



This is to certify that the

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SELF-MANAGEMENT TECHNIQUES IN

A WORK ADJUSTMENT SETTING

presented by

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SELF-MANAGEMENT TECHNIQUES IN

A WORK ADJUSTMENT SETTING

Вy

Terry L. Vander-Molen

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A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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ABSTRACT

SELF-MANAGEMENT TECHNIQUES IN A WORK ADJUSTMENT SETTING

Вy

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This study tested whether the relatively new treatment method of self-control could be incorporated into existing work adjustment training programs. Peckham Vocational Industries, Inc. which provided this type of program to handicapped individuals in the Greater Lansing, Michigan, Area, made their facility available to this researcher, for this purpose.

The intensive research design was selected because it emphasizes the careful monitoring of each individual with respect to target behaviors, and has been effective in defining treatment effects on the individual. The study was of a pilot nature, that will influence future research. The effects of this new treatment method on individuals in work adjustment training are important, especially considering the diversity of handicapping conditions represented by this clientele. Three subjects were selected by the Peckham staff and this researcher. They represent primary disabilities of physical limitation, emotional imparment, and mental retardation. Each was referred separately, and participated in the study at a different time. The procedure involved an initial baseline period (Base I), a self-monitoring period, a second baseline period (Base II), a self-monitoring + reinforcement period, and final baseline (Base III). During the entire study data was collected using ten minute observations out of the four periods of the day (before and after morning break, and before and after afternoon break), by the staff. The self-monitoring period required the subject to simply observe and record the target behaviors. The self-monitoring + reinforcement period involved self-determined goals and self-selected reinforcers for goal attainment, in addition to self-monitoring.

A logical approach to the data was taken instead of extensive statistical analyses. Results were represented by the use of graphs and median trend lines. In addition, means and standard deviations for each period were presented to provide an opportunity to review the data from another perspective.

The research hypotheses were generally supported by varying degree, indicating self-monitoring to be helpful in altering target behaviors, self-monitoring + reinforcement also to be effective, and thus self-control to have a positive influence on work adjustment trainee behaviors.

It was concluded that self-control could be an effective treatment method in a work adjustment training program, as it was received well, with positive treatment effects, by individuals with diverse handicapping conditions. Thus, the study served its purpose by presenting data that would support and encourage the pursuit of further research.

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In this section I wish to express my gratitude for the assistance received toward my doctoral degree, and in particular, the dissertation study.

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This study could not have been completed without the consent, and assistance of the staff at Peckham Vocational Industries, Inc., Lansing, Michigan. Glen Tarrant, Executive Director, and Mitch Tomlinson, Director of Services, provided the administrative leadership, and support necessary for the research to be initiated, and subsequently conducted. Service Coordinators, Dean Manikas, Mary Smith, and Lisa Breitzer assisted with client identification, and selection. They were also available throughout the study, and provided important input, and observations. Randy Van Amburg, Accountant, made production records available for review, which provided information that was helpful in the development of the study design. Teresa Bass, Clerical Work Adjustment Instructor, assisted most directly with the selection of Subject A. She also provided technical assistance, valuable input, and kept the necessary records for the data collection on Subject A. Subjects B, and C were training in the workshop. Industrial Supervisor, Marilyn Buchko was most valuable to the data collection by arranging for them to continue on the same job as much as possible. Her leadership, and the assistance of her work adjustment speacialists Jim Crisp, Alan Collinsworth, Mike Dumeney, and Mary Gilbert, made it possible for the data collection to be completed.

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CHAPTER ONE

THE PROBLEM

INTRODUCTION

In the mid-sixties the behavioral therapy technique of self-control began to gain recognition. During the seventies it became increasingly popular as evidenced by the increasing number of studies appearing in the professional journals. In 1972, a special heading (Self-Control) was implemented as a separate category in the <u>Psychological</u> <u>Abstracts</u>. A variety of descriptors, to include selfdirected, self-controlled, self-regulated, and self-managed behavior change, were included. However, for the purposes of this study, the term "self-control" refers to all of the above and incorporates the principle that the individual has the capacity to control his/her own destiny.

Earlier studies involved non-handicapped individuals, who dealt with behavior changes that would result in weightreduction, and the elimination of cigarette smoking. More recent research however, examined a wider variety of behaviors to include fingernail biting, personal hygiene, dating behavior, vocational career selection, studying, anger arousal, lying, aggression, boring and ambiguious tasks, production rates, and many others too numerous to mention here. In addition, individuals with more diverse handicapping conditions recently have been included, such as substance abusers,

schizophrenic children, post-polio victims, those with muscular dystrophy, quadriplegics, and all levels of mental retardation, at all ages. Self-control has been compared to other techniques like the charting of behaviors, token reinforcement, and social reinforcement; validated by the use of biofeedback techniques; and examined in a variety of settings to include elementary schools, universities, facilities, and work adjustment programs.

Work adjustment programs provide training in the skills needed by handicapped individuals to perform successfully in job settings. This training may include developing appropriate responses to authority, increasing time-on-task behavior, improving social skills with co-workers, encouraging dependability and punctuality, learning effective job seeking skills, and other behaviors that will enhance the individual's potential to become employed. Adjustment programs furnish an important transitional phase that assist a person in advancing from a non-productive status to one of being a contributing member of society. Thus, the study of this relatively new, and popular self-control technique within the work adjustment setting is encouraging to the field of Rehabilitation, as more effective, and efficient techniques for assisting the handicapped continuously are being sought.

NEED

A review of the literature revealed a paucity of studies dealing with the handicapped who are enrolled in work adjustment programs. This was unexpected as the field

of Rehabilitation has been mandated to serve the more severly handicapped since the passage of the Rehabilitation Act of 1973, (PL 93-112). Since then more people, with conditions that constitute a more significant handicap, are being discharged from institutions, and integrated into local communities. These individuals generally need more indepth services in order to become employable, and work adjustment training programs are designed to meet that need.

In view of the studies that present encouraging results in terms of the feasibility, and effectiveness of self-control as a technique, it seems logical that it be examined in the work adjustment setting. The general approach in this setting is to have the training goals, processes, and reinforcers determined by the program, and the staff operating it. However, an increase in clients with more severe disabilities means that existing adjustment services are being increasingly taxed (Sink and Field, 1978). Thus. either the client-to-staff ratio must grow larger (a larger number of clients working with a single staff member) with a corresponding decrease in the quality of service provided, or the waiting list to access these services must grow longer, which dictates correspondingly longer periods of idle, and non-productive time for these persons. By introducing the self-control technique it was expected that the recipient of work adjustment training would have more input, influence, and responsibility for the outcome of that training. This could result in the client putting forth more effort,

acquiring a feeling of personal investment in his/her rehabilitation program, and a corresponding reduction in staff time necessary for interaction (Mahoney and Mahoney, 1976; Wehman, et. al., 1978; DeVries, 1976). This would allow for a greater client-to-staff ratio without a reduction in the quality of services provided, reduce the length of the waiting lists, and minimize the amount of wasted time in the lives of these individuals.

PURPOSE

The specific purpose of this study was to examine the utility of self-control techniques within a work adjustment training setting. This was accomplished by 1) Specific training of the staff and clients in the techniques of selfcontrol; 2) The selection of specific client behaviors to be examined; 3) Self-monitoring by clients, and staff monitoring of the frequencies of those behaviors; 4) Self-determination of target behavior goals; and 5) Self-reinforcement for the appropriate manipulation of the target behaviors.

RESEARCH QUESTION

Considering the popularity, apparent effectiveness, and efficiency of the self-control technique, and the increasing demands being made on work adjustment services, it seemed reasonable to examine their combined effectiveness. The basic question for this study asked what effect selfcontrol has on controling and/or changing the behavior of individual clients in a work adjustment training program?

THEORY

The principles of learning theory provided the basis for this research. Learning theory claims that personality is developed in response to a series of rewarding or punishing consequences of behavior. The behaviors which result in aversive consequences (punishment) decrease in the probability of recurrance. Behaviors which result in positive consequences (reward) will increase the probability of recurrance. As several repititions of reward or punishment of this type occur, the person's predictable behavioral pattern is formed. Through this process, the individual develops sequences of behavior which promote individual growth. In addition, antecedent cues or situations occuring just prior to a rewarded or punished behavior become related to the prediction of the consequence of the behavior. The ability to recognize cues and to understand consequences of behavior forms a basis upon which behavioral control is predicted. Within this broad concept of learning theory are countless principles, techniques, and definitions (DeVries, 1976).

Of particular importance to this study were the selected principles of operant behavior and contingency management. Operant behavior is a physical response to a stimulus or cue in the environment which causes a measurable effect on that environment. Each activity the person finds rewarded by the environment increases the probability of its recurrence; those met with punishment through conditioning, decrease their probability of recurrence. Contingency

management is the control of the various stimuli or reinforcements which affect the probability of recurrence of a selected behavior. By controlling the situation or the specific rewards which usually serve to produce or maintain the behavior, the behavior itself can be controlled. Specifically, the theory of self-directed or self-controlled behavior is the basic concept to be considered as background for the study. This concept will be defined in the following section, and elaborated upon in the next chapter.

DEFINITIONS OF TERMS

Self-control: Personally controlled behavior change where the target behavior, and the specific change to be made are self-suggested or self-prescribed, and clearly identified in objective, observable terms. The technique includes: self-monitoring of target behaviors, and self-recording performance concerning those behaviors; self-determined goals for the target behaviors; and self-selected, and selfadministered reinforcement for achieving those goals.

Work Adjustment: A treatment or training process utilizing individual, and group work, or work related activities, to assist individuals in understanding the meaning, value, and demands of work; to modify or develop attitudes, personal characteristics, and work behavior; and to develop functional capacities, as required in order to assist individuals toward their optimum level of vocational development (Sink et. al., 1978).

OVERVIEW

In the following chapter a review of the literature is provided with respect to the application of self-controlled behavioral techniques in a work adjustment training program setting. Specific studies relevant to self-control, selfmonitoring, self-reinforcement, and work adjustment will be included in separate sections. In chapter three the specific procedures for conducting the study will be described, and testable hypotheses stated. The analysis of results will comprise chapter four, and the discussion, limitations, implications, and recommendations will be presented in chapter five.

A REVIEW OF LITERATURE

INTRODUCTION

The learning theory of behaviorism has been considered mechanistic as it views the individual as a complex accumulation of the modification of innate responses, and the responses to stimuli, which have been determined by the consequences and reinforcements received. Behaviorists have historically viewed the development of personality, and individualized behaviors as the result of interaction with the environment, and events external to the individual. Humanists, on the other hand, believe personality and behavior to be the result of cognitive processing of information and events by the individual, including the perceptual processes highly unique to that individual (Rogers, 1961). Behavioral therapy is an emerging trend that incorporates the principles of empathy, warmth, genuineness, and a primary concern for the individual, with the efficient and effective tools of behaviorism. This combination generally results in effective behavioral change, and the development of a therapeutic, interpersonal relationship with the individual (Gomes-Schwartz, et. al., 1978). This relationship allows the individual to feel more secure in the counseling environment and thus express, and deal with, more personal and private concerns, and emotions. The powerful tools previously described can then be appropriately utilized within this secure environment. Hence behavioral therapy can be

effectively applied to external behaviors, internal emotions, and perceptions as well.

The newest development in this trend is the selfcontrol technique, which utilizes the humanistic, and mechanistic approach to problem solving, and behavior modification, and in addition, places the individual in complete control of the therapeutic process. This technique demands a self-realization of the cues which surround the behavior, and the reinforcement contingencies which affect it. In addition, as mentioned in the first chapter, self-controlled behavior necessitates a self-established standard for the behavior, self-monitoring, and a self-controlled reward system.

Work adjustment programs, as previously described were envisioned by early leaders in the field as highly sophisticated processes utilizing the psycho-social components of work to modify behavior, shape work attitudes, and generally prepare handicapped people for the labor market. Teaching concommitant community survival skills was another goal deemed necessary, and beneficial to achieve the primary vocational functioning objective (Wainwright, and Couch, 1978). Striving to achieve these goals provides a valuable, and necessary function that assists in the rehabilitation of more severly handicapped individuals. As a result of the Rehabilitation Act of 1973, and the growing trend toward de-institutionalization, existing services are having difficulty responding to the increasing need, and studies in innovation, effectiveness, and efficiency are in order (Sawyer, and Baker, 1978; Sink, and Field, 1978).

This study was an attempt to meet those needs, and in doing so relevant literature was examined. Reviewed here is that body of literature which evaluates the specific areas of self-control, self-management, and self-reinforcement in terms of their proven effects on behavior. Studies investigating work adjustment training programs, and various techniques used in them are also presented. In addition, a few studies were located that applied self-control programs to sheltered workshop, and work adjustment clients, and they are summarized.

SELF CONTROL

The individual who is credited with making the largest contribution to the advancement, experimentation, and development of operant conditioning is B.F. Skinner. This is important here as much of self-control is based on the application of the principles of reinforcement to operant behaviors. In one of the original writings on the topic of behavioral self-control, Skinner (1953) envisioned it as the reinforcement of those behaviors which make punished behavior less probable, and called this process the selfdetermination of conduct. He explained that when the punishing effects of certain behaviors are reduced, the behavior causing the reduction is rewarded by the reduction of the punishment. When that behavior is rewarded, its probability of recurrence thus increases, and the individual then is seen as operating under self control. Τn other words, the individual will more probably engage in

behavior that is reinforcing, less probably engage in behavior that is punishing, and is in control of making these choices.

Perhaps the most complete review of self-controlled behavior theory, and application is that of Mahoney, and Thoresen (1974). They agreed with the basic principle that behavior is controlled either by antecedents, and/or cues to behavior. If one wishes to change a given behavior, one must recognize both the typical consequences of the behavior as well as the cues that elicit that behavior. Mahoney, and Thoresen indicated research has verified that for selfcontrol to be effective, at least one of three elements must be present: self-observation, environmental planning, or behavioral programming.

The concept of self-observation allows a variety of technical alternatives including the use of graphs, and charts or any other systematic recording of behavior. The use of any form of an immediate feedback device by which the individual can judge progress is recommended. Self-observation is simply the routine, accurate reporting of the activity level of a target behavior that one does for oneself. Environmental planning, according to Mahoney, and Thoresen, involves changing the environment so that either the cues that precede the behavior or the consequences that follow it are changed. This may necessitate avoiding situations which elicit the behavior or avoiding those situations in which a choice is allowable. The final recommended procedure

is behavioral programming. This last recommendation involves altering the consequence which will change the frequency of the behavior.

In a somewhat more theoretical evaluation of the topic of self-control, Klausner (1965), provided considerable input. He considered self-control to be the freedom from external social dictates, or the internalizing of authoritarian dictates. According to Klausner, self-control is the ability to control the environment, and its impact. He indicated, however, that self-control is not so much total control of self but rather the control of selected aspects of the self.

Cautella (1969), described self-control as a response repertiore in which the individual can make responses to increase or decrease a response probability that is perceived as injurious to oneself or to others. He endorsed the concept of self-control because he felt the individual is more apt to maintain a level of new behavior if he is responsible for that change. Cautella described the method of selfcontrol within an operant framework, which utilized reinforcement, and punishment. Also described was reciprocal inhibition, which utilizes the processes of relaxation, thought stopping, or covert sensitization.

Rimm, and Masters (1974), defined the process of self-control as replacement of nonproductive behaviors with productive behavior. As others have indicated, the importance of the personal awareness of stimulus situations in

the environment which affect the probability of the desired behavior, and the response consequences of the desired behavior are emphasized. In other words, one must be aware of the causes, and consequences of the behavior. These authors also felt that alternative or competing behaviors are essential, as are the use of the principles of approximation (or shaping) to the desired behavior. Also important are the chaining of behaviors, and the control of the early parts of the chain, and the importance of self-monitoring.

In a critical article, Catania (1975), analyzed the concept of self-reinforcement, and concluded that because of internal logical contradictions, self-awareness is a more accurate term. He indicated the essential component of situations typically cited as instances of self-reinforcement was not the involvement of self-administered reinforcement but rather the establishment of self-discrimination or self-awareness.

Self-control has been used in combination with other theories. Radin, and Wittes (1974), discussed the findings, impact, and implications of the Michigan Early Education Program. The project developed a preschool curriculum, based primarily on Piaget's theory of the sequential development of intelligence, to use in the classroom, and in a home tutorial setting. The program also developed a group parent education program which used behavior modification principles to teach mothers how to foster the growth of self-discipline in their children.

In a book written by members of the Transactional Analysis Institute in New York, R. G. Abell, a psycholanalyst, presented a new approach to self understanding, and psychotherapy which was based on Transactional Analysis, Gestalt Therapy, nonverbal techniques, and traditional psychoanalytic procedures (Abell and Abell, 1976). Through personal experience, and exemplary case studies the author told how the reader can use psychological techniques to increase self-awareness, and control, manage, and "own" ones own life.

Career development theory has also been influenced by self-control studies as Thoresen, and Ewart (1976), maintained that the selection of a career is more complicated than studies generated by the typology theory of J. L. Holland, and the self-concept approaches suggest. Using an adaptation of J. D. Krumboltz's social learning model of career selection, it was argued that vocational decision making required a variety of self-control competencies. It was noted that while existing career studies frequently do not satisfy the scientific criteria of systematic observation, and rigorous instrumentation, self-control research could be devised to meet the requirements of intensive research design.

As evidence that the self-control technique is useable by lay individuals, Wallace (1977), made a statement that indicated how he, and others, used behavioristic methods-specifically, self-recording charts, and regularly scheduled

daily work hours--to accelerate, and maintain their writing outputs. On the basis of his statement, and an analysis of his self-recorded data, it was argued that a meaningful and useful analogy could be drawn between writing a novel and emitting a simple operant response on a regular schedule. This was accomplished by these writers without specialized training in behavioral therapy.

In addition, Perri, and Richards (1977) conducted an investigation into naturally occuring episodes of selfcontroling behaviors. They indicated that this was a common experience that had received little attention from researchers. Through a structured interview procedure, a demographic questionnaire, and a paper-and-pencil test, they determined those factors and methods that were crucial to successful self-management. Several college students were interviewed about their attempts to use self-control techniques for overeating, smoking, studying, or dating. Results indicated the following conclusions: a) Successful self-controllers reported using more techniques for longer periods of time; b) The use of self-reinforcement procedures was an important discriminant of successful self-management; c) The methods used by successful self-controllers seemed to vary according to the problem with which they were dealing.

Santrock (1976), examined the influence of various factors on the performance of a motor task. Three components of a situation--the ecological setting, the child's cognition,

and the social agent--were imbued with positive, neutral, or negative affect to determine if they were functionally related to the continued maintenance of performance at the task. The most powerful effects occurred when the affect of the ecological setting was changed: Those who experienced a happy room with happy pictures, and faces persisted longer than those in the sad or neutral room. Also, those who thought about happy things persisted longer than the subjects who thought about sad or neutral things.

Thus, self-control has been widely researched, examined in a variety of ways, studied in combination with other theories, and observed in many settings. One of the basic principles of this technique will be reviewed in the next section.

SELF MONITORING

One of the primary components in changing behavior by self-control methods is self-monitoring. Few published studies were found, but several individuals examined the concept of self-recording, and its overall effect on behavior, in their dissertation studies.

Walls (1969), stated in his discussion of the application of behavior modification to rehabilitation that the most expeditious plan in observing behaviors is to have the client count, and record target behavior. He went on to note that in many cases no reinforcement other than autorecording may be necessary to accelerate desired behavior. Mahoney, and Thoresen (1974), supported this same contention

when they indicated that self-monitoring may be more than an assessment tool, it could also be a treatment strategy. They called this possibility the reactive component of selfmonitoring, and suggested that a baseline of self-monitoring is essential to understanding other specific treatment effects.

Kazdin (1974), in an extensive review of the literature wherein self-monitoring was part of an experimental approach, found studies where self-monitoring had an effect on behavior, and studies where it apparently had no effect. It was his conclusion that self-monitoring has not been consistently influential in behavior change. He also addressed the issue of the reactivity of self-observation. It was his belief that whether the reactivity issue was or was not a problem depended on how the self-gained information was to be used. He noted that in many cases, the effects of self-monitoring seemed to lose impact on behavior change over time.

Richards, et. al. (1976), conducted an investigation dealing with the self-control of study behavior of college students. They replicated support for a previous finding that self-monitoring does change study behavior. In addition, they examined whether information feedback, and selfadministered consequences had an effect on self-monitored study behavior. They found that information feedback did account for some of the behavior change but manipulating the quantity, and quality of information feedback, and selfadministered consequences had little or no effect on the

changes produced. An additional finding was that students lacking accurate information about the extent (i.e., amount) of their study behavior benefited more from self-monitoring than those who were already knowledgeably about their study behavior.

In an unpublished doctoral dissertation Hutzell (1975), researched the effects of self-recording a neutralvalued behavior. Eyeblinking was selected as the neutral behavior, and was self-recorded by different experimental groups. The primary results indicated that self-recording had a reactive effect upon eye-blinking rates. The direction of the effect was not the same across all subjects, but produced a decrease in eye-blinking rates for the majority of subjects. However, the subject's expectancies for change as manipulated by the procedures of the investigation had no significant relationship with the actual direction of change in eyeblinking rates. In a related study, Katz, et. al. (1976), investigated the effects of self-monitoring as a function of expectancies for change, and incompatible response training. The monitored response was fingernail biting behavior performed by college students. Results showed that self-monitoring alone did not reduce nail biting, nor did the addition of an incompatible response reduce that activity. However, the reactivity of self-monitoring seemed to be determined by the expectancy variable.

A study that investigated the relative therapeutic utility of self-monitoring, and self-instruction, applied to

covert responses related to depression was conducted by Nystedt (1976), in his doctoral dissertation. Although the study found no group differences on the behavioral measures of depression, the group that combined self-monitoring with a self-instructional procedure to generate covert positive self-statements showed a significant increase in the rate of recorded positive self-statements. The group that selfmonitored their positive, and negative self-referenced statements only, failed to modify the rate of recorded positive self-statements.

Self-monitoring was compared to thought-stopping, and applied to smoking behavior by Cochran (1976), in her dissertation. In this study self-monitoring alone was less effective than when used in combination with other selfcontrol procedures (i.e. suggestion influencing expectation, and thought-stopping).

In another dissertation, Grace (1976), examined the effectiveness of self-monitoring in the modification of obesity in children. Children were taught to monitor, and graph the frequency of their eating, and exercise. These children lost significantly more weight than controls at post treatment. They also showed maintenance of weight-losses, along with continued weight loss, at one, and two month follow-up contacts.

Blumberg (1976), studied the effectiveness of selfmonitoring in the treatment of enuresis, for his dissertation. Subjects were required to monitor their reactions

to increasing the daily amount of liquid intake, and the time each would voluntarily retain urine after first feeling the desire to void. Fifty percent of the subjects attained correction (14 consecutive nights without bed wetting), and another 16.7 percent reported improvement over baseline.

In a feasibility study, Moinat, and Snortum (1976), tested the usefullness of a 9 week program for training incarcerated female drug addicts in the use of self-management techniques, to include self-monitoring, and contingency management. Seventeen separate projects were completed which included the self-control of smoking, calorie intake, fingernail biting, hair-twisting, and lying. All but one of the projects demonstrated an improvement in final performance compared to baseline levels. Two indirect behavioral measures suggested that the subjects were methodical, and honest in self-monitoring their responses. There was no evidence that subjects using tangible consequences for goal attainment made greater progress than those employing only self-praise or social-reinforcement.

Another dissertation study combined the techniques of self-monitoring, and self-reinforcement, and tested their effectiveness in a medical rehabilitation setting (DeVries, 1976). Using an intensive research design, three patients residing in a medical rehabilitation treatment center were studied in terms of the effects of this treatment on specific behaviors that were directly related to their rehabilitation process. Although the results were somewhat equivocal, an

analysis of the overall process indicated the patterns of behavior changed dramatically after the self-reinforcement treatment period, back to levels similar to the baseline in many cases.

Self-monitoring, and reinforcement were examined in reference to the study behavior of college students, in a research project by Tichenor (1977). Subjects were asked to observe, and record the number of minutes studied for a course. Reinforcers were points toward that subject's course grade. Results indicated a significant increase in study time, suggesting this approach is possible, and effective in the natural environment.

Another study used a self-monitoring/self-reinforcement combination that was shown to be effective in modifying the inefficient spending habits of college undergraduates (Paulsen, et. al., 1977). Spending, and the carrying of checkbooks or credit cards were self-recorded, and self-reinforcement was administered for the avoidance of these behaviors. The treatment group produced a significantly greater change (55 percent reduction in spending) than placebo control subjects, who showed a slight average increase. A three month follow-up suggested that the improvement was maintained.

Rekers, and Varni (1977), used the self-monitoring, and self-reinforcement combination in an intensive research design to decrease feminine behavior in a cross-genderidentified six year old boy. The subject was taught to
Self-monitor his own sex-role behavior, and then to reinforce himself for appropriate gender responses. A follow-up conducted 12 months after the termination of treatment showed that the subject exhibited no evidence of feminine behavior or mannerisms, and appeared more calm, relaxed, and socially responsive than at the beginning of therapy.

The current literature generally showed selfmonitoring to have some effect on the behavior involved but not in a systematic nor predictable fashion. In addition, behavior changes as a result of self-monitoring seemed to be temporary in some cases. However, the effectiveness of this treatment appears to be improved when used in combination with other techniques, leading to significant changes in behaviors that have been maintained over time. The most effective combination seemed to be self-monitoring with selfreinforcement, which produced the most significant, and consistant results. Hence, this combination was selected to be incorporated into this study.

SELF REINFORCEMENT

Another major component within the self-control concept is the management of reinforcers that will change the target behavior. Bandura, one of the leaders in the field, has published, in conjunction with others, several articles on the topic (Bandura, Grusec, and Menlove, 1967; Bandura, and Perloff, 1967; Bandura, and Whalen, 1966). In these articles, the authors were generally concerned with the combined effects of role modeling on the

self-establishment of reward standards, and the effects of self-reinforcement on the individual. In a study of 80 children, Bandura, and Perloff (1967) reported that the reinforced subjects as a group performed better at a given task than did the non-reinforced group. They noted no significant difference in the performance of the externally or self-reinforced children. They did note however, that the self-reinforced group seemed to establish higher levels of performance than was necessary in terms of minimal standards for reward. Bandura, Grusec, and Menlove (1967) discovered that when children were exposed to role models, they tended to establish a standard for their own behavior in terms of the modeled standards, even if the schedule was very demanding, and lower performances were possible to obtain the same reward. The common observation in each research team was the negative personal effect that the potential for failure had on the children, as well as the undue expectations they often held for their own performance. Based on this research, it might be worthwhile in any self-reinforcement program to be alert to the tendency of persons to be overly demanding in establishing behavior standards for the amount of reward obtained.

Sola, and Resnick (1973), conducted two experiments with 7 year olds from schools in a black, lower socioeconomic status neighborhood, to test the hypothesis that self-production of sensory reinforcement enhances its effect relative to identical reinforcement which is externally provided. Completion of a work period led to a reinforcement period,

where different groups either controlled visual input or received the same input externally controlled. It was found that, over extended trials, the group with autocontrol of visual input completed more trials before dropping out, and responded at a higher rate during the reinforcement period, than did groups with the externally-produced input. It was concluded that self-production is an important factor in determining the effectiveness of sensory reinforcement.

In a much different research design, Lovitt, and Curtiss (1959), reported the results of a comparative study on reinforcement techniques. In a single case study design of a twelve-year-old student, the researchers found that self-administered rewards by the student for correct behavior prompted a higher performance for a specific classroom behavior than either a teacher-dominated point system or other teacher-dictated reward. In a repeated measure experimental study, these findings were reproduced, thereby confirming the hypothesis that a self-directed reinforcement program produces more of a desired change in a specific behavior than does an externally devised system.

In another single subject study, Nurnberger, and Zimmerman (1970), applied the concept of self-controlled behavior to study habits. They found, through the use of self-administered punishment, that a graduate student significantly changed his behavior with respect to work on his dissertation. The student increased his study behavior when he required the researchers to spend his money on social

programs with which he was in basic disagreement, if his behavior was below a self-established standard. It is surmised by DeVries (1976), although not described in the article itself, that the reinforcement gained by the student for productive behavior undoubtedly served to increase his motivation to continue such goal directed behaviors as well.

In a comparative study, Mahoney, Maura, and Wade (1973), found there was a significant difference in weight loss between groups using self-reward, self-punishemnt, or a combination of the two, to control eating. They discovered that the self-reward group lost the most weight over a period of time. The self-reward/self-punishment group was less effective in weight loss than the first group but more effective than the self-punishment only group. This seemed to indicate that the utilization of self-reinforcement has more applicability than self-punishment, however, there may be some consideration given to applying both principles in a self-control study.

Introducing another aspect into the self-reinforcement research, Reschly, and Mittman (1973), examined the relationship of self-esteem status, and task ambiguity. In a study with male, and female 7th graders, a direct, positive relationship between self-esteem status, and self-reinforcement rates was found. The higher the individual's selfesteem, the more appropriately, and effectively self-reinforcement was integrated. In addition, these authors successfully replicated previously reported generalizations

concerning an indirect, negative relationship between amount of task ambiguity, and rates of self-reinforcement.

In a similar vein, Rozensky et. al. (1977), examined the relationship between depression, and self-reinforcement behavior in medical patients in a Veteran's Administration Hospital. Those referred for psychological evaluation were divided into high, and low depression groups, and were compared with a control group on a memory task. Results show that the high depression group gave themselves fewer selfrewards, and more self-punishment following their task responses than either of the other groups. This was true despite the fact that there were no differences in the number of correct responses.

Speidel (1974), studied the motivating effects of contingent self-reward on an intellectual, though boring, task. College students were instructed to work on simple addition problems for as long as they wished. Subjects in the self-reward condition presented themselves with sections of a television film, contingent upon a fixed ratio schedule, that they had selected from three alternatives. An experimenter-rewarded group received the same movie sections automatically. A control group received rest periods instead of the film. Results partially support the hypothesis that contingent self-reward can have motivating effects. The selfreward group completed significantly more problems than the control group, while there were no significant differences

in number of problems completed between the self-reward, and the experimenter-rewarded groups.

Kanfer, and Duerfeldt (1967), in a three-phase research design utilizing three groups, also tested the effects of self-controlled versus other-directed reinforcement. Three groups of subjects were shown geometric designs, and asked to select correct designs based on a pre-given criteria. Two of the three groups were initially reinforced for responses without any relationship to correctness; the third group was not reinforced for any response. The second phase of the study continued the non-contingent external reward system for one group, the second group was asked to reward themselves if they felt they were correct, while the control group continued on a no-reinforcement program. The final phase of this study was an extinction period for all three groups. The results showed a significant difference in the final phase behavior with the self-reinforcement group correctly choosing more designs than the other groups. This study supports the hypothesis that training in selfadministered reinforcement enhances performance under extinction.

Based on the data presented in the above studies, some general conclusions can be drawn. Without any doubt, there is reason to believe that the use of reinforcement, whether externally controlled or self-directed, enhances the likelihood of change in a target behavior. Although the literature was not conclusive on the differences between

the externally controlled, and self-directed reinforcement programs, there are some subtle points to be made. It seems apparent that the use of self-directed reinforcement causes individuals to set higher goals for themselves in terms of an acceptable standard of behavior. Once established, this behavior pattern seems to exist for a longer period of time than does the behavior pattern of an externally reinforced group. These considerations are of utmost importance when considering the behaviors of clients in work adjustment settings. If an individual can be helped to produce behaviors that are more appropriate to the work setting, his/her employability will be enhanced. Since a major portion of the clients' time is spent in situations that are not immediately reinforcing, teaching the principles of selfreinforcement for use in those situations would perhaps help increase the likelihood of those behaviors necessary for a successful, and efficient rehabilitation, in terms of productive employment. Thus, the possibility of teaching selfcontrol behavior patterns that will persist into these situations is another major reason for conducting a study of this nature.

WORK ADJUSTMENT

Special programs to teach work-appropriate behaviors to handicapped individuals have been in existance for many years. The passage of Public Law 78-113 in 1943, gave impetus, and special attention to these programs. Rehabilitation workers were authorized to provide any service necessary

to render a disabled individual fit to engage in remunerative employment. Some advances were made in military hospitals during World War II, and more comprehensive rehabilitation centers were established. However, no real gains were made until the 1954, Rehabilitation Act (PL 83-565) authorized the use of rehabilitation funds for the establishment of rehabilitation facilities. This encouraged the building, and development of facilities, and the services provided in them gradually gained sufficient recognition, and growth to warrant special legislation. The passage of Public Law 89-333 in 1965, authorized the provision of vocational evaluation, and adjustment services for up to 18 months to persons suffering from catastrophic disabilities. Programs for the mentally retarded, emphasized by President Kennedy; and the manpower development programs, and special services for the mentally ill, as part of President Johnson's "Great Society", all included a strong work adjustment component. In 1967, the Vocational Evaluation, and Work Adjustment Association was chartered as a professional division of the National Rehabilitation Association to particularly represent work adjustment specialists, and vocational evaluators. By 1976, VEWAA had grown to become the second largest professional division of NRA. Finally, the Rehabilitation Act of 1973, (PL 93-112) placed a greater emphasis on services specifically for the severely handicapped. The provision of such services places a great responsibility on the adjustment specialist, and adjustment programs in general (Sink, et. al., 1978).

Studies have been conducted to assess the effectiveness of work adjustment programs, most of which have been generally favorable. An example is Growick's (1976), investigation of the effects of a work adjustment program on the rehabilitation status, and personality of emotionally handicapped individuals. The personality variables employed included measures of manifest anxiety, and work attitude. The subjects were 30 clients who shared a major diagnosis of emotional disability, possessed a minimum of an eighthgrade education, and were referred by the Department of Vocational Rehabilitation to a work adjustment program for services. Analysis of the data revealed that the work adjustment program appeared to improve the rehabilitation status, and work attitude but not the manifest anxiety level of the participants.

Research has also examined the effectiveness of behavior modification techniques in the work adjustment setting. Carter (1973), studied the effect of behavior modification techniques upon the production, self-evaluation, and vocational adjustment of retardates. The investigation compared the effect of teaching sheltered workshop skills utilizing behavior modification (operant conditioning) techniques with the effect of teaching workshop skills by conventional modes. Production data were gathered, the clients rated themselves, and were in turn rated as workers by the staff at two intervals during their stay at the sheltered workshop: 1) At the conclusion of a three week

evaluation period; 2) and upon completing the thirteen week personal adjustment training period. It was hypothesized that the behavior modification group would obtain significantly higher scores in production, self-evaluation, and vocational adjustment than the conventionally taught group, and all three hypotheses were supported beyond the .001 level of confidence. It was concluded that behavior modification techniques appeared to be a better way of increasing the production of retardates than conventional modes of teaching. Another conclusion was that this technique helped clients to evaluate themselves more realistically. It was further determined that the conditioning technique greatly improved vocational adjustment, and was probably preferable to the conventional teaching technique with which it was compared.

Three types of behavioral techniques were used by Moore (1974), in her doctoral dissertation. The effects of behavioral charting, token reinforcement, social reinforcement, and combinations of behavioral charting with token or social reinforcement, upon the production rates of sheltered workshop clients were investigated. The experimental period consisted of six five-day treatment stages that applied the above mentioned treatments. It was determined by an analysis of variance of the resulting weekly group production means that the cumulative effect of all reinforcement modes applied was highly significant. However, multiple comparisons of treatment means failed to

detect significant differences between most of the specific reinforcement modes. Charting combined with social reinforcement appeared to have the best results with the clients but this combination procedure was only slightly better than using charting or social reinforcement alone. Both token, and social reinforcement were more effective than charting alone. All modes of contingent reinforcement employed were better than unmanaged reinforcement. These findings led to the conclusion that positive reinforcement, and specifically social reinforcement used both alone, and in combination with behavioral charting, can be a very effective mode of reinforcement for sheltered workshop clients.

Ortega, et. al. (1976), used an intensive research design to examine the use of social reinforcement to increase productivity, and develop self-monitoring skills in a mentally retarded assembly-line worker. This case study was conducted with a 27-year-old male Down's Syndrome retardate, in a sheltered workshop. Baseline production was determined, and in the treatment phase, social reinforcement, in the form of attention, and verbal praise, was given. The goal for the study was to improve the client's production rate to double that of baseline. The subject was instructed in the use of a simple timing device, and record keeping. Results showed the subject's production rate did improve to more than twice that of baseline. The case is offered as further evidence that teaching self-monitoring skills, plus the use

of social reinforcement, can add significantly to effectiveness in a work adjustment workshop.

The effects of social reinforcement, and visual feedback on work production among mentally retarded sheltered workshop clients were assessed by Daniels, and Hansen (1976). In their investigation four mentally retarded persons received both verbal, and visual reinforcement for performance on a sorting task in a sheltered workshop. Eight others were nonreinforced controls. Results supported the hypothesis that positive reinforcement would increase work productivity over a brief period of time for sheltered workshop clients. These findings suggested that production for such individuals can be increased without tokens or other material reinforcers.

Another study was conducted by Helland et. al. (1976), where they compared self, and external-reinforcement using trainable level retarded persons. They used performance on a workshop task to study the effectiveness of selfreinforcement relative to external reinforcement, on residents of a facility for the trainable mentally retarded. Their findings indicated that those individuals could learn self-reinforcement techniques, and the effects of selfreinforcement were comparable to those of experimenter reinforcement.

Mahoney, and Mahoney (1976), pointed out the advantages of using self-control techniques with the mentally retarded. They stated that using a retarded person as a

self-change agent had been successfully demonstrated using three components of self-control: Self-monitoring, antecendent cue alteration, and consequence changes. They further' specified that preliminary inquiries indicated self-regulatory skills could be developed in areas ranging from personal hygiene, and aggression to academic performance.

Another article dealing with the issues of behavioral self-control with mentally retarded clients was written by Wehman (1975). He discussed this topic in an attempt to elucidate the role of a rehabilitation counselor in the training of self-management skills to the mentally retarded. One conclusion germane to this study, was the self-control training was vital for mentally retarded individuals to reach their full potential.

In a later article, Wehman, et. al. (1978), described three studies utilizing the intensive research design to investigate the differential effects of externally administered, self-administered, and self-determined reinforcement contingencies on the work production rates of developmentally disabled workers. The results of experiment I indicated that a profoundly retarded 18-year-old male worked at equivalent rates under externally administered or selfadministered reinforcers. Experiment II indicated that a severely retarded 34-year-old male also worked at a high work rate under a self-determined reinforcement contingency. Experiment III replicated these findings in a more controlled design with a 29-year-old retarded male, who also

had a mild spasticity (quadriplegia) condition which interfered with his ambulation, speech, and finger dexterity. Different tasks adapted from community workshops were utilized in each study.

SUMMARY

The studies reviewed have indicated that selfcontrol, as a technique for achieving behavior change, has been widely examined, with primarily favorable results. Self-monitoring contributes to behavior change, but not in a systematic nor predictable manner. It has been suggested that self-monitoring is most effective when used in combination with other techniques, and that its effects should be examined individually, as well as in combination. The literature review also reveals that reinforcement enhances the likelihood of behavior change, and that self-administered reinforcement will cause the individual to set higher goals for him/her self, and the effects will be more long lasting. Effective rehabilitation programs train behaviors that are expected to carry over into situations that are not immediately reinforcing. Work adjustment programs are responsible for developing the full employment potential of handicapped individuals. They are increasingly working with more severely handicapped individuals, who require more indepth services on a longer term basis in order to realize their potentials. No studies were found where self-control, utilizing primarily the principles of self-monitoring, and self-reinforcement, was investigated within a work adjustment training program.

Thus, the pilot project described here will explore this unique combination, and is expected to set the stage for more extensive research into developing, and substantiating more effective, and efficient treatment techniques that can be utilized in the work adjustment setting.

One of the most current publications dealing with work adjustment was a monograph outlining a work adjustment cirriculum development project written by Coffey, and Ellien (1979). It summarized a one year effort of a group of leaders, and workers in rehabilitation to define the role, and function of the adjustment specialist, the development of appropriate curricula, and the integration of final results, and recommendations. Among the many useful, and informative outcomes, and recommendations was one that applied specifically to this study. One of the highest priority training needs for work adjustment specialists is to learn, and incorporate behavior change techniques, with an emphasis on practical experience, and skill development. This study is an attempt to meet that need, directly for the staff working with this project, and indirectly by contributing to the literature, and research information available that would assist in meeting that need on a larger scale.

CHAPTER THREE

METHODOLOGY

INTRODUCTION

The earlier chapters have noted the need for further research in the area of work adjustment training. It has also been suggested that the link between behavioral procedures, and work adjustment be studied in greater depth. The theory and practice of self-controlled behavior modification have been reviewed, and the overall positive effect on selected behaviors have been noted. It then seems reasonable to study whether the introduction of this popular and effective program into work adjustment training has a positive effect on selected client behaviors.

In this chapter the design, and implementation procedures for such a self-control program in a work adjustment setting will be considered. The sample selection, instrumentation, experimental procedures, hypotheses, research design, and method of analysis will be described in the following sections.

SAMPLE

This study intended to test the effect of a selfcontrol program, to include self-monitoring, self-established goals, and self-selected and administered reinforcement on work adjustment clients. A facility delivering work adjustment training provided the population from which a

sample was selected. Further, because the study concentrated on the individual effects of an experimental treatment on specific behaviors in an intensive design, only a small number of work adjustment trainees were used.

The subjects were selected from those clients being referred to the work adjustment training program at Peckham Vocational Industries, Incorporated. Peckham is a facility offering vocational evaluation, and work adjustment training to handicapped people in the Greater Lansing, Michigan, area. They provide these services to several referring agencies, although their primary source of referrals is the Bureau of Rehabilitation. Their clientele is made up of individuals possessing a wide variety of disabling conditions.

This study was designed to test the application of self-control theory in a different setting than had previously been used. The intensive design was chosen over a group comparison design. This intense study permited a greater in-depth analysis of the effects of self-control on individuals, as opposed to attempting to prove that selfcontrol makes a significant change in all work adjustment clients.

Three clients were selected (to be studied individually), to provide ample opportunity to test the effects of the principles of self-control on specific behaviors. A cross-section of disabilities was included in order to examine the effects of the treatment on a variety of handicapping conditions. The nature of the study was

briefly described to the case managers, and the work adjustment program staff. They were asked to recommend individuals whose work adjustment plans included the need to improve production levels, change behaviors inappropriate to the work setting, and become more responsible for their The ability to perform simple record keeping actions. was also reviewed. The staff then asked the clients if they would consider participating in the study. If an individual agreed the referral source was so informed, and a meeting was arranged between the case manager, the client, and this researcher. The study was briefly described, and appropriate target behaviors were discussed. The three subjects to be included in this study were the first three to provide a complete set of data. A letter of agreement was drawn up, and signed by all concerned, and is included in Appendix A.

INSTRUMENTATION

Several reports containing a wealth of descriptive, and diagnostic data were available through the referring source. In addition, an individualized work adjustment training plan that lists specific objectives to be accomplished was also available. The primary instruments used in this study were the behavioral charts maintained by the staff, and the subjects themselves, primarily consisting of production rates. Other data was considered, as were other behaviors specific to the individual subject. The clients served as their own control, with the frequency of

target behaviors being compared with baseline in an effort to assess the effectiveness of the self-control intervention.

PROCEDURES

The procedures, forms, and guidelines were specifically generated for this project, as it constitutes a pilot study for a research proposal from the Research and Training Center, University of Wisconsin-Stout. Examples are included in the appendices.

The staff at Peckham involved in this study were given an overview of the study in terms of the research design, and hypotheses to be tested. They were introduced to the concept of self-control, the principles of selfmonitoring, and self-reinforcement, and how this study planned to investigate the effectiveness of these techniques within the work adjustment setting. They were also trained in behavior observation based on the Point Sampling Technique described by Coker, and Schneck (1979). This system is based on the concepts of the behavior hierarchy (a way or arranging tasks so each step is increasingly more specific than the one preceding it), operational definitions (accurately describing the specific characteristics of the behavior to be examined), and sampling (the observation of behavior for a short period of time, at regular intervals). The specific procedures utilized are described in Appendix B.

Base I

A 5-day pre-treatment baseline period began after the client had adjusted to the new environment in work adjustment training. This consisted of staff-monitoring of the target behaviors on each subject, and recording this information on a regular basis. As previously mentioned, the target behaviors were discussed with the subject, the adjustment program staff, and the case manager. Production rates were targeted for each client involved, and additional behaviors were selected specific to each subject.

Self-Monitoring

At the end of the fifth day of Base I, the subject was informed of the specifics of the behaviors being observed. Subjects were asked to begin keeping records of those behaviors themselves, on the following day. In most cases this record keeping required only counting, and recording, and was continued for a 5-day period. After the fifth day, subjects were asked to stop keeping records, although staff observations continued throughout the study.

Base II

Another five day baseline period immediately followed the self-monitoring period.

At the conclusion of the five day Base II period, a conference was held with each subject individually to explain the concept of reinforcement for performing the target behaviors. A discussion was held regarding the kinds of things that would be rewarding to them. A standard of

behavior was established by the subjects, incorporating the information gathered during the self-monitoring period. The specific reward to be self-administered upon achieving that standard was selected from a list of those available (see Appendix C). This information was then recorded in the staff, and subject monitoring records.

Self-Monitoring + Reinforcement

For the next 10 days each subject self-monitored his/her performance, and self-reinforced the achievement of their respective, self-determined goals.

Base III

The last five day period was another baseline where staff observations only were recorded.

The sequence of events is clearly shown in Figure 3-1:

Base I	Self-monitor	Base II	Self- monitor + reinforce-	Base III
(A)	(B)	(A)	ment (C)	(A)

Figure 3-1: Sequence of interventions in work adjustment training.

The study adheres to an ABACA design: A, representing a baseline period where staff observation data only was collected; B represents a self-monitoring only period; and C represents the combination of self-monitoring, and selfreinforcement.

HYPOTHESES

The purpose of this study was to test whether the establishment of a self-control program, including selfmonitoring and self-reinforcement, would have an effect on the selected target behaviors of rehabilitation clients in a work adjustment training program. The design of the experiment was such that the following directional hypotheses could be tested:

Hypothesis 1:

The implementation of a self-monitoring program for selected client behaviors will increase the occurence of the behaviors toward competitive levels over a pre-treatment baseline period (Base I).

Hypothesis 2:

The implementation of a self-monitoring + selfreinforcement program for selected client behaviors will increase the occurence of the behaviors toward competitive levels over a pre-treatment baseline period (Base II).

Hypothesis 3:

As a result of the self-control intervention the occurence of selected behaviors during the post treatment period (Base III) will be improved over the pre-treatment baseline period (Base I).

An example of data that would support these hypotheses is shown in Figure 3-2. As performance approaches competitive level (100%) it becomes more difficult to continue improvement. Thus, semi-log graph paper was used in an effort to reflect increasing difficulty.



Base I Self-M Base II Self-M+R Base III Figure 3-2. An example of data considered supportative of this study.

DESIGN

Chapter two provided support that the theory of self-directed behavior has utility. It has been applied in a wide variety of settings with apparent success. It has also been shown that the application of behavior modification principles has been employed successfully in rehabilitation settings to promote desired behavior change. Therefore, in an attempt to understand the dynamic effects of selfmonitoring, and self-reinforcement on behavior change in a

work adjustment training program, the intensive case study, or an N of 1, research design was chosen.

Intensive Research Design

The supporting rationale for the intensive research design or case study approach is provided by several authors (Anton, 1978; Frey, 1978; Leitenberg, 1974; Shapiro, 1966; Thoresen, 1972 & 1978; Thoresen, and Anton, 1974; Thoresen, and Ewart, 1976). Each of these authors noted, among many other reasons, that research of this type emphasized the careful monitoring of each individual with respect to the target behaviors. Since this is a necessary element in behavioral research, the intensive research design or case study approach seems reasonable.

Another rationale for choosing this design is the diversity of the population in a work adjustment training program. Because one client's condition is different from another's, and since each treatment program is unique, considering the severity, and complexity of the disability, it is practically impossible to establish a true comparative group study. Establishing comparative groups on some selected demographic variable would necessitate the use of several work adjustment programs or a time lapse study, both of which are susceptible to confounding possibilities. The use of a single subject study permits the subject to be his/her own control, and the various hypotheses can be tested in a within-subject manner (Chassen, and Bellack, 1966). If

more than one research subject is used, a comparison across subjects is also a potential evaluation consideration.

Another consideration given to the choice of the intensive case study approach is based upon its effectiveness in defining treatment effects on the individual. As Anton (1978), Chassen, and Bellack (1966), Frey (1978), Shapiro (1966), and Thoresen (1972 & 1978) indicated, the problem with the comparative group design is that a statistically significant effect may, in fact, reflect a true effect in very few subjects but the influence in those individuals is strong enough to deviate the entire group norm. These authors noted further, that the specific effect of treatment on the individuals involved is lost to the researchers.

Davidson (1969), summarized all of the above considerations giving four supporting reasons for such a design:

- 1. It (single case study design) reduces...the error variance by eliminating the usual confounding between variations in behavior associated with different values of the independent variable, and the variations between individuals.
- This design may be used with considerable effectiveness... in clinical practice... in which each individual represents a unique case.
- 3. The within-subject design makes it possible to study differences between individuals in the characteristic way.
- 4. The functions which are apparent when the individual design is employed may be lost or distorted when average values are substituted as required by the group design. (p. 508)

A final consideration given to the choice of the intensive case study approach is the ability to include the multiple baseline time series design, where appropriate. This design is recommended for intensive case studies by several authors (Anton, 1978; Frey, 1978; Thoresen, 1972; and Thoresen, and Anton, 1974). In the multiple baseline time series design there is an emphasis on direct observation, and continuous recording of data over time for an individual subject. Data are viewed in "time series", and the patterns of change from one point in time, or from one intervention to another, can be analyzed by both logical and statistical means (Frey, 1978). Thoresen (1972) described the use of this design as most applicable when an experimenter is concerned with the effects of a treatment on several behaviors of the person or treatment effects on the same behavior in different settings. Wolf, and Risley (1971) observed this design to also be useful when carried out across two or more different responses under the same environmental condition(s), and on the same subject(s), or across two or more environmental conditions with the same response(s), and on the same subject(s). In addition, the multiple baseline time series design is considered the best alternative to control for the potential effects of internal confounding factors.

The design of this experiment, then, is geared to observing the effects of a treatment on specific individuals and specific behaviors. Thoresen (1972) postulated that

research in counseling must get back to "the basics" meaning there is a need for direct observation, careful description, and systematic planned interventions with individual subjects. The intensive case study, including multiple baseline where appropriate, provides the research design for fulfilling such a statement.

ANALYSIS

As was previously noted, one of the benefits of conducting an intensive case study is to assess the specific effects of a treatment program on individual subjects. This analysis can be both statistical, and nonstatistical in nature. One need simply to observe the graphs of the data obtained, and draw some general conclusions about the treatment effects. The non-statistical approach will also include consideration of the subjective climate during the study, the individual influences that may effect client behaviors, and any changes in daily procedures which might cause a variation in behavioral observations.

Another proposed way of assessing the effects of treatment on behavior is a dynamic analysis. Instead of concentrating on the analysis of the data as it is grouped through summations, and statistically comparing the values of the grouped data, the dynamic analysis of data keeps each of the data points separate. The analysis is done based on the general distribution of the data points. This method, described by White (1971, 1972) is built from a relatively simple computation of the median slope of the distribution of points for any period of the research with a comparison of the slopes for each phase.

This computation of trend lines improves greatly over the least squares regression line in its predictability. White (1971, 1972), in an examination of 166 previously completed research studies of classroom behaviors, found the median method proved to be the most effective predictor of future performance over either the more typical regression model, or a "Quickie Method", a shorter method of calculating the median slope (a corrected median slope method).

The median slope of the data is that trend line which divides the data points in half. This method is not then greatly influenced by the extreme deviation of one or two grossly deviant data points. What the median slope line becomes, then, is that line above or below which 50% of any given individual's data points can be expected to fall. By projecting this slope into the future, the researcher can test whether the number of data points actually falling above or below the projected trend line is significantly different than expected. The regression line, on the other hand, tends to be more affected by major deviations of scores. Because of this influence, the slope of the line may be significantly changed, and may not provide accurate prediction for future data.

Since this study was conducted in a relatively new work adjustment training program, there were no long term contracts in-house that would produce steady work for

the duration of the study. In addition, daily problems, such as running out of parts, meeting production deadlines, etc. made it necessary for the clients to work on a variety of jobs. In an effort to render the data comparable, the actual production of the subjects will be expressed in terms of a percentage of competitive employment rates. This is perfectly acceptable, and easily determined as each job in the workshop has a piece-rate that is comparable to competitive employment. In other words, each piece completed is worth a certain wage, and the competitive rate would be the number of pieces completed per hour in order to earn minimum wage. For example, if each piece completed earned 2¢, then 155 per hour would equal the current minimum wage of \$3.10/hr. This is common practice within the majority of workshops, and training programs throughout the country (Dolnick, 1963) and is the method utilized within Peckham Vocational Industries, Incorporated.

Subsequent references to competitive levels, and rates throughout this study will include, and refer to the concept described above. The goal of the program is for individuals to achieve 100% of competitive rate.

CHAPTER FOUR

RESULTS

INTRODUCTION

This chapter will present the data collected during the entire study. Since the research was conducted utilizing the intensive research design (N of 1 study), the data gathered on each of the three subjects will be presented separately. Subsquently, a comparison of treatment phase means will be presented to represent another perspective. Finally, all data will be analyzed across subjects, in an effort to glean similarities, and trends.

SUBJECT A

Subject A was a female, 28 years old, divorced, and head of her household. She suffered 2 auto accidents, and has a medically defined back problem that is aggravated by strenuous activity. Thus, she was unable to continue working in the factory setting. The State Bureau of Rehabilitation sponsored her retraining in a combination work adjustment, and skill development program. This program is designed to build on, and improve typing skills previously learned, and teach behaviors appropriate for an office setting. She was highly motivated, and viewed the program as an excellent opportunity to improve her vocational horizons, and upgrade her life style. At the beginning of the study, her two adolescent sons had just returned home, after spending the

summer with their father. The boys requested to live with their father on a permanent basis, and this was causing emotional distress for this woman.

Specific behaviors that needed improvement were not identifiable for the study. She was punctual, attended regularly, and maintained a positive attitude throughout her program. The instructor commented on her high level of motivation to do well in the program, and felt she was performing to capacity at all times. Thus, data was collected only on her typing performance in terms of speed (words per minute), and accuracy (errors).

Results showing trends within each of the phases may be seen in Figure 4-1. Semi-log graph paper was used in an effort to reflect increasing difficulty as performance approached higher levels. For example, the improvement from 90% to 100% of competitive rate is much more formidable to achieve than an improvement from 30% to 40%. This graph paper compensates for, and thus, reflects that increasing difficulty. Competitive rates were based on 50 words per minute, and five errors, as demanded by most entry level positions where typing skills are a requirement. For the sake of clarity, these figures will show only the slope of the median trend lines. Complete reflections of all data points, and trend lines are contained in Appendix D.

This subject's typing speed (words per minute), and accuracy (errors) for five minute timings were recorded through all phases of the study by the instructor. Her



Figure 4-1. Median Trend Lines of Performance Speed Within Each Phase of the Study for Subject A.





performance during the Base I period showed dramatic improvement, with an increase in speed, and reduction in errors. This period included Subject A's third week in the work adjustment/skill training program. According to the instructor, the third week generally shows the most improvement for clients who have had previous training in typing (as this one had). The improvements noted during this phase could be considered unusually high, as normally when typing speed increases, accuracy decreases, and vice versa.

During the self-monitoring phase her speed continued to increase, while the error rate was maintained above competitive rate. The instructor evaluated this improvement to be very good. The influence of the self-monitoring period is again demonstrated when compared to the Base II phase. There is a noticable reduction in speed, and a large decrease in accuracy with no break in time between the periods (i.e. self-monitoring ended on Wednesday the lOth, and Base II began on Thursday the llth). Typing speed recovered nicely, and improved rapidly throughout this phase. The error rate improved but did not reach the competitive level.

When asked to establish her goals for the next phase, this individual chose 50 words per minute with 5 (or less) errors. This goal was selected without influence by the instructor or this researcher, but was coincidently the same as the goals of the program. The instructor agreed

that the goals were too high, but due to the self-control nature of this study, we did not attempt to interfere with her goal setting process. She did not select a reinforcer for goal attainment, as none of the reinforcers available were in any way rewarding to her. Thus, the instructor, and this researcher indicated that if she reached her goal we would reward her with a suitable reinforcement. As previously noted, this subject was highly motivated to achieve in her program. The goal of 50 words per minute with 5 or less errors was highly significant as she measured her success by its achievement. She expressed it as a strong personal goal that she wanted to accomplish in order to launch her new career. Self-reinforcement was not used although selfmonitoring, and self-determined goals were performed, as planned. Though self-reinforcement was not implemented according to the study design, she was intrinsically motivated, and goal attainment likely would have produced a great sense of self satisfaction.

During the self-monitoring + reinforcement period her typing speed did not improve above the highest achieved in the Base II phase. Her accuracy decreased to a level lower than Base II, and did not improve to competitive rate. In addition to setting her goals unrealistically high this subjects' personal life was interfering with her performance. During this time period she, and her exhusband were engaged in final negotiations over her sons' moving in with him, involved with their lawyers, and going

to court for the final settlement. She was also disappointed in her inability to reach her goals. Base III data indicated a dramatic increase in speed that diminished, and leveled off at the competitive level. (This increase is more realistically reflected in Appendix D, Figure D-5, as compared to Figure D-4.) Rate of errors continued to be a problem, as accuracy did not reach the performance criterion. This phase included the end of her training program, during which time she worked as a supplemental secretarial assistant in the front offices at Peckham Rehabilitation Center. Tn addition, she did volunteer work at Peckham after her program terminated, in order to keep up her skills while she attempted to locate suitable employment. Thus, her training program was not as consistant as during the previous phases. and five minute timings were not taken as regularly. Her emotional state, the inconsistancies in her program, and possibly the lack of self-reinforcement were felt to have negatively influenced her performance during this phase of the study.

For Subject A, hypothesis one was supported for typing speed as it continued to improve to higher levels than Base I. Hypothesis one was also supported for accuracy as it exceeded competitive level, and maintained this excellent performance during this phase. This level was not again achieved throughout her training program.

Hypothesis two should be considered equivocal for speed as it was maintained at a higher level than the
earlier phases. However, no improvement took place during this period, and the hypothesis could have been rejected on that basis. It was rejected for accuracy as her error rate was actually higher than during Base II. However, it did improve during this phase, while speed remained constant, indicating good progress.

Hypothesis three was supported for speed as it was noticably above all previous phases, and above the competitive rate. Her performance in Base III is more than double the Base I level. This hypothesis was rejected for accuracy as performance was lower during Base III than either Base I or Base II. A large improvement was noted but the competitive level of 100% was not attained.

SUBJECT B

Subject B was a 47 year old male, who was short in stature, and lived with his brother, and family. According to the records of the Community Mental Health Agency, his primary disability was Schizophrenia, and secondary disability described as borderline mental retardation. The records further indicated a long history of mental health problems, and institutionalizations. His parents were deceased, and several of his siblings also had mental health problems. He had approximately a 3rd grade education, and was considered in stable condition while taking medication regularly. He was in the Vocational Adjustment Training Program at Peckham, and expected to be referred to the State Bureau for Rehabilitation as productivity approached competitive standards.

The primary reasons for his being in the program were to gain exposure to, and experience in a work setting, develop favorable work habits, and increase production rates to near competitive standards. The specific behavior identified for the study was distractability from his work. Upon closer examination, the primary reason for being distracted was his strong desire to be helpful to others. He would talk to his fellow workers, asking if they needed help, and whenever he noticed someone having a difficult time he would leave his work station to help them get parts, lift boxes, fix a stapler, find an empty box, etc. The decision was made to concentrate on improving production, rather than attempt to specifically reduce this behavior. Thus, data was gathered on production rates only, for fear that specific intervention would place a negative connotation on otherwise desirable behavior. It was concluded that a concentration on production rates would tend to reduce all behaviors that were incompatible with increasing production speed. Observations were made, and data recorded primarily by the work adjustment assistant, whose responsibilities included recording observations on all clients in the work adjustment program.

Figure 4-3, shows the resulting trends within each phase of the study. Base I shows a good general increase in production rate. The self-monitoring phase did not show a continued increase in the rate of production, but reflected a continued performance above that achieved during Base I.

The self-monitoring effect is also noticable when looking at Base II, as performance fell off as soon as the self-monitoring procedures were removed, and no time break occured between the phases. Production improved during Base II but did not attain the average level maintained during selfmonitoring.

This subject also set his goals too high, and adjustments were made each day until a realistic, attainable goal was established. He selected as a reinforcement extra time in the Adult Basic Education Classroom working on math, reading, and spelling. Thus, each day when he achieved his goal, he was automatically free to leave the work area, and pursue his studies. On days when the production goal was reached, he spent 20-40 minutes in the classroom.

His performance during the self-monitoring + reinforcement phase showed immediate decline at the beginning of the period, followed by gradual, and steady improvement throughout until it ultimately passed the level achieved during the self-monitoring phase. Base III data shows a continued increase in production, without the large change between phases.

Hypothesis one was considered equivocal for this subject. The production rates during self-monitoring were maintained at a level higher than during Base I, although a decrease in performance was noted.

Hypothesis two was considered equivocal as the rate of increase during self-monitoring + reinforcement was

Percent of Competitive Rate



Figure 4-3. Median Trend Lines of Performance Within Each Phase of the Study for Subject B.

improved over Base II, but at a similar level since a noticable drop in production occured at the beginning of this phase. The highest rate of performance did, however, surpass the level achieved in Base II.

Hypothesis three was supported as Base III data reflects the best production rates for this subject throughout the study.

SUBJECT C

Subject C was a 31 year old female who was living in a community residential setting. She was moderately mentally retarded, and has been treated successfully for cancer of the thyroid glands. She had been institutionalized for approximately 20 years, and was continuing to recover from that isolation. She was referred into the Work Adjustment Program by the State Agency for the Mentally Retarded, to be involved in long term interventions that would improve her skills, provide her with work experience, and improve her productivity. Plans were to refer her to the State Bureau of Rehabilitation when her productivity approached the competitive rate.

In addition to improving production, a primary reason for referral into the program was to reduce her distractibility within the working environment. As the study began, however, this behavior had improved to the point where it was no longer of concern. The staff, case manager, and this researcher could not identify another behavior in need of changing, as she exhibited very appropriate

work habits (good attendance, punctual, staying at work station, working steadily, etc.). The most significant problem remaining was her slow rate of production--generally between 15-25% of competitive rate. Thus, production rate was selected as the only behavior of concern, and data was collected on her production speed. Observations were made, and data recorded primarily by the work adjustment assistant, whose responsibilities included recording observations on all clients in the work adjustment program.

The trends of performance within each phase of the study are recorded in Figure 4-4, for Subject C. It became impossible to use the same job for data collection, due to the nature of the work flow in the workshop. Thus, baseline data was gathered for the three jobs to be used, and are reflected in the Base I section of the graph. The legend identifies the specific packaging job performed so that an appropriate comparison can be made. The double line in the Base II section reflects the median trend line for the combined performance during that phase.

During Base I a gradual increase in production rates were noted. The self-monitoring period showed a marked increase at the beginning (from 36% at the end of Base I to 50%) with a gradually increasing trend throughout the phase. Base II showed a high rate of production at the beginning, and a decrease throughout the phase. This was somewhat influenced by a change in jobs performed during this period. At the beginning she performed the same job

that was available during the self-monitoring phase, (packaging pin stripe tape). This job was being completed at the time, resulting in generalized pressure to finish it quickly, so that it could be shipped out on deadline, and billed. This subject seemed to be influenced by this rush, and improved her performance accordingly. This result should be considered favorable progress toward competitive employment as similar demands are made, and she demonstrated appropriate responsiveness. During the latter part of this phase she began working on a different job (valve extensions) that was quite similar, as both were involved with the packaging of small parts. Her rate was reduced from the previous job, but maintained at a level approximately twice that of her Base I performance on valve extensions.

The self-determined goals established by this subject were set at a level easily reached at the beginning of the self-monitoring + reinforcement phase. The goals did seem realistic however, when compared to her actual achievements during self-monitoring. A third job was performed during this phase (numbers, and letters). It too was a small packaging operation, but was more complex, with several more steps involved. She began producing at a level much higher than Base I, demonstrating generalized improvement in her overall performance. She agreed to have her goal increased periodically, to her actual performance level, and felt confident that she would be able to exceed it. The trend line reveals that she did so very effectively



Figure 4-4. Median Trend Lines of Performance Within Each Phase of the Study for Subject C.

throughout the period. The reinforcer she selected was to perform as an assistant to a work supervisor as soon as her production goal for the day was met. Noticable, and impressive improvement was made throughout this phase, and she thoroughly enjoyed the status of assistant supervisor. The Base III phase reflected another change in jobs where she was again performing the packaging operation (valve extensions) that was available during the latter part of Base II. There was a noticable drop in performance at the beginning of Base III but very good improvement during this phase, to a higher level than previously reached on this job.

Hypothesis one was supported as production rates during self-monitoring were maintained at a much higher level than Base I, in addition to the maintanence of an increasing trend.

Hypothesis two was also supported as performance during the self-monitoring + reinforcement phase started at a level similar to Base II, and markedly improved throughout this period.

In addition, hypothesis three was supported for this subject as her performance during Base III was more than double that of Base I. In this case, Base III production was also higher than, and showed a greater increase than the self-monitoring phase.

TREATMENT PHASE MEANS

Means and standard deviations of Subject A's performance throughout the study are recorded in Table 4-1.

A sizeable difference may be noted between Base I and the self-monitoring phase where speed was noticably increased from 53 to 76 percent of competitive rate. (Competitive rates were based on 50 words per minute, and 5 errors, as required by most entry level positions.) A similar difference exists for accuracy as she exceeded the competitive rate through this phase. During Base II her average words per minute continued to increase, but not as much as during the self-monitoring. Accuracy decreased from above competitive level to only 79%. During selfmonitoring + reinforcement her speed continued to improve, but accuracy continued to decline. During Base III speed again increased but more noticably than between the other phases, except for the difference between Base I, and selfmonitoring. Accuracy reversed its trend, and began to improve, but did not reach competitive level.

Table 4-1

Mean Performance and Standard Deviations Within Each Phase of the Study for Subject A.

		BASE I	SELF-M	BASE II	SELF-M + RFMT	BASE III
UDM	x	53.06	76.39	86.92	90.96	108.26
WPM	8	11.44	9.4	9.91	9.31	12.3
ERROR	x	83.89	110	79.23	64.62	73.91
	б	29.09	29.1	30.5	31.77	30.89

The mean performances of Subject B in each phase are contained in Table 4-2. A large difference between Base I, and self-monitoring was noticable, with little change in standard deviation. The mean for Base II was less than selfmonitoring, which was expected if treatment effects were experienced. The self-monitoring + reinforcement mean was somewhat higher than Base II, but does not reflect the level achieved during self-monitoring alone. The Base III phase produced the highest mean throughout, and indicated a noticably higher level of performance than Base I. The gradually decreasing standard deviation indicated this subject's performance also stabilized, and became more consistant during the study. This consistancy, at a higher level of production, indicated a noticable, generalized improvement in this subject's performance, indicating positive treatment effects.

Table 4-2

					•		
			BASE I	SELF-M	BASE II	SELF-M + RFMT	BASE III
PRODUCTION	к	x	33.84	49.53	44.17	46.49	52.1
	RATE IN	٦	9.72	9.11	7.52	5.54	4.26

Mean Performance and Standard Deviations Within Each Phase of the Study for Subject B.

Table 4-3 contains the mean performances of Subject C during each phase of the study. The mean for self-monitoring

was more than double that of Base I, showing a noticable increase in her production rate. The Base II mean is also increased but not as much as between Base I, and selfmonitoring. Continued increase is noted during the selfmonitoring + reinforcement phase, and it must be remembered that it was more difficult to improve as one approached 100% of competitive rate. The mean for Base III was depressed, partially due to the change in jobs. Recognition must be given to the fact that even though depressed, this mean was higher than Base I, and self-monitoring. The standard deviation increased with self-monitoring but then diminished, indicating more consistant productivity while at a higher rate. This was, again, an indication of generalized improvement, and the improvement was expected to be maintained over the long term rehabilitation plan.

Table 4-3

Mean Performance and Standard Deviations Within Each Phase of the Study for Subject C.

			BASE I	SELF-M	BASE II	SELF-M + RFMT	BASE III
DUCTION	E IN Z	x v	26.48 6.3	54.33 10.12	64.35 7.96	76.03 8.67	59.87 6.05
PRC	RAT						

TRENDS AND SIMILARITIES

A review of similarities and trends may be accomplished by examining the above data across subjects. All subjects showed improvement in their respective production rates during Base I, indicating general improvement in their performance without treatment intervention. All subjects demonstrated better performance during the self-monitoring phase, than in Base I. This was accomplished by either continued improvement or the maintanence of a production rate higher than that achieved in Base I. When self-monitoring was terminated, the performance of all subjects changed noticably. The rates dropped for Subjects A and B, and raised for Subject C. As previously mentioned, the rush throughout the workshop to finish the job influenced Subject C to work faster. All subjects individually requested to continue self-monitoring after the end of that phase. They were uniformly informed that they could be asked to resume those tasks at a later date.

Comparison of Base II data with Base I data indicated higher performance levels within the Base II phase, in all cases. All subjects showed an improvement in performance within the self-monitoring + reinforcement phase over Base II. This was again demonstrated by the maintenance of a level higher than the average in Base II and/or continued improvement. In addition, Subjects A and C performed better during the self-monitoring + reinforcement period than in the self-monitoring alone phase. Subjects

B and C demonstrated good improvement trends within the self-monitoring + reinforcement period. Base III performance by Subjects A and B was better than Base II, and as previously mentioned, a job change between the selfmonitoring + reinforcement and Base III periods for Subject C may have influenced that reduction in performance. However, in all cases, Base III performance far exceeded Base I. Subject B improved from approximately 1/3 of the competitive rate to over 1/2. Subjects A and C, however, more than doubled their respective Base I levels.

The analyses revealed that all hypotheses were supported to at least some degree by the subjects involved in this study. Thus, it is felt that the research has served its purpose in providing information of a pilot nature that substantiates the pursuit of this investigation. The discussion, limitations, implications, and recommendations for this pursuit will be presented in the final chapter.

CHAPTER FIVE

DISCUSSION

INTRODUCTION

This study was designed to test whether selfcontrol could be effectively incorporated into a work adjustment training program. Self-monitoring, self-determination of target behavior goals, and self-selection of reinforcers were incorporated into this project. The hypotheses were generally supported to varying degrees by the data collected. This chapter will discuss the results presented in the previous chapter, identify limitations, and present implications, and recommendations for future research.

DISCUSSION

As indicated in chapter 4, all subjects showed marked improvement during Base I. This reflects favorably on Peckham as it demonstrates progress within the existing program without this specific treatment intervention. In addition, it can be logically assumed that a practice effect was involved. The scope of this study did not include the methods nor controls to examine critically this effect, nor determine the actual cause of this increase. The noted improvement during baseline also made it difficult for treatment effects to increase the rate of progress.

All of the subjects demonstrated better performance during self-monitoring than in Base I. This performance was interpreted as a treatment effect due to the unobtrusive design of the study, and the strength of the intensive research design in controling internal confounding factors. This result tended to disagree with Katz, et. al. (1976) whose conclusion implicated self-monitoring to be ineffective unless associated with expectancies for change; and Nystedt (1976) who found self-monitoring effective only when associated with self-instruction. The finding supported Grace (1976), and Blumberg (1976), both of whom found selfmonitoring alone to be effective in changing target behaviors. Mahoney and Thoresen (1974) suggested a baseline to examine the effects of self-monitoring when used along with other specific treatment effects, as they indicated self-monitoring alone could be used effectively as a treatment strategy. This study tended to support that contention.

During the self-monitoring + reinforcement period all subjects performed generally better than Base II rates. This was noted in terms of continued progress, a greater increasing slope of the median trend line, and/or continued progress at a higher level. This was also supported by the means of the two relevant phases. With the exception of accuracy for Subject A, all means for self-monitoring + reinforcement were above those for the Base II period. This finding supplemented the conclusion of Tichenor (1977), Paulsen, et. al. (1977), and Rekers, and Varni (1977),

whose research demonstrated the effective combination of self-monitoring, and reinforcement to change target behaviors significantly. This result was also noteworthy as Base II performances of all subjects were higher than Base I, due to the influence of the self-monitoring.

For Subjects A, and C, performance in the selfmonitoring + reinforcement period was noticably better than during the self-monitoring alone phase. This agreed with the conclusion by Cochran (1976) that self-monitoring alone was less effective than when used in combination with other self-control procedures. The average performance of Subject B was not higher however, the trend of behavioral change was opposite. Improvement was noted in Subject B's self-monitoring + reinforcement phase, while a decline in performance was demonstrated in self-monitoring alone.

Base III performance exceeded that in Base I in all cases. Subject B demonstrated an average performance of approximately 34% of competitive rate during Base I, and improved to an average of over 52%. Except for the accuracy of Subject A, all other average performances of Subjects A, and C more than doubled in Base III over their respective Base I levels. In a similar study (Ortega, et. al., 1976) a subject doubled his production rate over baseline, within a workshop setting. These data tended to support, and replicate that finding.

The above results were considered treatment effects as other sources of variation, and confounding were controlled.

As Thoresen (1972) has noted, the intensive case-study design (N of 1 study) is a time-series design described, and supported by Campbell, and Stanley (1966). Such designs control for all internal sources of invalidity which might influence experimental data. In addition, the study was unobstrusively incorporated into an existing program so that the Hawthorne effect was also controlled.

Comparison of the median trend lines with the mean performance, and standard deviation of each phase of the study showed the data to be consistant from both perspectives. Each presented a slightly different picture, as the trend lines revealed improvement or decline in performance within each period, while the means provided a point of comparison. The standard deviations examined consistancy of performance, and reflected noticable improvement for Subjects B and C. Thus, the combination of methods presented a more complete picture of the data collected, and added strength to the logical analysis of the results.

The changes between one phase, and another were described as a result of treatment on each individual. These changes were not always in a favorable direction, but their presence demonstrated that the individuals were affected by the procedures. Noticeable changes occur.at the end of the self-monitoring phase. Subjects A and B decreased their performance indicating self-monitoring to have a definite, positive effect in their activity. Subject C increased, but it is suspected the rush in the workshop affected her performance.

Another noticeable change was between the selfmonitoring + reinforcement phase, and Base III. Subject A dramatically increased typing speed, but accuracy again dropped. At this point in time her decisions were final, she accepted her boys' desire to move in with their father, and it was finalized through the courts. Her training program was drawing to a close, she was working in the front offices at Peckham, and the five minute timings were not as consistantly taken. Thus, a decline in performance was noted, however, the lowest level of speed remained above the criterion level of 100%.

Subject B did not show a noticable change between self-monitoring + reinforcement, and Base III, but change existed for Subject C. This was addressed previously as it was suspected that a change in jobs was influential. A similar change was noted with the job change in the Base II period, for Subject C.

At this point the differences among the three subjects will be described. Subject A was a normal adult female with a physical disability that was not severe, nor noticeable. She was under some emotional stress, but demonstrated the potential to be successful in her newly chosen career. She was considered highly motivated by the instructor, and thought to be performing to capacity at all times. Self-monitoring alone resulted in a positive effect on her performance, and seemed more beneficial than the self-monitoring + reinforcement. In addition to the

emotional stress involved during the latter phase, having set goals that were not achieved appeared to have a negative affect on her. This was demonstrated by reporting her progress (and lack of accomplishment) to this researcher in a lowered tone of voice, poor eye contact, and looking down during the exchange.

Subject B was more severely handicapped by his mental disability, and was unable to live alone, and manage his own affairs. He lived in his brother's home, and was trying continuously to please this individual. The case manager reported the brothers' attitude to be negative toward the subject. He expressed the belief that the subject was incapable of learning, totally dependent, and had no potential for improvement. This subject demonstrated insecure, and dependent behaviors throughout the study by asking questions frequently, and persistantly checking to insure he was performing correctly. In addition, he counted his parts prior to assembly, usually more than once, and counted the completed product prior to recording his production, again more than once. He also requested that a staff person check his count to insure correctness. While he voiced positive feelings toward participation, the procedures were distracting to him. If he were able to utilize the procedures over a longer period of time, it is expected they would have become less distracting, and his production may have increased to an even higher level.

The disability of mental retardation also prevented Subject C from living independantly. Her history of residing in institutions, and other dependent living facilities restricted the development of her potentials. Thus, her performance was limited to what she was told to do, and met minimal expectations. While the program at Peckham was concerned with her production goals, there was no formal procedure for increasing her rates. Progress was being made during Base I, but this subject responded most favorably to the treatment. She seemed pleased with her increasing production during self-monitoring, and showed her recordings to staff members. The most noticable improvement occured in self-monitoring + reinforcement. Since she was exceeding her goals so easily, the possibility of increasing them was discussed. She readily agreed, and this was accomplished several times. The goals were increased to a level approximately 10% below her actual production for the preceeding two days. Toward the end of the phase, she became rather flippant, feeling confident that she could exceed any goal that was reasonably close to her actual production rate. This air of confidence continued as her job tasks changed, and she was pleased with her newly discovered abilities and potentials. It appeared as though she internalized this confidence as she was noticed to be more assertive, happy, and outgoing with staff members, and fellow workers. Thus, for this subject, the treatment uncovered hidden potentials, and reinforced their development. Many staff

members made unsolicited comments about the distinct improvement that occured over a shorter period of time than had been anticipated.

Throughout the study, ongoing communication was maintained with the staff. Daily exchanges were made with the work adjustment training, and typing personnel. Periodic check-in was accomplished with the administrative individuals and case managers. The improvements of the subjects involved were noted by these staff members, especially where Subject C was concerned. It naturally followed that these individuals would react favorably toward the subjects for positive steps toward their program goals. Thus, informal social reinforcement was allowed to develop naturally, and was provided normally, without intervention by the research design. Daniels, and Hansen (1976), and Moore (1974) conducted formal studies to examine the effects of social reinforcement, and visual feedback on work production, and found that combination to effectively increase work productivity for sheltered workshop clients. The social reinforcement received by these subjects then, although not controlled for in this study, was expected to have a generalized positive effect on them.

An exit interview was conducted by asking each subject to respond to a list of questions (see Appendix E). All made positive statements about the experience, and enjoyed their participation. Each expressed a noticed difference between the baseline periods, and treatment

periods. They became more aware of their actual performance, and recognized the increase in their production. Subject A felt frustrated by having goals established that she was unable to reach during the time alloted. Subjects B, and C liked having a goal as a target, and were pleased when it was reached. Subjects A, and C indicated they would rather record their own progress. Subject B also liked recording his progress but would rather have the staff count his production for him. The only recommendation for improving the recording were to allow larger spaces on the recording form. There were no suggestions for making the process more useful. Subject A expressed emotional factors surrounding her sons' desire to move to their father's home as affecting her involvement with the project. In addition, she was planning to move to the State of Texas to pursue employment in her new occupation, and felt this excitement may have distracted her from maximum performance, toward the end of her involvement. Subject B indicated difficulty adjusting to the demands, and constant changes in his brother's behavior. His performance was affected by having good, and bad days, especially earlier in the study. The holiday season caused some excitement for Subject C as a long bus trip alone, to visit her dad, took place over Thanksgiving.

LIMITATIONS

One of the limitations that developed in the study was the lack of specific behaviors available for treatment. All subjects needed to improve their production rates, but

other behaviors were not abundant within the work adjustment plans of these individuals. This was due primarily to the limited number of subjects involved. The lack of additional behaviors may have actually been beneficial, as Subjects B and C asked several questions, and had some difficulty understanding the procedures. If other target behaviors would have been involved, the treatment program may have been too complex for them to perform successfully within the limited time available.

Another area of concern was the self-determination of goals. Bandura, and Perloff (1967) pointed out that those in a self-reinforcement program established higher levels of performance for reward than those in an externallyreinforced program. Subjects A, and B set goals higher than they could reach within the time limits. The goals for Subject A remained the same throughout, while Subject B's goal was reduced to near his current production level. Subject B made improvements in the self-monitoring + reinforcement period, while Subject A did not. If Subject A's goals would have been reduced, perhaps she too would have improved. However, this is speculative, especially since significant emotional distress was present during this period. Subject C set appropriate goals compared to her self-monitoring production. However, her continued improvement during Base II increased beyond the self-monitoring level.

Another problem was the performance of more than one job by Subject C during the course of the study. This became necessary due to the irregular work flow, and the short term nature of the contract work available to the program. The situation required that the data be transformed into percentages of competitive rates so that performance on one job could be guantitativly described in similar terms to that of a different lob. This was necessary for the data collection on Subject C, as previously mentioned, and also for the sake of comparative analyses across subjects. Even though all jobs performed during this study were similar small packaging operations, differences in the rates of performance were noted for Subject C. This problem also caused difficulty in the collection of data for Subject B. Occasionally the workshop ran out of parts, and it was necessary for him to work on another job. Data was not collected on those days due to the gross differences in jobs performed.

Another limitation was the time distribution across the phases of the study. In some instances it took approximately three weeks to collect enough data for one five day phase. This was obviously not equivalent to collecting data for a five day phase over a five day period. Such things as history, maturation, and/or environmental changes may have had more opportunity to influence the individual and his/her performance, over the longer period of time.

The self-monitoring + reinforcement phase was scheduled for a ten day period while other phases were scheduled for five days. This was so designed as the selfmonitoring + reinforcement phase was considered the most complex. Thus, more time was allowed for the subjects to understand, and adjust to the procedures. The amount of increase was recorded over a longer period of time, and could thus be somewhat inflated. Allowing for this does not change the direction of change during this period, but would somewhat reduce the slope of the median trend line, and slightly affect the mean performance.

The amount of time involved by the staff, and this researcher, in conducting the study was also considered a limitation. In the early stages meetings were necessary to inform the staff of the nature of the study, to screen clients for use as potential subjects, and to train workshop supervisors in behavior observation based on point sampling. In addition, it was necessary for observations to be made during each time period of the day (before and after morning break, and before and after afternoon break). This was not always remembered due to daily involvements, and it became necessary for this researcher to be physically present at the workshop to coordinate, and initiate staff observations. Daily visits were made for approximately three months, that involved roughly five hours each.

Finally, as mentioned in chapter three, this intensive design study proposed to test the effects of

self-monitoring alone, and self-monitoring + reinforcement on selected subject behaviors. While such a design controls for sources to internal invalidity, the small number of subjects used does not allow for the results to be generalized to work adjustment training program populations as a whole.

IMPLICATIONS

The process of conducting this study has revealed at least a dozen issues that should be considered by those intending to replicate, or expand on this research. First, the design did not allow for an analysis of the practice effect. Thus, it was impossible to separate treatment effects from improvement due to repetition of the same task, over a period of time. It could be enlightening to extend the original baseline until stabilization of subject performance is achieved. Another approach might be the use of a control group, in an effort to determine the separate effects.

Another practice effect may have occured in staff observations. During the Base I phase of Subjects B, and C substantial increases were made in production. Part of these increases may have been due to improved accuracy, and more intense attention to the regular observations. Even though several practice observations were made on a pilot subject, the reality of the official study, and the incorporation of the observations into the daily activity of the staff may have contributed to the noted increases. The

practice observations on a pilot subject should be included as a part of the official study, yet excluded from the final analyses.

Second, a similar study conducted with a larger number of individuals with the same disability is suggested. More extensive information on the effects of the procedures on a specific disability group would result, in addition to allowing more generalization to that group population. It might also be helpful to conduct a study with those of similar personality types. This would identify the psychological characteristics of individuals most receptive to these procedures, and those most favorably assisted by self-control.

It may be advisable to include an identification of internal-external locus of control for the subjects to be involved in the future research. In an extensive review of the literature, Strickland (1978) supports the premise that individuals with an internal locus of control prefer treatment interventions that allow them freedom, and the ability to control their own programs. Those with an external locus of control seem more comfortable with a structured program that is more directed by others. This may be an important variable in selecting appropriate subjects for research, and examining the treatment effect differential.

Social reinforcement has been demonstrated to have a positive effect on target behaviors (Daniels, and Hansen, 1976; and Moore, 1974). Thirdly, a closer examination of

their effects may be in order to determine the most effective method of administering this type of reinforcement, and identify the staff members who are most influential in providing positive verbal feedback, and encouragement.

It remains necessary, as a fourth consideration, to examine whether these treatment methods would be effective with target behaviors other than skill development or production rate. Another study might identify specific behaviors to be used as targets for change, or admit into the investigation only those individuals with identified, and confirmed behaviors needing change, in addition to improving their production.

Fifth, more formal procedures need to be identified, and utilized concerning the self-determination of goals. A method for adjusting goals set too high or too low should be in place, as it is counterproductive to strive for unreachable goals, and not sufficiently motivating to reach goals that are unchallenging.

As mentioned in the Limitations section the single most troublesome issue was the lack of a single task for the subjects to perform for the duration of the study. It lengthened the time necessary to collect sufficient data, affected the results, and required data manipulation into common terms. As a sixth consideration, it is highly recommended that the research be conducted with only one job or task on which to base production rates. This action should produce more homogenous results.

Seventh, the time allotted to each phase of the study needs to be consistant. The length of time should be sufficient for comprehension, and incorporation into the subject's daily activities. This would be influenced by the characteristics of the subjects involved, as lower functioning individuals need more time for this adjustment.

Eighth, this study added to the body of research that supports self-control as a treatment technique, selfmonitoring as an effective method of changing behavior, and the specific combination of self-monitoring + reinforcement. Mahoney, and Mahoney (1976), and Wehman (1975) supported the use of self-control with the mentally retarded. Wehman et. al. (1978) demonstrated the effective use of self-determined, and self-administered reinforcers within a workshop setting. The results of this project extended this concept a step further toward the practical application of self-control into the rehabilitation plans of handicapped individuals in need of work adjustment training.

Ninth, the procedures were straightforward, and simple, and received well by the subjects involved. They were easily incorporated into the existing program, making them available for immediate application, and further research. The primary reason for referral of clients into the work adjustment training program was to increase productivity. The treatment promoted an accelerated increase in production, which in turn contributed to the amount, and frequency of verbal reinforcement, and provided successful

experiences contributing favorably to the individuals' self-worth. Although this was not specifically measured, it is commonly accepted that improved self-concept, and increased self-worth follow positive, and successful experiences that have been rewarded.

It should be recognized that Peckham Vocational Industries, Incorporated interacts regularly with the university. It serves as a classroom setting, providing laboratory experiences for graduate students. It provides a site for student practicum, and internship experiences. It also houses a university-based program that innovatively combines the expertise of engineering with the needs of rehabilitation clients. Thus, Peckham may be unique in its receptiveness to new ideas, original approaches, and finding a better way. As a tenth consideration, this should be considered by those planning to conduct further research, and selecting an appropriate site.

Finally, the treatment procedures utilized in this study appeared to have brought about improvements at a faster rate than normally expected. This could be a major step toward relieving the pressures on existing work adjustment programs to provide more indepth services to the more severely disabled (Sink and Field, 1978). If a client becomes more responsible for his/her rehabilitation program a corresponding reduction in staff time is necessary for interaction (Mahoney, and Mahoney, 1976; and Wehman, et. al., 1978). Thus, more clients could be served by the same number

of staff personnel without a reduction in the quality of services provided.

IMPACT

This research has served a useful purpose as a pilot study for the pursuit of further research by the Research and Training Center, University of Wisconsin-Stout.

It has influenced the program at Peckham Vocational Industries as they have incorporated the procedures into their existing program so that all clients in the work adjustment training program are participating in its benefits.

The study has influenced the staff at Peckham as two separate requests were made to include two specific clients. The staff felt these clients could benefit by the self-control techniques. The procedures were applied to these clients, although no formal data were collected.

Valuable assistance was provided to the three subjects involved. They enjoyed participating, and became more aware of their performance, and progress. Their lives, and rehabilitation programs have improved as a result of their assistance.

This dissertation project has been more than an academic exercise. It has done more than produce research for the sake of research. It has proven to be a valuable endeavor that has made significant contributions, and produced information that is directly useful in an applied setting. It has paved the way for additional research that will further refine the procedures, and make them more applicable to a greater variety of handicapped individuals.

APPENDICES

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APPENDIX A

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LETTER OF AGREEMENT

LETTER OF AGREEMENT

I, ______understand the general purposes of this study are to examine, and compare various methods of observing, and recording behaviors performed in the work adjustment training program.

I understand that any personal information gathered during this project is confidential, and will not be released to anyone without my expressed written consent.

I give Peckham permission to allow the project director to obtain diagnostic, and descriptive information from my personal file. I understand that in any report written about this study I will not be identified by name, and other identifying information will be changed to protect my identity.

I am participating on a voluntary basis, and understand that I may stop at any time without affecting my training program, and services received.

Signature

Date

Witness

APPENDIX B

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PROCEDURES

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ORIENTATION MEETING WITH POTENTIAL SUBJECT,

INCLUDING STAFF MEMBER

- We are conducting a study in the work adjustment training program.
- The study is examining different ways of observing, and recording behaviors.
- 3. If you agree to help with the study you will engage in the same activities as usual in the workshop.
- You will continue to pursue your individual work adjustment training program.
- 5. If you decide to participate, you will be asked to observe, and record certain behaviors periodically.
- 6. If you refuse to participate, it will in no way affect your program. Involvement is voluntary.
- If subject agrees, discuss behaviors that he/she would like to improve.
- 8. Also discuss reasons for their being in work adjustment.

9. Secure signature on letter of agreement.

STAFF ORIENTATION

I. SELF-CONTROL: Personally controlled behavior change where the target behavior, and the specific change to be made are self-suggested or self-prescribed, and clearly identified in objective, observable terms. The technique includes: Self-monitoring of target behaviors, and self-recording performance concerning those behaviors; self-determined goals for the target behaviors; and selfselected, and self-administered reinforcement for achieving those goals. Self-control utilized the humanistic (a la Carl Rogers) and mechanistic (behavioral) approach to problem solving, and behavior modification. It also places the individual in control of the rehabilitation process.

II. SELF-MONITORING: The observation, counting, recording, and totaling of target behavior performance. This process generally has some effect on those behaviors, but not in a systematic nor predictable fashion. In addition, behavior changes as a result of self-monitoring seem to be temporary in some cases. The effectiveness of this treatment appears to be improved when used in combination with other techniques, such as self-reinforcement. This combination seems to be most effective, leading to significant changes in behavior that have been maintained over time.

III. SELF-REINFORCEMENT: Providing oneself with a reward for achieving a pre-selected goal. Reinforcement enhances the likelihood of change in a target behavior. The use of self-directed reinforcement causes individuals to set higher goals for themselves in terms of an acceptable standard of behavior. Once the behavior is changed, the new behavior pattern seems to be maintained over longer a period of time

IV. OVERVIEW OF STUDY: Base I, self-monitoring, Base II, self-monitoring + reinforcement, Base III.

- A. Staff observations are maintained throughout all phases.
- B. Last day of Base I period: Ask client to observe, count, and record target behaviors on form.
 - 1. Review operational definition of target behavior.
 - 2. Demonstration of tally, and recording.
- C. Last day of Base II period: Ask client to establish daily goals for target behaviors.
 - Review information from self-monitoring period for guidance.
 - Present list of available reinforcers (See Appendix C).
 - 3. Ask individual to select a reinforcer, to be available upon achieving daily goal.
 - Insure that all staff members are aware of goals, and self-reinforcement to avoid interference.

- 5. If a client finds none of the available reinforcers rewarding, researcher, and staff may negotiate a suitable reinforcer for that individual.
- V. OBSERVATION TECHNIQUES
- A. Ten minute observations will be made four times per day.
- B. One observation will be made during each of the four periods of the day (before, and after morning break, and before, and after afternoon break).
- C. The specific time for the observation should be randomly selected from each period so that they are not made at exactly the same time everyday.
- D. The observation period should begin as the client reaches for the first part in the packaging process.
- E. Only those units <u>completed</u> within the ten minute period should be counted.
- F. Secondary target behaviors, specifically, and objectively described for each subject, will also be recorded during this ten minute observation period.
- G. Comments regarding the clients non-productive behavior during the time period should be recorded such as: Away from station to get parts; looking around while not working; talking to others; examining, organizing or arranging parts, etc.

VI. RESPONSIBILITY

- A. These observations will be made primarily by the staff member responsible for all behavioral observations on the workshop floor.
- B. If this individual is unable to make a scheduled observation, the subject's immediate work supervisor should serve as back-up to insure the observation is completed during the appropriate time period.

INSTRUCTION:

NAME

- 1. Record Time Period & Date.
- 2. Tally Behaviors.
- 3. Make Comments.

	OBS	DAY 1:	DAY 2:	DAY 3:	DAY 4:	DAY 5:
PRODUCTION RATE	1					
	2					
	3					
	4					
BEHAVIOR	1					
	2					
	3					
	4					



APPENDIX C

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LIST OF REINFORCERS

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LIST OF AVAILABLE REINFORCERS

UPON REACHING YOUR GOAL FOR THE DAY, YOU MAY:

- 1. Work on another job of your choice, in the workshop, or;
- 2. Have an extra break in the lunchroom, and a free coke, or;
- Be an assistant supervisor in the workshop, while earning minimum wage, or;
- 4. Go have a counseling session with your case manager, or;
- 5. Spend extra time with your studies, in the Adult Basic Education Classroom, or;
- 6. Go home early.
- 7. If you reach your goal every day in the week you may choose a longer lunch hour on friday.

APPENDIX D

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ORIGINAL DATA POINTS

AND GRAPHS



97

Typing Speed

A :

Subject

















Typing Speed Subject A:





Typing Speed

Subject A:









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SELF MONITORING DATA POINTS. Each data point represents one ing. Terry L. Vander-Molen, Investigator; October 1980 FIGURE D-7. SELF 5 minute timing.

Percentage of Competitive Rate





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Typing Accuracy

Subject A:



150





Percentage of Competitive Rate

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10 minute observation. Terry L. Vander-Molen, Investigator; October 1980 Each data point represents one FIGURE D-11. BASE I DATA POINTS.



Percentage of Competitive Rate



Each data point represents one L. Vander-Molen, Investigator; October 1980. SELF MONITORING DATA POINTS. Terry 10 minute observation. FIGURE D-12.









Investigator; October 1980 FIGURE D-15. BASE III DATA POINTS. Each data point represents one 10 minute observation. Terry L. Vander-Molen,



Subject C: Production Performance





Terry L. Vander-Molen, Investigator; October 1980. 10 minute observation. FIGURE D-17:



Terry L. Vander-Molen, Investigator; October 1980 Each data point represents one FIGURE D-18. BASE II DATA POINTS. 10 minute observation.











Production Performance

Subject C:

Percentage of Competitive Rate

EXIT INTERVIEW QUESTIONNAIRE

APPENDIX E

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POST TREATMENT INTERVIEW

- 1. Tell me about the experience. How did you feel about it?
- 2. What difference did you notice between when you were recording, and when you weren't?
- 3. What difference between recording the first time, and recording with goals, and reinforcements?
- 4. Would you rather record your progress or have the staff do it?
- 5. How could the recording be made easier?
- 6. How could the process be more useful to you?
- 7. What other things were going on in your life that may have affected your involvement in this project?

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