberger, 1976). The data were analyzed simply in terms of central tendencies and in terms of measures of variability. The mean percentages for each subject at each phase of the training program are presented and discussed via Table 2 and Figure 18.

At the baseline, the experimental group and the control group appeared to be similar in terms of the on-task performance of the subjects. Table 2 shows the mean on-task performance score for the experimental group to be 89.6% at baseline while the same score for the control group was 86.6%. The standard deviation from the mean was 8.83 for

Table 2

Mean Percentage On-Task of Each Subject at Each Phase of Self-Management Training

	B	GS	SMT	SM	CSE	EEC	CG(1)	CG(2)	CG(3)	Follow-Up
E-N	98.9	100	92.5	94	97	97	96	96.7	97.9	90
E-GF	97.7	98	96.2	99	99	99	98.7	95	97.5	90
E-CB	82.9	82.4	88.8	92.7	91	94	95	86.3	89	93.3
E-GM	89.2	92	90	92	97	100	100	97	99	100
E-MR	78.9	69	56.3	88.9	93	94	91	78.7	92.4	90
C-MF	74.8	74.7	73.8	74.8	86.7	70.6	68	86	84.8	73.3
C-J	91	91.9	92.5	87.5	95	80	84	84.4	95	93.3
C-L	82.1	98.9	83.8	97	94	82.7	82.9	82.8	85	86.7
C-CR	98.8	92	95	93.7	92	83.8	92	84.2	92.5	90
C-D	88.1	96.8	87.5	87.3	92.9	82.4	89.8	66.3	85.7	93.3
Experimental	89.6	85.6	84.7	93.3	95.4	97	96	89.3	95.1	92.8
Control	86.6	91.8	86	88.4	92.1	79.3	83.3	81.6	88.6	86.9

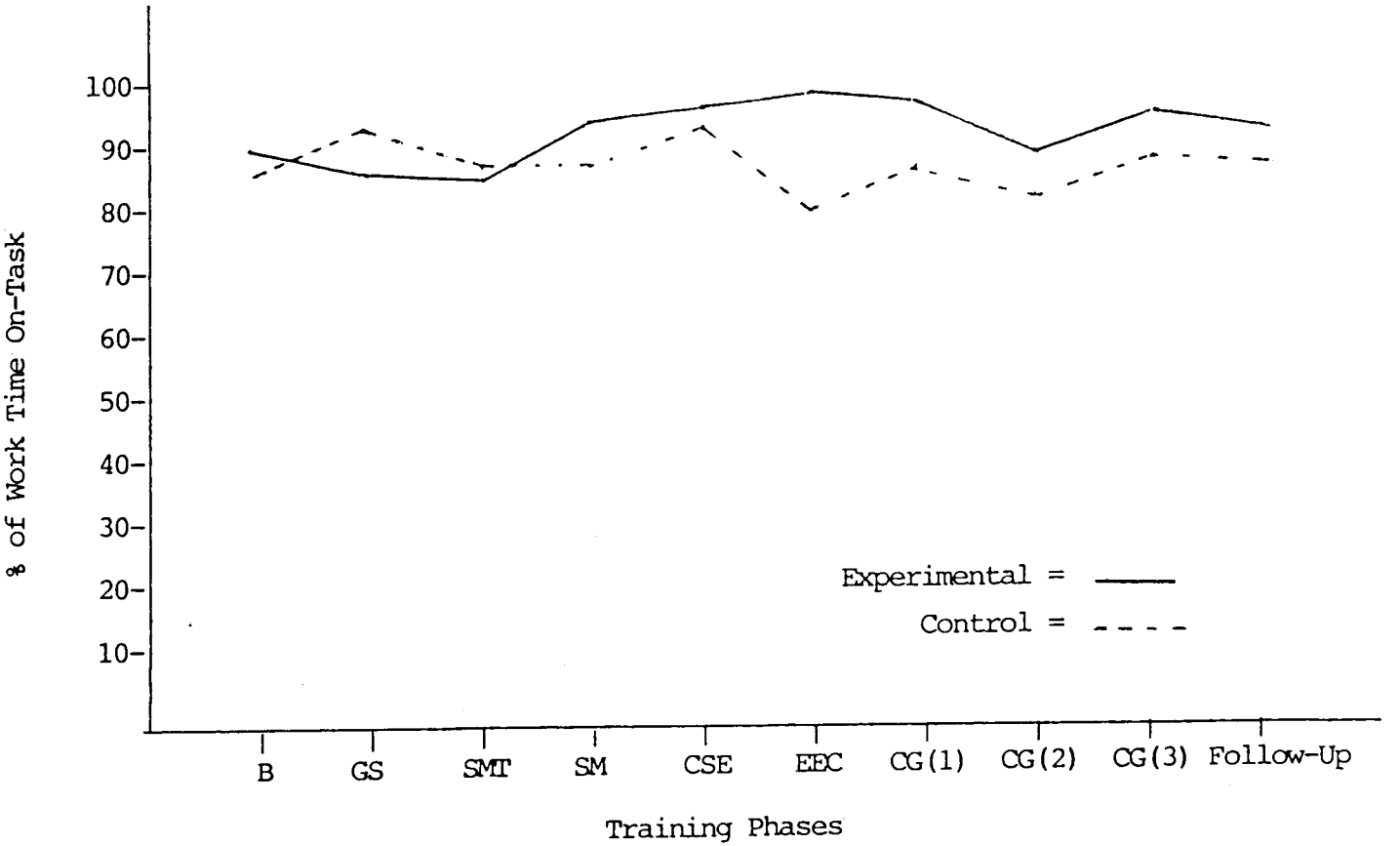


Figure 18. Levels of On-Task Performance at Each Phase of Self-Management Training.

the experimental and a similar 9.07 for the control group. Utilizing a t-test, no significant difference was found between the two groups ($p < .05$) at the baseline level.

The mean performance scores for each group shown in Table 2 and discussed in this section were computed using the daily data presented in Appendix E. That is, mean scores were determined daily for each group and those scores were averaged to determine the mean performance score for the week. The individual mean performance scores listed in Table 2 were obtained in a like manner. For this reason, the group mean performance scores listed in Table 2 may differ very slightly (due to absentees during daily observations) from the average of the individual performance scores on the same table.

As can be seen from Figure 18, the mean performance levels of the two groups were similar during the first four phases of the self-management training program. During the goal selection period, the control group out performed the experimental group by about 6 percentage points. During the self-monitoring training period, the scores of the two groups were almost equal, but by the actual self-monitoring period, the combined performance score of the experimental group had exceeded that of the control group. From that phase of the training model and throughout the study period, the scores of the experimental group remained at a higher level than the scores of the control group.

Differences in performance through the changing setting events phase were slight, only about three or four points. However, by the end of the establishing effective consequences phase, the difference was about 18 percentage points ($p < .05$). Through the rest of the study, the difference in mean performance between the two groups averaged more than eight points (see Figure 18). The experimental group's performance scores remained consistently higher than those of the control group.

A second consideration in comparing the performances of the two groups is the variability of scores. Table 3 compares the standard deviations from the means, or the spread, of the mean performance score of the subjects in each respective group at each phase of the training program. As with the mean levels of performance, the spread of the scores was very similar at baseline, and, at goal selection the control group scores varied to a lesser extent than the scores of the experimental group. While there was much variation in the scores of the two groups prior to the self-monitoring training phase, by the end of that phase, the standard deviation of the experimental group scores was below 4 and remained near that level for the duration of the study. The second week of the consolidating gains period was the exception when the variability of the experimental group scores returned to near the baseline level. However, this "regression" in the consistency of scores was influenced

Table 3

Standard Deviations of the Experimental and Control Groups' Mean Scores at Each Phase of Self-Management

Groups	B	GS	SMT	SM	CSE	EEC	CG(1)	CG(2)	CG(3)	Follow-Up
Experimental	8.83	12.77	16.16	3.69	3.29	2.77	3.51	8.02	4.28	4.34
Control	9.07	9.53	8.33	8.49	3.23	5.38	9.39	8.15	4.80	8.30

heavily by one score (see Appendix E), a problem endemic to any research endeavor utilizing small samples. By the third week of this phase the spread of scores was down and remained so through the follow-up observation.

Table 4 considers the variability of scores in a somewhat different manner. That is, the variability for the first half of the total experimental period, including baseline, was compared with the variability of scores in the second half of the training program, including the follow-up observations. The spread of scores for the control group was consistent across the total experimental period. The spread of scores for the experimental subjects during the second half of the program was reduced to one-half of the spread evidenced during the early weeks of this training endeavor.

Table 4

Standard Deviations of the Experimental and Control Groups' Mean Scores during the First Half of the Training Procedure and during the Second Half of the Training Procedure

Groups	B—CSE (combined mean scores)	EEC—Follow-Up (combined mean scores)
Experimental	10.12	5.06
Control	7.70	7.64

Figure 18 graphically illustrates these differences in on-task performance variability between the two groups. The experimental group curve becomes regular at the self-monitoring phase and remains more-or-less smooth for the duration of the study. On the other hand, the control group curve appears less regular throughout the study period.

IV. DISCUSSION

The present study demonstrated that individual rates of on-task behavior performance of mentally retarded subjects could, indeed, be influenced by the use of self-management techniques. Consistent with the recent literature, the findings cited herein indicate that subjects who were trained in the techniques of behavioral self-management displayed and maintained higher and more consistent levels of on-task performance than did a similar group of subjects who had not received such training. The differences in the performance of the two groups became especially pronounced at the establishing effective consequences phase where measures of both performance consistency and rate indicated a substantial superiority in the performance of the experimental clients. This superior performance was evidenced despite other factors [to be discussed later in this writing] which seemed to have a negative effect on the performance of members of the control group.

High Baseline Rates of On-Task Performance

As one studies the results section of this writing, one is struck by the extremely high levels of on-task performance exhibited by both the control group and the experimental group at baseline. An earlier study by Glynn et al. (1973)

found baselines much lower, at only 50-60% on-task. The initial reaction of this experimenter was that these high baseline averages were the result of a Hawthorne effect (Roethlisberger & Dickson, 1939). That is, each subject—both experimental and control—had knowledge of the experiment; also each subject was aware of the presence of an observer. Certainly, observer unobtrusiveness was a goal of the observation procedure, and each observer took steps to ensure as little visibility as possible. Nonetheless, the presence of an observer in the work situation was a variable which could have yielded inflated levels of on-task behavior.

However, even though the baseline phase was extended to two weeks to give the subjects a chance to acclimate to the experimental situation, no significant drop in the on-task performance rate occurred. The decision was consequently made to continue with the experimental phases, expecting that perhaps the presumed Hawthorne effect would "wear off" over the course of the first few weeks of the experiment, especially for those control group subjects for whom no type of recognition or encouragement for participation in the experiment was available.

Obviously, no systematic drop in on-task rate occurred for either group. Teachers and managers know that for any school or work situation in which some new external motivation

is added, increased productivity is generally the result. Examples of such external motivators have been air conditioning, music, aesthetic considerations and other such elements of a comfortable ambience. Less pleasing motivators have also been used with success. These include techniques such as one-way mirrors to monitor behavior, closed circuit television, and physical presence of an authority figure. But the changes produced by such attempts, for the most part, have been short-lived changes. That is, students or employees rather quickly seem to regress to business as usual, unless other contingencies are invoked as well.

For these reasons, this writer concludes that the high baseline levels of on-task performance of the mentally retarded subjects were not a result of the Hawthorne effect, of observer obtrusiveness, or of any empirical element of the experimental situation. Rather the high performance rates were more probably the result of years of training and externally administered insistence on increasing levels of on-task behavior. A major thrust of any prevocational or vocational program for the retarded is attendance to task. The guess of this writer is that the high levels of on-task performance were the result of years of drill in this very activity—at least the subjects appeared to have learned to "look busy." This hypothesis accounts for the difference in the baseline scores which Glynn et al. (1973) observed, since

that study was done with mentally retarded children in a classroom situation. In other words, the children in the Glynn study presumably had not been exposed to such long-term vocational training and hence had not been so conditioned to "staying on the job."

Variability in Performance

While a comparison of the mean performance of the experimental and control groups (see Figure 18, p. 54) indicates that the self-managing subjects were on-task more than the control subjects, the high levels of on-task behavior present at baseline certainly had a limiting effect on the conclusions which could be drawn from this type of data. Nonetheless, a consideration of the variability of the scores between the two groups suggests some rather significant findings concerning the productivity of mentally retarded workers.

Earlier in this writing, mention was made of the type work done in the sheltered workshop in which the research was conducted. To recapitulate, that work is primarily subcontracted from local industry. Therefore, the specific activities are varied and sporatic, involving small parts assembly, collating, packaging, deburring and sanding, woodworking, and other such activities. Also, many weeks in the shop are extremely rushed in an effort to meet the industrial demand. Conversely, other weeks are much less

busy to the point that supervisors have to "make work" to provide something for the handicapped workers to do. The present study extended across both kinds of weeks and several in between.

The variability of the performance scores (see Tables 3 and 4, pages 57 and 58, and Appendix E) seems to indicate that the self-management procedure utilized by the experimental subjects served to keep those subjects on-task more consistently across the many and varied types of work activity than were their control group counterparts. This is evident throughout the study, particularly in the latter half of the study where the standard deviation of scores among the experimental group was reduced by one-half. This trend was not shown by the scores of the control group subjects.

This consistency in on-task behavior was especially notable during the establishing effective consequences period. By chance, that EEC week found the work flow of the sheltered workshop at its lowest ebb in months. In fact, there was little to do in the shop except sanding either wooden craft items or plastic filter paper holders. Both of these jobs, of course, would be considered by "normal" factory workers as monotonous and boring. The indication from the data (see Table 3, page 57) is that certainly the self-management procedure was serving to keep the experimental clients

consistently on-task. This consistency was maintained even though the intrinsic reinforcers associated with more stimulating work activity were not present and on-task behavior would be expected to occur at a low rate (compare scores of control group).

The preceding trend calls into question the notion that retarded workers enjoy work which is highly repetitious. Even though many professionals and teachers in the field of mental retardation propound this notion, the findings and related observations from this study lend support to the alternative view that mentally retarded people actually prefer work which is more stimulating. While the design of the research reported herein did not allow for detailed data correlating on-task behavior and the complexity of the work activity involved, the findings taken as a whole, as well as the reports of the observers, indeed suggest that on-task behavior occurred at a lesser frequency during times when the involved work activity could be described as dull or boring. This was especially true of the control group subjects as can be seen by Figure 18 (page 54). The slow work week during the establishing effective consequences phase seemed to bring about rather dramatic losses in productivity in the control group subjects. The second week when work was slow occurred during the second week of the consolidating gains period. Figure 18 (page 54) shows the serious effect this

slow-down had on the on-task performance of not only the control group, but of the experimental group, as well. Certainly the data seem to suggest that, like "normal" workers, the retarded workers find inherent reinforcement in more stimulating work. The absence of this reinforcement in boring work was associated with a decline in productivity. This was especially true for those control group subjects who lacked the necessary self-management skills to maintain their productivity without undue influence from external contingencies.

The Stress of Self-Management

As the experimental phases progressed and the self-management procedure became more complex, a serendipitous observation was made which could have implications for future self-management undertakings with mentally retarded subjects. That is, by the self-monitoring period, it had become obvious that the self-management program was stress-producing for those subjects who were involved in this activity. Some of the subjects were affected more than others.

All the experimental subjects spent much time talking about their counters, worrying about whether they could hear the signal bell, and questioning the experimenter repeatedly about all the conceivable finer points of the procedure. A couple of the subjects became so concerned that their counters

would get confused with those of other subjects, that they demanded their names be written on them. One subject was observed to show a marked increase in self-stimulatory activity during the initial trial periods, and another increased his level of hyperactivity. This latter subject also appeared agitated in other areas of his life and, when this was discussed with him by his counselor, he blamed it on concern over the self-management program.

Is it any surprise that the self-management program was a source of stress for the involved subjects? Is the responsibility of self-management too great for mentally retarded subjects to handle? Questions such as these were considered by the experimenter in consultation with some of the professionals at the agency where the experiment was conducted. The conclusion reached was that the level of personal responsibility available to the retarded adults prior to the experiment had been very low. That is, since they were children in school (or in some other institution), the major mode of training afforded them had been externally centered. That is, these subjects had learned to behave in certain ways because it was expected of them by others. Discounting notions about personality development and super-egos, one might conclude that to a large extent, these adults had received very limited opportunity to develop expectations for themselves. The self-management program put the

responsibility for the behavior of each subject squarely on each respective subject. It was a new experience in free will, perhaps a frightening one.

The suggestion of this writer is not that retarded people should be excluded from the use of self-management techniques. On the contrary, the suggestion is that retarded people appear very capable of managing their own lives to extents determined only by individual abilities and disabilities. Each subject managed to cope with the imposed stress of the self-management situation to the point that productivity rates were maintained or increased and the consistency of performance was significantly improved. The suggestion is that perhaps professionals in the field of mental retardation have historically and systematically further handicapped their clients through failing to provide them the opportunity to develop more responsibility for their own behavior. Such professionals may need to reconsider some of the methods currently utilized in the system of service delivery for the retarded.

Response from Participants

This section is not intended to present fervent consumer testimonials about a new product which works. However, the response from the participants was almost this impassioned.

One subject reported, "This program has helped me. My check was bigger last week than it has been in a long time. Much bigger than usual. I am going to keep this up!"

Another, "It really helps to see what you're doing [when monitoring] like we have been."

And another, "This really helps me with my attention. Sometimes I get real bored and sort of drift off. Now something clicks and I can come back. Maybe it's because of the bell [i.e., the signal for self-monitoring]. I can tell I do better work when I am not in the program, too. I know I do better on cutting strips on the bandsaw."

The response from the subjects' parents was equally positive. One elderly parent seemed pleased that her daughter was in the experimental group and made the astute suggestion that perhaps through self-management her daughter could gain more confidence in her ability to make her own decisions and try new things. A father who discussed the program with this experimenter believed that through self-management his daughter could learn to be more responsible for herself.

Both the subjects and their families were excited about the possibility of this new style of instruction.

Implications

The data reported herein suggest that mentally retarded individuals can benefit from self-management training. Litrownik (1982) states that any experience in self-management for mentally retarded subjects produces more independence in other situations. Bowman et al. (1977)

agree and add that through self-management, individuals who are said to be mentally retarded may attain and maintain skills in areas (e.g., community living) where externally administered programs are difficult to implement. While the design of the reported study did not consider stimulus generalization directly, certainly the implications of the findings would support the views of both Litrownik and Bowman.

Further, the findings suggest that professionals in the field of mental retardation need to take a critical look at existing programs for the retarded, especially programs for early education of the retarded. It is believed that most of these programs do not provide the skills to mentally retarded children which enable them to become self-directing adults. Just as the clients in the experimental group experienced anxiety as they were given complete responsibility for their own work behavior, the experimenter hypothesizes that such anxiety would be evidenced by most retarded adults, given the same responsibility. As Hendry, Riches, and Warchol (1978) point out, our special education classrooms may not be teaching our mentally retarded children to become successful adults. These children need educational experiences which provide them the opportunity to learn to manage their own lives and behavior. Perhaps a basic perception on which our special education curricula are

based is that mentally retarded people are incapable of such self-direction. The data from this study certainly contraindicate this opinion.

The trend toward rigidly applied operant training is not limited to special education situations; it was found also in the workshop where the research was conducted. Each participant in that program had an individual plan which specified goals and externally administered methods for reaching those individual goals. No plans were specified for allowing the clients eventually to gain control of the various areas themselves. In addition, this shop had certain general rules which hinged on external rewards and punishers, mostly punishers. For example, clients who did not get change at a specified time were not allowed (by others) to purchase a soft drink. Clients who refused to do one job were not allowed (by others) to attempt another. Clients who created a disturbance in the work place were removed (by others) and not allowed (by others) to return to remunerative work for a specified period. A few telephone calls to other shops and agencies, confirmed that indeed virtually every agency for the retarded in this state operates according to such externally oriented programming.

While such activity deals with a variety of administrative difficulties and is not atypical of regular classroom and industrial management situations, the suggestion

from the data presented herein and from the related observations is that an approach which involves a stronger reliance on self-management techniques might be more beneficial, not only to the clients, but even to the agencies themselves. In the behavior management literature, a clear indication is that two of the major difficulties in behavior modification are retention and generalization of behavioral gains achieved. Teachers and supervisors who use operant training techniques with little emphasis on what Williams and Long (1979) call consolidating gains actually create work for themselves. A student might reach criteria for a skill, only to lose that skill when retested after a period of time. Consequently, the teacher then has the job of retraining. The same reasoning holds for teaching many of the community life skills for which generalization is imperative. A stronger emphasis on generalization and self-direction should certainly expand the students' possibilities and reduce the teachers' work load. Thus, agencies employing such techniques should evidence increased efficiency of programming.

In addition, it would appear that an emphasis on self-management techniques could vastly increase the potential productivity of a workshop as a business. Self-directing workers who remain on-task across a variety of production activities could surely reduce "dead-time," waste

of supplies, and error rate. Such workshops could probably operate with less staff, as workers require reduced direction and supervision from external sources. In the least, the staff could be better utilized in activities involving training for new skills and positive production. This same concept should hold true for most any situation in which self-management procedures are systematically employed.

In this connection, a tentative conclusion may be reached that self-management procedures might be justified by cost effectiveness alone, even if such procedures failed to produce significant increases in the performance of desired behaviors. During the course of the study, the five experimental subjects were involved in self-management procedures for approximately one hour per day, five days per week, for eight weeks. During those almost forty hours, staff intervention into any matter involving the experimental clients was limited to providing additional work, answering work related questions, and monitoring the quality of production output. The observed relationship of staff to many of the other clients in the work setting appeared more intensive and often involved correction and direction in many behaviors broadly defined as "work habits." In other words, the self-managing sample seemed to require less teacher support than the population of clients in the specific workshop setting where the study was conducted.

Cost-efficiency in terms of staff utilization appeared to be maximized.

Self-management is easy to teach to retarded subjects, and the data suggest that once the subjects learn to self-manage only occasional up-dating is required for these individuals to retain proficiency. The research cited herein deals only with workshop level clients and vocationally oriented procedures. However, the findings of other research and the opinion of this experimenter is that, indeed, the focus of programming for the retarded should shift away from today's emphasis on rote skill development through operant techniques to programming which allows these individuals more experience in managing their own lives.

Suggestions for Further Study

This project yielded several questions for which further study is indicated. One obvious question involves the dependent variable of this study, on-task behavior. As explained, on-task behavior was observed and recorded as a process measure of productivity. This was done because a product assessment could not be employed in the specific situation in which the data were collected. Experimental replication of this study using a product assessment, such as the number of units produced in a given time period, should be done to determine if similar findings would result.

Experimental replication might also consider larger samples, since statistical assumptions made from larger samples would be more valid in terms of generalizability to the population of retarded individuals. In this connection, future studies might also employ samples matched on the basis of on-task behavior performance. This, too, would aid in interpreting the findings. Further, future replication might seek random samples which perform baseline levels of on-task behavior at rates much lower than the rates evidenced by the samples reported herein. Such samples could more clearly demonstrate changes in behavior performance which might result from the experimental conditions.

This study generated questions in the area of job preference among mentally retarded workers. From the observations made during this study, one could conclude that these workers enjoy work that is challenging and changing. Perhaps mentally retarded workers "don't get bored" with work which is considered undesirable by industry because this is the only kind of work they can get. Experimental investigation into this area of job preference is indicated.

Another research possibility involves a study of how well today's special education programs prepare mentally retarded children to mature into their true least restrictive environments. This would involve a content validity study of

representative curricula, as well as a standardized look at the levels of adaptive behavior attained by graduates of "good" special education programs. The emphasis of this research would be on the level of self-direction and ability to generalize skills achieved by the students.

In summary, this study supports the use of self-management techniques in the training and habilitation of mentally retarded individuals. While the use of these techniques are somewhat of a departure from the contemporary reliance on operant training, the indication is that more self-oriented training may prove to be especially effective in the long-range habilitation effort. It is believed that a shift toward self-management training could not only positively impact the training of mentally retarded individuals, but also could produce positive results in terms of program cost effectiveness. More reserach is needed to consider the use of self-management with other ages and levels of retarded people in varying situations.

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APPENDIXES

APPENDIX A

CONSENT FORMS

Consent to Participate in a Research Project

I, _____, hereby agree to participate in the reserach project conducted by Allen Hendry and other CSEC staff at the CSEC Sheltered Workshop. I understand that I may withdraw from the project at anytime I so desire.

On this date, Mr. Hendry explained to me:

1. The procedures involved with the project, including those that are experimental.
2. The benefits which I may expect from my participation.
3. Any problems or risks which may occur during the course of the study.
4. The alternative procedures which I might choose.

In addition, my questions were answered regarding the procedures and conduct of the study.

_____ _____
Subject Date

_____ _____
Witness Date

COMMUNITY SERVICES FOR EXCEPTIONAL CITIZENS, INC.

Serving Mentally Retarded and Developmentally Disabled Adults

715 Emory Valley Road • Oak Ridge, Tennessee 37830 • 483-4385

January 7, 1983

This is to let you know that has agreed to participate in a research project that we will be conducting at the Workshop. The aim of this project will be to teach our clients to work steadier, thereby making them more productive. This project will teach them the skills necessary in order that they self-manage their own work rates and become more aware of how they spend their time each day in the Shop.

The training will be supervised directly by me and will involve no risks to any of the participants. Basically, the system will consist of each participant keeping records and charts of his/her own rate of production and receiving a special reward (i.e., cup of coffee, coke, salad bar, etc.) for improved performance. The project will start on January 17 and continue for about ten weeks. Of course, during that time, it will be most important that attend regularly.

If you desire more information about what we are doing, please call me.

Sincerely yours,

Allen B. Hendry
Executive Director

am

APPENDIX B

INSTRUCTIONS FOR OBSERVERS

INSTRUCTIONS FOR OBSERVERS

In any employment situation, a variety of worker behaviors may be observed. Some of these behaviors are the on-task, work-oriented behaviors for which the worker is purportedly paid. Other behaviors emitted in the work situation have little to do with work. A basic assumption of this paper is that an increase in on-task behavior directly results in an increase in worker productivity. Therefore, the task of the observers in the experimental situation will be to determine if the observed workers are on-task at various observation points as indicated by a systematic time sampling observation procedure.

The purpose of this instructional packet is to familiarize you as an observer with the observation procedure which will be followed.

On-Task Versus Off-Task Behavior

In order to evaluate adequately the behavior of the subjects, the observer must have a clear operational definition of on-task behavior and off-task behavior. In general, on-task behaviors may be defined as those behaviors which involve the subject's sitting or standing at his/her work station with assigned work before him/her, eyes on that work, and, in some production oriented manner, manipulating the work. Other behaviors, such as leaving the work station,

"horseplaying," or sitting and not working will be considered off-task behavior.

More specifically, behaviors similar to the following should be coded on-task:

1. Engaging in any production oriented activity (e.g., counting, packaging, sanding, sorting, assembling, collating, folding, etc.).
2. Completing other tasks assigned by the supervisor (e.g., cleaning, loading, assisting another worker, etc.).
3. Filling out the workshop contract sheets.
4. Seeking tools, supplies, or additional instructions.
5. Eyes on work in a manner to appear to be problem-solving.

Behaviors similar to the following should be coded off-task:

1. Leaving the work station.
2. "Horseplaying" with another worker.
3. Daydreaming, or staring into space or out a window.
4. Exhibiting tantrum-like behaviors or agression.
5. "Doodling" with the piece of work; that is, manipulating the piece in a manner which is not conducive to its completion.
6. Not engaging in assigned work activity or not using materials provided.

Talking with a co-worker should not be coded off-task unless it is seen to interfere with production.

Occasionally during the observation periods, the subjects may be engaged in behaviors that are not on-task as defined above, but neither are they off-task in the sense outlined by the above description of off-task behaviors. In other words, sometimes subjects may find themselves in situations where on-task behavior is not possible, so the observation procedure must take these into account. Such situations might include:

1. Orienting to a loud noise or disruption in the work environment. A momentary incidence of orientation response to the slamming door, for example, should not be considered off-task. This would be considered neutral and would not be counted in the analysis of the data.

2. Waiting for new supplies once the subject has completed the work before him. Not often, but occasionally if two or more workers finish their assignment simultaneously, they must wait for their supervisor to furnish more work.

As long as the subject does not engage in any of the above described off-task behaviors during the short waiting period, then this wait is not to be considered off-task behavior. This type of behavior should also be considered neutral.

Observation and Recording Procedures

Prior to the first observation, you will have completed the pre-experimental training. If anything about the observation procedure is not clear to you, that should be cleared up before the first actual observation. If everything is clear to you, then please follow the following procedures:

A. You will need to deal with certain details daily prior to commencing the observation.
   1. Review this handbook and the following procedures.
   2. Review the examples of on-task and off-task behavior.
   3. Be certain that you arrive at the observation site in plenty of time to gather your materials and be ready to start the observation at 10:30 a.m. sharp.

B. Take a seat in the workshop where all the subjects are visible.
   1. Locate all ten subjects.
   2. Be sure you know exactly what each subject has been assigned to do. If you are in doubt, talk with the workshop supervisor or the experimenter.
   3. Have before you an observation sheet (Figure 1, page 12), a stopwatch, and a pencil. The experimenter will provide these items to you.

4. Arrange all your materials in a manner which allows for efficiency in your observation. Such arrangement will be considered during the training session.

C. At appriximately 10:30 a.m., you will start your stopwatch and make the first round of observations. A round is defined as observing each client once in the prescribed manner and in the sequence listed on the observation sheet. When you start your watch, you should immediately observe and code the behavior of the first subject listed. Having observed this first subject, you should then observe and code the behavior of the second subject, then the third, and so forth until you have observed and coded the behavior of each subject on your list. Each subject should be observed at the precise moment his/her name comes up on the observation sheet. In other words, your recording the behavior of one subject is your signal that it is time to observe the next. Thus, the individual observations should follow each other almost rhythmically, and there should be no delay between observations. The idea is to move <u>quickly</u> and <u>consistently</u> through the ten individual observations which compose a round of observations.

Any notes or other considerations which need to be attended to during the course of an observation, should be delayed until the end of the round. You will have ample time between rounds to deal with such matters. A full day's observation will consist of twenty rounds and each round will consist of ten individual observations.

D. Code your observations on the observation sheet, as follows:

A—On-task behavior will be coded "A."

O—Off-task behavior will be coded "O."

X—Behavior which cannot be legitimately considered either on-task or off-task (as previously described) will be coded "X."

N—Use the symbol "N" if for some reason you were unable to complete an observation.

E. The time interval between each round of observations will be 2-1/2 minutes. This interval will be measured from the start of one round of observations to the start of the next. Wait until the full 2-1/2 minutes has elapsed from the start of the first round of observations before you begin the second, and so forth. A round of observations will require only about forty-five seconds to one minute to complete, so you will have about 1-1/2 minutes wait between rounds.

F. After you have completed the twentieth full round of observation, please give your data sheet and other materials to the experimenter. Do not disturb the work situation as you leave, for clients may continue to be involved in self-monitoring.

Observer Procedures Conducive to Unobtrusiveness

In order to obtain meaningful observation data, your behavior during the course of your observation should not call attention to you or to what you are doing. Therefore, please behave accordingly. Be careful especially not to interact with or in any way reinforce the behavior of any subject. Do not make eye contact with subjects and do not talk with any worker in the shop, especially the subjects. As Lane (1976) points out, if you do not know what to do with yourself while you are waiting from one observation interval to the next, try organizing your materials, reviewing this handbook, or looking at an instructor. This will help you avoid accidentally reinforcing a subject and will serve to make the subjects less interested in you.

Inter-Rater Reliability

From time to time, the reliability of observations will be checked. The procedures for doing this are explained in Appendix C. You should review those procedures.

Procedures for Assisting Subjects with Charting of Self-Recorded Data

As mentioned in the "Self-Monitoring" section of the text of this thesis, there is a necessity for the subjects to receive two kinds of feedback at the end of each trial period. These include: (1) accuracy of self-recording and (2) information concerning behavior performance.

The first of these will be discussed with each subject by the experimenter. He will utilize your observation sheets to determine how closely the individual self-recorded data of the five experimental group subjects agrees with the observer recorded data. Since the observers and subjects will utilize different types of time sampling procedures and since these procedures cannot be applied simultaneously, then a precise accuracy level for self-recording cannot be determined. However, given the statistical assumption that time sampling techniques represent a reasonably accurate picture of the environment, then the difference between the observer recorded on-task behavior scores (O-Scored) and those self-recorded by the subjects (S-Scored) should be slight. Subjects will be rewarded for accurate self-recording if the difference is two points or less. A form (Figure 6, page 25) will show this estimation of accuracy of the self-recorded data.

The second sort of feedback the subjects will receive at the end of each trial period will be information regarding their behavior performance as compared to performance from previous trials. This feedback will be the responsibility of the primary observer, and it will be disseminated through the use of graphs. Each subject will maintain a graph of his/her behavior for the duration of the experiment commencing with the self-monitoring phase. At the end of each trial period, the observer will help the subject transfer his self-monitored data from the counter onto the graph. This will be done in an effort to allow the subject to more clearly recognize if his/her performance of the target behavior is increasing or decreasing from day to day. The observer should be very matter-of-fact in lending assistance to the subjects in graphing subject behavior. The observer should help the subject to interpret the graphed data, but should avoid any mannerisms or verbal inflections which might serve to reinforce the performance of the subject. Reinforcement at this point will be intrinsic, if at all, as the subject monitors his own or her own behavior. Eye contact should be avoided also while discussing the graphed data. The observer should focus all attention on the graph itself.

Also, the observer should avoid any discussion of the accuracy of the self-recorded data. That will not be the

issue at the point of graphing. The issue is the subject's perception of his/her behavior performance as indicated through self-recording.

APPENDIX C

ASSESSMENT OF RATER RELIABILITY

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Largely, the extent to which observation data may be assumed to represent a true picture of the environment depends upon two factors: (1) the validity of the observation technique and (2) the reliability of the observer data. Assuming that the observation technique employed by this study is valid, then the reliability of the actual observations becomes of the utmost importance.

Lane (1976), using a similar technique of observation, states that observers who are familiar with the observation technique usually obtain inter-observer reliability scores of 80 to 98%. That is, observers who know what they are doing generally agree among themselves in coding on-task versus off-task behavior a high percentage of the time. On the other hand, observers who have had little experience with the type technique employed by this study, show much lower agreement.

Hence, all the observers utilized during the conduct of the data collection received a generous measure of pre-experiment training and practice. In addition, prior to the experiment and continuing throughout the experimental phases, steps were taken to ensure the maintenance of observer reliability. To wit, one of the five observers was assigned the additional task of making reliability checks from time to

time. This specified observer made simultaneous observations with each of the other observers individually at various points throughout the study.

In order that the reliability checks flowed smoothly and in order that the involved observations were indeed simultaneous, the observer with the responsibility of checking guided the simultaneous observations by providing verbal cues to the primary observer. The primary observer and the checking observer were asked not to collaborate on individual observations, although the checker operated the stopwatch, began the observation rounds, and generally kept the observations on pace.

When a reliability check was scheduled to occur, the primary observer and the checker were seated together in the observation area and were instructed to follow the procedure outlined in Appendix A in preparation for the actual observation. Both observers had identical observation sheets (Figure 1, page 12). When observers were ready to begin, the checker signaled "Ready . . . Go," as he started the stopwatch. Then the checker called the last name of the first subject, and both observers coded the behavior of that subject. Then the checker recited the last name of the second subject, and that subject's behavior was likewise coded. This procedure was followed throughout the remaining eight subjects in the first round, and then throughout the other rounds at the standard intervals of 2-1/2 minutes.

The responsibility of the checker was to keep the observation flowing rhythmically and steadily as outlined by Appendix A, and at no point did observers discuss or compare their recordings.

The above described voice-cue observer synchronization was employed because (1) subjects were not necessarily sitting in the same place throughout the observation period, causing any sort of preprogrammed synchronization (e.g., stopwatch intervals, tape recording) to be inadequately flexible to accommodate the busy workshop environment, and (2) the background noise in the workshop would certainly cover the voice-cue synchronization allowing unobtrusiveness to be maintained.

At the end of the observation period, the checker took the completed Figure 1 (page 12) from the primary observer and transferred the required data to Figure 2 (page 13), the form for assessing inter-rater reliability. The indicated agreement between the observers was accepted at no less than 85%. Should some observer have fallen below that minimum, then he/she would have been either retrained or disqualified, depending upon circumstances. However, during the data collection period, inter-rater reliability was actually much higher than the preposed criterion (near 95% in most cases), so no observer retraining was required.

APPENDIX D

SELECTION OF REWARDS

SELECTION OF REWARDS

At the completion of the changing of setting events phase, the experimenter met individually with each experimental group subject and discussed the use of reward contingencies. The experimenter explained that certain rewards would be made available to the subjects for self-administration contingent upon their improvement in day-to-day rate of productivity.

The subjects were shown a list of available rewards (Figure 19) as examples of rewards that they might choose. Then the subjects designed their own reward systems utilizing the suggested rewards on Figure 19 or other rewards which seemed feasible. The experimenter allowed each subject freedom in selecting his/her own rewards. The role of the experimenter was merely to clarify the nature and extent of the chosen rewards and to help each subject make decisions concerning the feasibility or logistics of the selected rewards. The reward choices were recorded on Figure 7 (page 30).

Available Rewards [a]

BREAK TIME (10:00 a.m.) EDIBLES: FREE COKE FREE COFFEE DOUGHNUT/PASTRIES FRUIT POTATO CHIPS/PEANUTS, ETC.
TIME TO TALK WITH CHOSEN STAFF MEMBER
CIGARETTES (5/DAY)
CIGARS (2/DAY)
QUARTER (1/DAY)
EXTENDED BREAK TIME (15 MINUTES)
TOKEN, One/day to be exchanged for prizes suggested by subject. (EXAMPLES OF PRIZES: 5 tokens = 1 free Big Mac 3 tokens = Dairy Queen Milkshake 2 tokens = Bic Pen 10 tokens = Salad Bar at Bonanza, etc.)
CHOICE OF SHELTERED WORKSHOP JOBS

[a] Additional or alternate rewards may be used upon agreement of both the Experimenter and the Subjects.

Figure 19. Available Rewards.

APPENDIX E

DAILY RATES OF ON-TASK PERFORMANCE FOR EACH SUBJECT AT EACH EXPERIMENTAL PHASE

Table 5

Mean Percentage On-Task of Each Subject at Baseline

	Day									
	1	2	3	4	5	6	7	8	9	Average
E-N	100	95	100	100	100	100	95	100	100	98.9
E-GF	95	100	95	100	88.9	100	100	100	100	97.7
E-CB	60	95	100	95	55	95	61.1	100	85	82.9
E-GM	95	83	95	95	60	85	100	100	90	89.2
E-MR	85	85	55	50	65	85	90	95	100	78.9
C-MF	57.9	58	95	85	85.7	65	36.8	100	89.9	74.8
C-J	100	80	80	94.7	100	—[a]	73.7	100	100	91
C-L	75	55	90	100	88.9	65	85	100	80	82.1
C-CR	100	100	100	100	94.7	100	100	100	94.7	98.8
C-D	—[a]	90	75	100	60	80	100	100	100	88.1
Experimental	87	92	89	88	73.8	93	89.2	99	95	89.6
Control	83.2	77	88	95.9	85.9	77.5	79.1	100	92.7	86.6

[a]Indicates an observation period during which a subject was not available to be observed.

Table 6

Mean Percentage On-Task of Each Subject at the Goal Selection Phase

	Day 1	2	3	4	5	Average
E-N	100	—[a]	—[a]	—[a]	—[a]	100
E-GF	100	100	100	90	100	98
E-CB	100	70	89.5	70	—[a]	82.4
E-GM	100	85	100	75	100	92
E-MR	90	45	90	65	55	69
C-MF	90	45	90	73.7	X	74.7
C-J	100	80	89.5	90	100	91.9
C-L	100	100	100	94.7	100	98.9
C-CR	100	95	85	85	95	92
C-D	100	100	100	89.5	94.7	96.8
Experimental	98	75	94.9	75	85	85.6
Control	98	84	92.9	86.6	97.4	91.8

[a]Indicates an observation period during which a subject was not available to be observed.

Table 7

Mean Percentage On-Task of Each Subject at the Self-Monitoring Training Phase

	Day				
	1[a]	2	3	4	5	Average
E-N	X	70	100	100	100	92.5
E-GF	X	100	94.7	90	100	96.2
E-CB	X	100	100	100	55	88.8
E-GM	X	75	95	100	90	90
E-MR	X	60	65	40	60	56.3
C-MF	X	55	80	80	80	73.8
C-J	X	83.3	100	100	86.7	92.5
C-L	X	80	90	100	65	83.8
C-CR	X	90	100	90	100	95
C-D	X	85	90	—[b]	—[b]	87.5
Experimental	X	81	90.9	86	81	84.7
Control	X	78.6	90	92.5	82.9	86

[a]Indicates sheltered workshop was closed due to inclement weather conditions.

[b]Indicates an observation period during which a subject was not available to be observed.

Table 8

Mean Percentage On-Task of Each Subject at the Self-Monitoring Phase

	Day 1	2	3	4	5	Average
E-N	100	95	100	75	100	94
E-GF	100	95	100	100	100	99
E-CB	100	95	85	83.3	100	92.7
E-GM	100	80	95	85	100	92
E-MR	94.7	100	80	70	100	88.9
C-MF	84.2	60	—[a]	55	100	74.8
C-J	100	75	80	—[a]	95	87.5
C-L	100	100	100	85	100	97
C-CR	95	100	100	100	73.7	93.7
C-D	100	100	75	85	76.5	87.3
Experimental	98.9	93	92	82.7	100	93.3
Control	95.8	87	88.8	81.3	89	88.4

[a]Indicates an observation period during which a subject was not available to be observed.

Table 9

Mean Percentage On-Task of Each Subject at the Changing Setting Events Phase

	Day					
	1	2	3	4	5	Average
E-N	100	100	95	100	90	97
E-GF	100	100	95	100	100	99
E-CB	85	90	100	85	95	91
E-GM	100	100	100	85	100	97
E-MR	100	85	100	80	100	93
C-MF	100	73.7	70	100	90	86.7
C-J	95	85	100	100	95	95
C-L	100	100	100	95	75	94
C-CR	80	100	95	95	90	92
C-D	100	100	89.5	90	85	92.9
Experimental	97	95	98	90	97	95.4
Control	95	91.7	90.9	96	87	92.1

Table 10

Mean Percentage On-Task of Each Subject at the Establishing Effective Consequences Phase

	Day 1	2	3	4	5	Average
E-N	95	100	100	95	95	97
E-GF	100	95	100	100	100	99
E-CB	100	100	70	100	100	94
E-GM	100	100	100	100	100	100
E-MR	90	90	100	90	100	94
C-MF	95	90	80	63.2	25	70.6
C-J	95	75	70	80	80	80
C-L	95	75	75	95	73.7	82.7
C-CR	100	—[a]	70	80	85	83.8
C-D	94.7	75	—[a]	80	80	82.4
Experimental	97	97	94	98	99	97
Control	95.9	78.8	73.8	79.6	68.7	79.3

[a]Indicates an observation period during which a subject was not available to be observed.

Table 11

Mean Percentage On-Task of Each Subject during the First Week of the Consolidating Gains Phase

	Day 1	2	3	4	5	Average
E-N	100	100	85	95	100	96
E-GF	100	100	100	94.7	—[a]	98.7
E-CB	100	100	85	100	90	95
E-GM	100	100	100	100	100	100
E-MR	100	75	90	95	95	91
C-MF	95	100	35	55	55	68
C-J	100	80	75	100	65	84
C-L	100	55	70	89.5	100	82.9
C-CR	95	85	95	90	95	92
C-D	95	100	75	78.9	100	89.8
Experimental	100	95	92	96.9	96.3	96
Control	97	84	70	82.7	83	83.3

[a]Indicates an observation period during which a subject was not available to be observed.

Table 12

Mean Percentage On-Task of Each Subject during the Second Week of the Consolidating Gains Phase

	Day 1	2	3	4	5	Average
E-N	100	—[a]	100	—[a]	90	96.7
E-GF	90	100	—[a]	—[a]	—[a]	95
E-CB	80	84.2	78.9	95	93.3	86.3
E-GM	100	90	95	100	100	97
E-MR	80	80	85	65	83.3	78.7
C-MF	75	95	95	65	100	86
C-J	100	85	83.3	75	78.9	84.4
C-L	100	78.9	75	70	90	82.8
C-CR	80	61.1	100	85	94.7	84.2
C-D	30	75	—[a]	80	80	66.3
Experimental	90	88.6	89.7	86.7	91.7	89.3
Control	77	79	88.3	75	88.7	81.6

[a]Indicates an observation period during which a subject was not available to be observed.

Table 13

Mean Percentage On-Task of Each Subject during the Third Week of the Condolidating Gains Phase

	Day 1	2	3	4	5	Average
E-N	94.4	100	95	100	100	97.9
E-GF	—[a]	100	100	100	90	97.5
E-CB	90	100	100	100	55	89
E-GM	100	95	100	100	100	99
E-MR	100	95	83.3	95	88.9	92.4
C-MF	95	65	84.2	90	90	84.8
C-J	90	90	100	95	100	95
C-L	65	80	85	100	95	85
C-CR	90	85	—[a]	95	100	92.5
C-D	70	78.9	94.7	95	90	85.7
Experimental	96.1	98	95.7	99	86.8	95.1
Control	82	79.8	91	95	95	88.6

[a]Indicates an observation period during which a subject was not available to be observed.

Table 14

Mean Percentage On-Task of Each Subject at Thirty Days Subsequent to the Termination of Self-Management Programs

	Day 1	2	3	Average
E-N	—[a]	85	95	90
E-GF	90	100	80	90
E-CB	95	100	85	93.3
E-GM	100	100	100	100
E-MR	80	100	—[a]	90
C-MF	55	100	65	73.3
C-J	85	100	95	93.3
C-L	80	100	80	86.7
C-CR	80	100	—[a]	90
C-D	85	100	95	93.3
Experimental	91.3	97	90	92.8
Control	77	100	83.8	86.9

[a]Indicates an observation period during which a subject was not available to be observed.

VITA

Allen B. Hendry was born in Greeneville, Tennessee, on August 20, 1952. He graduated in 1970 from Greeneville High School and enrolled in East Tennessee State University. After a year, he was employed by Greene Valley Developmental Center in Greeneville, and subsequently transferred to Tusculum College where in 1975 he received his undergraduate degree in Special Education and Psychology. In the summer of 1975, Hendry became employed as Coordinator of Residential Services for Community Services for Exceptional Citizens in Oak Ridge. He began work on the Master of Science degree in Educational Psychology at The University of Tennessee in late 1975.

In 1977, Hendry became Executive Director of CSEC, and, at that time, temporarily suspended his studies at U.T. Then in late 1978, he resumed work toward the Master's degree in Educational Psychology, and that degree was awarded in August, 1983.

Hendry continues to serve as Executive Director of CSEC. He is past president of East Tennessee Community Mental Retardation Agencies Association and President-elect of the Tennessee chapter of the American Association on Mental Deficiency. Currently, he serves on the [Mental Retardation] Commissioner's Advisory Planning Committee and

is Chairman of the Knoxville Regional Subcommittee of that body. In addition, he is a member of the Association for Retarded Citizens of Tennessee.