12-1986

An Investigation of the Effects of an Applied Behavior Management Program on Selected Measures of Worker Performance in a Financial Institution

Daniel A. Schroeder
Western Michigan University

Follow this and additional works at: http://scholarworks.wmich.edu/masters_theses
Part of the Industrial and Organizational Psychology Commons

Recommended Citation
http://scholarworks.wmich.edu/masters_theses/1343

This Masters Thesis-Open Access is brought to you for free and open access by the Graduate College at ScholarWorks at WMU. It has been accepted for inclusion in Master's Theses by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.
AN INVESTIGATION OF THE EFFECTS OF AN APPLIED BEHAVIOR MANAGEMENT PROGRAM ON SELECTED MEASURES OF WORKER PERFORMANCE IN A FINANCIAL INSTITUTION

by

Daniel A. Schroeder

A Thesis
Submitted to the Faculty of The Graduate College in partial fulfillment of the requirements for the Degree of Master of Arts Department of Psychology

Western Michigan University Kalamazoo, Michigan December 1986
AN INVESTIGATION OF THE EFFECTS OF AN APPLIED BEHAVIOR MANAGEMENT PROGRAM ON SELECTED MEASURES OF WORKER PERFORMANCE IN A FINANCIAL INSTITUTION

Daniel A. Schroeder, M.A.
Western Michigan University, 1986

Twenty CRT operators from an operations department at a financial institution were used to evaluate whether a behavior management program utilizing feedback and incentives would improve their work performance on real job tasks. In accordance with predictions, results revealed that the group performed significantly better \( (p \leq .05) \) under the behavior management program than they did during a baseline period. Behavior management was significantly effective for most, but not all, work areas. The program also produced some unexpected, but positive, side-effects.
ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to Dr. John Nangle for his guidance and assistance during the preparation of this thesis and throughout my graduate program. His advice and counsel were invaluable, and I thank him for his helpful suggestions. Also, I would like to acknowledge Dr. Jack Asher, and Dr. Dale Brethower, who participated in the review of this manuscript and were members of my thesis committee.

Finally, I wish to thank my parents for their support throughout my academic career. I would especially like to thank my father for his instruction and insight during my research for this thesis. This project would never have become a reality without his cooperation and I am grateful for all that he has taught me about effective management methods.

Daniel A. Schroeder
INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

University Microfilms International
300 N. Zeeb Road
Ann Arbor, MI 48106
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark \( \checkmark \).

1. Glossy photographs or pages ______
2. Colored illustrations, paper or print ______
3. Photographs with dark background ______
4. Illustrations are poor copy ______
5. Pages with black marks, not original copy ______
6. Print shows through as there is text on both sides of page ______
7. Indistinct, broken or small print on several pages \( \checkmark \)
8. Print exceeds margin requirements ______
9. Tightly bound copy with print lost in spine ______
10. Computer printout pages with indistinct print ______
11. Page(s) _______ lacking when material received, and not available from school or author.
12. Page(s) _______ seem to be missing in numbering only as text follows.
13. Two pages numbered ______. Text follows.
14. Curling and wrinkled pages ______
15. Dissertation contains pages with print at a slant, filmed as received ______
16. Other__________________________________________

______________________________________________
______________________________________________
______________________________________________

University
Microfilms
International

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................... ii
LIST OF TABLES .................................................. iv
LIST OF FIGURES ............................................... v

CHAPTER

I. INTRODUCTION .................................................. 1
   Motivation Theories ........................................ 1
   Goal Setting Theories ...................................... 3
   Management Style Theories ................................. 5
   Incentive Theories ......................................... 8
   Feedback Theories .......................................... 11
   Behavior Management Theories ............................. 15
   Financial Institution Interventions ....................... 18

II. METHOD .......................................................... 21
   Subjects ................................................. 21
   Apparatus ............................................... 21
   Procedure .............................................. 22

III. RESULTS ....................................................... 32

IV. DISCUSSION ................................................... 43

APPENDIX .......................................................... 53

BIBLIOGRAPHY ..................................................... 54
1. Definition of Target Behaviors Utilized in the Behavior Management Program ........................ 23
2. Frequency of Dispersion of Incentives ............... 30
LIST OF FIGURES

1. Daily Performance Worksheet .................. 28
2. Median and Range of Work Behavior Performance Scores ............................................ 35
3. Median and Range of Statement Rendering Performance Scores ........................................ 38
4. Median and Range of Phone Inquiry Service Performance Scores ...................................... 39
5. Median and Range of Account Status Information Entry Performance Scores ...................... 40
6. Median and Range of New Account Information Entry Performance Scores ....................... 42
CHAPTER I

INTRODUCTION

Achieving maximum worker productivity is a primary goal of most organizations. A wide range of intervention strategies have been utilized in order to obtain this goal. Within the field of management, a number of areas have been identified which may be important to improving worker performance. For instance, motivation, management style, feedback and incentives have been assumed to affect worker performance. Maximum performance simply means the point at which a worker is performing with the greatest proficiency that his or her ability allows for. A number of researchers have concluded that in order for a worker to achieve maximum performance a high degree of motivation must be present within the individual.

Motivation Theories

Maslow (1943) asserted that all individuals have basic sets of needs that they attempt to satisfy during their lives. According to Maslow, individuals will only be productive when their needs are met. The implications of this model are clear: In order to improve worker performance a personnel manager must provide an environment that fulfills the needs of individuals.
Herzberg (1966) proposed a two-factor theory in which he stated that individuals have two sets of needs to be met, motivator needs and hygiene needs. To Herzberg, hygiene needs are elements that provide individuals with a healthy environment. Motivator needs are growth needs within the framework of the two-factor theory. Motivator needs are met by things that are part of the work itself such as autonomy or recognition for the accomplishment of difficult tasks. To obtain maximum worker performance according to Herzberg, the personnel manager must ensure that a work environment exists that allows for individual growth.

Vroom (1964) constructed a theory of motivation based on three components: valence, instrumentality, and expectancy. According to Vroom, an individual is concerned with the probability that an action will lead to an outcome (expectancy), whether or not that outcome will produce additional outcomes (instrumentality), and the degree to which those outcomes are valued (valence). Thus, Vroom suggests that individuals are motivated when they perceive that they can gain something of value by engaging in some activity within the organizational setting.

McClelland (1955) developed a theory of motivation based primarily on the need for achievement. He proposed that various stimuli in the environment acquire
motivational properties through their association with success or failure in the past. For example, if a person was successful in the past in a certain setting, then in the future the person will be likely to engage in achieving activities in similar settings. Thus, personnel managers should pay attention to the situations in which success has occurred in the past in order to increase the motivation of their subordinates according to McClelland.

In summary, motivation theories suggest that an organization must concentrate on the needs of its employees in order to realize maximum productivity. However, individual needs are intangible and difficult to measure or define. As a result, researchers have investigated numerous other areas in an attempt to arrive at a more logical strategy to utilize when trying to improve worker performance.

Goal Setting Theories

Goal setting has been demonstrated in a number of studies to positively influence an individual's task performance (e.g., Garland, 1984; Ivancevich, 1976; Latham & Yukl, 1975; and Locke, Frederick, Lee & Bobko, 1984;). A goal can be defined as what a person is consciously attempting to accomplish (Latham & Yukl, 1975). According to goal setting theory, an individual's
conscious goal setting intentions regulate his or her action. Additionally, hard goals are assumed to lead to a higher level of performance than does an easy goal or no goal at all.

Ivancevich (1976) found that goal setting resulted in improved satisfaction and performance for a group of sales personnel. Individuals were either trained in participative goal setting or assigned a pre-set goal. They were then compared to a group of individuals who did not utilize goal setting. The individuals who did utilize goal setting demonstrated higher performance and reported greater satisfaction than did their counterparts who did not use goal setting.

Garland (1984) investigated the relationship between goal setting and task performance using undergraduate students as subjects. He found that goal setting increased "self-efficacy" which led to higher performance on a creativity task.

Locke et al. (1984) explored the effect of self-efficacy, goal and task strategies on task performance. They concluded that goal setting aided job performance, although self-efficacy was a more crucial variable.

In summary, the aforementioned studies suggest that goal setting must be incorporated into the work environment.
Management Style Theories

Although goal setting has been demonstrated to affect worker performance, another group of research advances the idea that management style can improve worker performance. Studies in this area have distinguished management behavior and decision making as key components in determining whether or not workers will be productive (e.g., Beck & Hillman, 1983; Blanchard & Johnson, 1982; Blanchard & Lorber, 1984; Gilbert, 1985; Hollingsworth & Hoyer, 1985; Komaki, 1986; and Luthans, Rosenkrantz & Hennessey, 1985). In general, the literature in this area suggest that the effective manager is someone with both leadership skills and supporting and helping behaviors.

Blanchard and Johnson (1982) introduced the concept of the "one minute manager." This manager is an efficient, multi-talented leader. He sets goals, listens, reprimands, praises and is task directed and results oriented. Blanchard and Johnson proposed that appropriate management behavior (one minute management) will result in higher productivity and greater satisfaction for everyone involved in the process. Blanchard and Lorber (1984) further defined effective management style. They proposed that effective managers set goals, praise and reprimand behaviors, and construct contingencies which make appropriate subordinate behavior
more likely.

Gilbert (1985) stated that sincere commitment by the manager toward his subordinates is the important ingredient in developing productive employees. He claims that excellence in task performance is enhanced when the personnel manager "communicates sincere interest in the worker" (p. 453). Thus, Gilbert, like Blanchard and Johnson, advocates supportive supervisory behavior as a means to improve worker performance.

Luthans, Rosenkrantz and Hennessey (1985) conducted an observational study in order to determine which activities successful managers actually perform. Their findings indicated that successful managers are political in nature, and it is this orientation, rather than technical skill, that determines their level of effectiveness. The generalizability of this finding is somewhat limited, however, due to the organizationally specific nature of some of the activities of the successful managers examined in the study.

Hollingsworth and Hoyer (1985) outlined a process whereby managers could determine target behaviors for their subordinates and then implement a strategy to reinforce these behaviors. They emphasized that reinforcement of the new behavior patterns is crucial. Reinforcement, in their opinion, is the crucial factor in developing new behaviors in subordinates.
Beck and Hillman (1983) proposed that positive management can, among other things, create higher productivity, increase employee satisfaction and result in higher morale. They allege that positive management focusing on the needs of individuals will result in increased productivity.

Komaki (1986) attempted to empirically determine what constitutes effective supervisory behavior. She compared effective supervisors with ineffective supervisors using the Operant Supervisory Taxonomy and Index. Her findings indicated that the major difference between effective and ineffective managers was that effective managers spent more time collecting performance data and more often used a work sample method of data collection. Komaki did not find sufficient evidence to support the notion that effective supervisors are more positive or supportive than are ineffective supervisors.

Cameron (1984) noted that effective managers are consistent and fair in disciplining their employees. He suggested that as with positive reinforcement, discipline should be immediate and behavior-specific.

According to researchers in the area of management style, then, supervisors who are positive and supportive of their subordinates, who reinforce subordinate behavior and who are consistent and sincere in their behavior will have a beneficial impact on the satisfaction and
performance of their subordinates. There is a wealth of general observational data available which support the idea that a positive, supportive management style improves worker performance. The studies mentioned above and this general observational data appear to support Blanchard and Johnson's claim that "people who feel good about themselves produce good results" (p. 19). Thus, it seems logical that management style can indeed influence subordinate performance.

Incentive Theories

A number of investigations have examined the correspondence between the use of incentives and task performance. For example, Nebeker and Neuberger (1985) have explored the relationship between a performance contingent reward system and worker productivity and have found that the use of incentives improved employee attitudes, satisfaction and productivity. Employees in a purchasing division of a naval shipyard served as subjects in their study, which indicated a positive relationship exists between incentives and subsequent employee performance.

Hundal (1969) examined the impact of an incentive system utilizing knowledge of performance for a group of industrial laborers. He found that as employees were given greater incentives their output tended to increase
as well. In general, his findings indicated that knowledge of performance increased motivation and improved productivity among the laborers.

Philips and Freedman (1985) studied the effects of contingent pay on work values of employees. They found that although individual differences may exist with respect to reactions to extrinsic incentives, in general, rewards increase motivation and satisfaction. They also assert that extrinsic incentives usually result in improved worker performance.

Orpen (1982) found that rewards contingent upon good performance improved worker productivity. He also found that when reward delivery was highly contingent upon good performance, satisfaction was increased. Orpen found, using assembly workers in a manufacturing corporation as subjects, that the use of incentives conveyed at a weekly meeting improved their performance on a routine checking operation.

Freedman (1985) discussed the use of performance based incentives in a chain of convenience stores. A commission system and an annual bonus were used as performance contingent incentives for a group of store managers, who served as subjects for this study. He found that performance and job satisfaction increased dramatically for the store managers and the company realized a net benefit of nearly $200,000 from the
Luthans, Paul and Taylor (1986) investigated the effect of contingent reinforcement on retail salesperson's performance. Their findings were that contingent reinforcement had a positive impact on the salesperson's functional and dysfunctional behaviors. The greatest behavior change was noted in area the of dysfunctional behavior. This finding indicated that the salespersons' inappropriate behavior diminished when a performance contingent reinforcement system was used.

Keller and Szilagyi (1978) examined leader behavior and its longitudinal relationship with subordinate expectancies and satisfaction. They found that punitive leader behavior led to a decrease in subordinate satisfaction. Additionally, they found that rewards were better than punishments in influencing subordinate behavior. They noted that a leader can improve subordinate behavior "by the administration of rewards that are contingent on performance" (p. 122). Thus, these findings support the notion that incentives/rewards can improve worker performance.

Huber (1985) investigated the effectiveness of goal setting and financial incentives as techniques to stimulate learning. She found that just as financial incentives have been demonstrated to motivate performance, they also are effective during learning.
Specifically, she found that financial incentives led to greater learning by trainees on a productivity task involving the proofreading of written materials.

Latham and Dossett (1978) explored the use of contingent monetary reward for a group of unionized employees. They found that contingent monetary reward led to increased productivity and generated increased employee satisfaction. Using employees of a northwestern company (beaver trappers), these researchers found that the productivity of the workers increased 63% through the use of performance contingent monetary rewards.

Feedback Theories

It would seem that when incentives are made contingent upon performance, worker productivity can be effectively improved. The evidence to support this contention is substantial, as noted in the discussion above. There are, however, additional interventions which have demonstrated a positive influence on worker performance. For example, feedback has been used in a number of investigations to improve worker performance (e.g., Catano, 1976; Chandler, 1977; Chhokar & Wallin, 1984; Emmert, 1978; Herold & Parsons, 1985; Ivancevich & McMahon, 1982; Jacoby, Mazursky, Troutman & Kuss, 1984; Newby & Robinson, 1983; Spreat, et al. 1985; and Stoerzinger, Johnston, Pisor & Monroe, 1978). Feedback...
has been used in organizational interventions based on the view that receiving feedback is a significant event in the life of an individual performing work. Through feedback an individual may receive information about the quantity and quality of his or her work and also information about the effectiveness of the strategies used in task performance.

Newby and Robinson (1983) investigated the effectiveness of feedback on the cashier precision of drugstore employees. A publicly posted performance chart in combination with contingent reinforcement was found to significantly increase work performance.

Stoerzinger et al. (1978) assessed the practicality of a feedback system in a salvage operation. The system utilized in this study consisted of direct measurement of the employees in conjunction with a graphic display of daily and weekly work performance. Their findings indicated that collecting productivity data and providing feedback with regard to this data led to improved worker performance. The ability of the supervisor to provide effective feedback was viewed as being critical to the success of the program.

Catano (1976) explored the relationship between feedback and subsequent worker performance for a group of helicopter technicians. He found that feedback in the form of information regarding system performance led to a
lower average error rate, which was indicative of an improvement in performance. This study used system-wide changes as the basis for feedback, not the more typical individual or group behavior. Still, the findings support the idea that feedback (individual, group or, in this case, system-wide) will improve worker performance.

Chandler (1977) found that feedback concerning the frequency of a supervisor's negative verbal behavior and feedback about his shift's productivity served to decrease negative comments by the supervisor and increase shift performance. Graphed feedback was utilized along with positive verbal reinforcement for improved performance by the supervisor, which resulted in a large decrease in the number of negative comments he made, and a sharp increase in the output of his department.

Emmert (1978) compared group performance feedback with individual performance feedback. He found, using manufacturing crew employees as subjects, that the use of feedback improved their performance on their daily tasks (making splices in metered bobbins). He found that group feedback produced a performance increase and that individualized feedback produced an even more drastic improvement.

Chhokar and Wallin (1984) studied the use of feedback in increasing occupational safety in a heat exchanger manufacturing and repair plant. They found
that providing feedback enhanced safety performance. However, the also found that providing feedback regarding safety performance once in two weeks was as good as providing it once a week, leading them to the conclusion that more feedback may not always mean better feedback. This finding did not detract from the usefulness of feedback, overall. As they note, "any increase in the frequency of feedback would appear to be beneficial" (p. 529). Thus, these researchers found that in an environment in which feedback is lacking, any change in the frequency of feedback is a positive occurrence.

Herold and Parsons (1985) attempted to define the amount and type of performance feedback available to individuals in work settings. They found that self-generated feedback is most often available and that this feedback, when positive, appears to be esteem-enhancing. They also found that supervisors are often reluctant to communicate negative information to their subordinates.

A similar study by Ivancevich and McMahon (1982) demonstrated the superiority of self-generated feedback over external feedback. They found that feedback appeared to be an attribute of the job rather than of the supervisor-subordinate relationship.

Finally, Jacoby et al. (1984) investigated the implications of ignoring feedback. They found that decision makers do not always choose to attend to
feedback when they are allowed to be selective in choosing the information they will and will not consider. Outcome feedback (feedback about how well an individual has performed) may not always have a positive impact according to these researchers. They suggest that the provision of relative feedback (feedback about how an individual performed relative to others) may be a more important variable.

In summary, the articles cited above suggest that the use of feedback often facilitates employee performance improvement. This is especially true in situations where feedback is lacking in the work environment.

Behavior Management Theories

Recently, contemporary managers have been becoming increasingly familiar with the use of behavior management as a means to improve worker performance. Behavior management addresses the issue of effective management behavior and often utilizes goal setting and performance contingent feedback and incentives as intervention strategies. The use of behavior management has been widespread. It has been used in education, football, swimming, basketball, mental health organizations and in industry (e.g., Frederiksen, 1982; Frederiksen & Lovett, 1980; Fulton & Malott, 1982; Komaki & Barnett, 1977;
Kreitner, 1978; Kreitner, Reif & Morris, 1977; McKenzie & Rushall, 1974; Petrock, 1978; Rogers, Brethower, Dillon, Malott & Sallwey, 1983; Roldier, 1978; Spreat et al., 1985; and Stephens, 1975;). It is likely that managers in many settings use some form of behavior management to improve the performance of their subordinates.

Despite the apparent widespread use of behavior management, there are a number of related issues, which, at present, seem controversial. For example, Komaki (1982) investigated why positive reinforcement is avoided in the work environment. She found that cultural factors were the major reason for the sporadic use of positive reinforcement. The prevalence of aversive control was also a major factor, according to Komaki. In a second research project, Greller (1980) evaluated feedback sources within the organization. He found that subordinates' views regarding the sources of feedback are dissimilar from the views held by supervisors. He suggested that this discrepancy may be the cause of subordinate resistance to change. Another investigator, Neugarten (1985) explored a number of strategies for productivity improvement. He asserted that one of the main obstacles to productivity improvement is employee resistance. He concluded that employees may be threatened by the term productivity and this may lead them to sabotage the improvement program. Finally, Rhea
(1985) discussed the implications of productivity improvement as the work place becomes increasingly automated. He stated that the most important item to productivity improvement is "the commitment of the organization to serving the needs of its staff" (pp. 446-447). Rhea suggested that productivity improvement can be achieved if the needs of the individual are properly understood and if strategies are implemented so that they might be met.

In summary, the aforementioned studies suggest that a behavior management program may be met with a good deal of resistance and, in fact, might be unsuccessful. However, there is a wealth of research available which seems to support the idea that a behavior management program can be effectively implemented. For instance, Petrock (1978) found that a behavior management program centering on improving the consequences for doing an appropriate task led to performance improvement for a group of warehouse workers. Fulton and Malott (1982) found that behavior management improved the completion of non-recurring tasks for a group of managers in a psychology program. They found that by utilizing a structured meeting system both supervisor and subordinate performance improved.

Kreitner, Reif and Morris (1977) found that the public posting of feedback information resulted in
improved performance for the mental health technicians who served as subjects. Rogers et al. (1982) found that the use of a point system and a weekly feedback session led to superior performance for a group of individuals in a Job Search program. The usefulness of behavior management is further supported by Frederiksen and Lovett (1980) who found that behavior management practitioners report an 89% level of effectiveness. Thus, there does seem to be sufficient data available to support the proposition that an organization might realize better worker performance if a behavior management program is implemented.

Financial Institution Interventions

The present study is an attempt to implement a behavior management program in an operations department at a midwestern financial institution. Previous research in such a setting has not been extensive. Russell (1984) found that an individual performance measurement program, which used goals and rewards to develop and reinforce achievement, led to an increase in worker performance in the service products department of a large bank. The ABA Banking Journal ("A Banker's Advice: Try Incentive Pay," 1985) suggested that the use of incentive pay might be a way to reduce common bank errors and improve productivity. A Colorado bank which had implemented a
performance contingent incentive pay system was discussed as evidence of the type of benefits that such a program can bring about. Cropley (1986) explored the use of positive management in creating a job environment which promotes maximum efficiency. He suggested that this could be accomplished if middle managers strive to be positive role models for their subordinates. Finally, in an unpublished article McAdams, McNally, and Dierks (1985) found that a productivity program utilizing rewards led to performance improvement in the areas of customer service and proof room operations at an Arkansas financial institution.

It appears as if the study of the use of behavior management in financial institutions is somewhat limited. Therefore, a need exists for research in this area.

The purpose of this "field" research project was to investigate the effects of behavior management on worker performance. The independent variable in this study was a behavior management program entailing systematic feedback and the use of performance contingent incentives. The dependent variable was job-related performance as measured for each of the five target areas.

Behavior management may aid individuals by providing them with feedback about the quality of their performance. Further, this type of program may increase
as individual's satisfaction which may lead to an improvement in performance. It was therefore hypothesized that a behavior management program would have a positive effect on worker performance. Specifically, it was hypothesized that a behavior management program would have a positive effect on worker behavior, statement rendering, phone inquiry service, account status information entry and new account information entry. The null hypothesis asserted that a behavior management program would not have a positive effect on worker performance.

Based upon the analysis of the literature, it was predicted that post-test performance of the subjects would be superior to their earlier baseline level performance. The exposure to the behavior management program would produce improvements in both worker performance and job satisfaction.
CHAPTER II

METHOD

Subjects

Twenty CRT (cathode ray tube) operators (17 females, 3 males) from an operations department at a midwest financial institution were used as subjects in this study. The subjects were between the ages of 20 and 30 years, all of whom had been employees of the financial institution for at least one year. Subjects were selected on a volunteer basis. From a population of 20 operators, all chose to participate. This can be explained by the fact that the CRT operators were asked to volunteer based on the premise that this study was a by-product of a recent restructuring of the operations department in which new systems of management would be implemented. Thus, this "business as usual" approach resulted in little employee resistance regarding collaboration with the researcher.

Apparatus

The site of the study was the CRT section in the operations department. This consisted of numerous work tables with several individual work stations at each.

21
Each workstation was equipped with an IBM 3278 CRT, with access to an IBM 3287 dot matrix printer. Each station had a Northern Telecom telecommunications headset in order to handle customer inquiries. Fluorescent lighting was used in the department and standard office chairs were used by the CRT operators at the work stations.

Procedure

The initial step in the program was to determine and define the target areas for the intervention. In consultation with the operations department vice-president several areas were considered, including the following: managing inappropriate behaviors, increasing the effectiveness of task performance, increasing the work output, increasing supportive behaviors, and increasing rule following behavior. After examining the job description for the CRT operator's position and comparing it with what actually took place on the job, the following areas were selected for inclusion in the behavior management program: appropriate worker behavior, statement rendering, phone inquiry service, account status information entry and new account information entry (see Appendix for job description). The target areas are defined in Table 1.

It was important to define the target areas in
observable, measurable terms. Some of the areas were harder to define than others. For example, account status information entry was easy to quantify (e.g., 100% accurate entry of information for a presently existing account). However, defining the target area of appropriate worker behavior was difficult. An examination of exactly what was desired in this area proved to be helpful. For this program, appropriate worker behavior was defined as: eliminating tardiness, eliminating unexcused absences, eliminating excessive breaks, keeping the work area neat, and maintaining a neat personal appearance.

Table 1
Target Areas

<table>
<thead>
<tr>
<th>Work Behaviors</th>
<th>Definition of Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate work behavior</td>
<td>No tardiness, no unexcused absences, no excessive breaks, work area clean, appearance neat.</td>
</tr>
<tr>
<td>Phone inquiry service</td>
<td>Provide accurate information to customers in a courteous manner in a timely fashion.</td>
</tr>
<tr>
<td>Statement rendering</td>
<td>Prepare customer statements accurately, matching enclosures to statements.</td>
</tr>
<tr>
<td>Account status information entry</td>
<td>Accurate entry of information on a presently existing account.</td>
</tr>
<tr>
<td>New account information entry</td>
<td>Accurate entry of recently opened, new account information.</td>
</tr>
</tbody>
</table>
After the target areas were defined it was decided that they should be positively reinforced. A concerted effort was made to direct most of the positive comments to individuals, rather than to the group. The supervisor was responsible for providing much of this feedback, although other management personnel such as the vice-president of operations also provided feedback. This program emphasized the importance of using positive verbal reinforcement immediately after the behavior was observed and when performance improvement was needed. Although positive reinforcement was emphasized, negative reinforcement was used in instances when a disciplinary problem occurred. As with positive reinforcement, the emphasis was on immediate, specific feedback. The intent was to praise or reprimand the individual's performance, not the individual themselves.

Next, the rate or frequency with which the various target behaviors were to occur was determined. In essence, this involved setting performance standards by which the individuals would be measured. These standards were determined after a one month baseline period. The various performance levels of the CRT operators were identified during the baseline period. These performance levels served as the initial standard by which the CRT operators were measured during the behavior management program. Percentages were used on the tasks or skill
areas (e.g., enter 100% of the new account information correctly). The percentages were determined by dividing the total work output which was done correctly by the total amount of work which was completed and multiplying by 100. For instance, if an individual prepared 100 statements in a day and 97 of those statements were error-free, then by dividing 100 into 97 and multiplying by 100, a score of 97% was derived. A frequency count was also utilized for the target areas (e.g., prepare 150 customer statements each day). The standards were intentionally changed after the worker had met the goals set for them. New goals were then established. These new goals were more difficult to achieve than the earlier goals, but they were changed in such a way so as to ensure the likelihood of future successful performance. In other words, they were increased in increments that the individuals would be likely to meet or surpass. This process enabled the behavior management program to be a positive type of procedure.

The one month baseline period also served as a training period for the supervisor. The supervisor was important to this program because it was this person who provided feedback, monitored employee performance and served as a positive role model for the CRT operators. During the trial period, several interview sessions were held by the researcher, in conjunction with the operations
department vice-president, to ensure that the supervisor was picking up the nuances of the program and understood the special responsibilities which the position was now accountable for.

By its very nature a financial institution emphasizes the importance of accuracy. Transposing a decimal point, for instance, can have far-reaching consequences. For this reason, the program de-emphasized the speed or rate with which the employees did their tasks. It was important to finish each day's work load, but it was more important to do the work accurately. Thus, methodical, accurate work was valued more than fast, slipshod work. The exception to this was in the area of customer inquiry service. In this area the goal was to provide the customer with the appropriate information in a timely fashion. Customers do not like to be kept waiting on the phone, so the program stressed the importance of dealing with each customer in a prompt, but not rushed, manner.

In monitoring the worker's performance the program utilized the standard daily production performance report for the operations department. With the exception of the work behavior area, the other target areas were based on job proficiency measures derived from predetermined standards. The work behavior area, however, was based solely on supervisory ratings made during distinct monitoring periods. For the other areas, an editor, a CRT
operator position which was rotated on a regular basis, was used to record the accuracy with which the various tasks were being performed. Each CRT operator had a user identification number which allowed the editor to keep track of the entries each CRT operator made. The CRT operators kept track of their own performance, as well. This information was especially useful for monitoring their performance in the area of phone inquiry service. By its very nature, phone inquiry service necessitated the use of self-recording of performance levels. The supervisor also observed and recorded performance data as per standard operating procedure. Agreement between the monitoring records of the supervisor, the editor, and the CRT operators in every instance exceeded 95%. Agreement was determined by the supervisor, who examined the editor's records and the CRT operator's records in order to detect any discrepancies.

The performance levels of each CRT operator were recorded on a worksheet located at the manager's desk. A weekly meeting made it possible for the CRT operators to view their recent performances as indicated by this chart. Thus, weekly feedback sessions specifically related to worker performance were utilized in addition to the more informal day-to-day feedback each CRT operator was provided. A facsimile of the performance worksheet which was utilized for recording the activities of the CRT operators is provided in Figure 1.
### Daily Performance Worksheet

**Supervisee**

**Supervisor**

<table>
<thead>
<tr>
<th>Date</th>
<th>Duties</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1. Daily Performance Worksheet.*
The program also utilized rewards that were given to employees who successfully met their goals or who performed far above what was normally expected. The stressful nature of the CRT position often results in what might be described as "burn-out." Thus, occasionally CRT operators who were performing well were given "surprise time-off." Under this procedure, a CRT operator might be given the afternoon off with pay at the discretion of the supervisor. Occasionally, unusual performances were remunerated with "spot-cash" rewards. For instance, one CRT operator uncovered a check-kiting scheme and was given a spot-cash reward of $100. Other more traditional incentives or contingencies were also used. For example, at the monthly departmental meetings employees who were performing well were publicly recognized in front of their peers. Also, these employees had their names placed in the bank newsletter to signify the excellence of their performance. Exceptional employees were also given gift certificates for use at local shopping centers. Table 2 presents the various incentives in this program and the frequency with which they were dispersed.
Table 2

Frequency of Dispersion of Incentives

<table>
<thead>
<tr>
<th>Type of Reward</th>
<th>Frequency of Dispersion During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time-off</td>
<td>14</td>
</tr>
<tr>
<td>Gift Certificates</td>
<td>9</td>
</tr>
<tr>
<td>Recognition at Departmental Meetings</td>
<td>4</td>
</tr>
<tr>
<td>Name in Bank Newsletter</td>
<td>4</td>
</tr>
<tr>
<td>Cash Rewards</td>
<td>2</td>
</tr>
</tbody>
</table>

In summary, the behavior management program included these steps: (1) determination of target areas to be used in the program, (2) definition of target areas in measurable terms, (3) specification of how much and/or how often the target behaviors were to be performed, (4) development of a monitoring system to monitor the work behaviors consistently, (5) determination of the contingencies to be used, and (6) changing the goals or the frequency and/or quality of rewards when greater performance was needed.

This program of feedback and incentives was utilized for a four month period following a one month baseline period. It was anticipated that as the employees became more familiar with the relationship between job
performance and feedback and incentives that their performance would improve. It seemed plausible that as the employees became used to the program the positive aspects of the behavior management plan would facilitate improvements in their work performance.

Four monthly measures were made in each of the five target areas and compared to the earlier recorded baseline period as a check to determine the significance of the gains in work performance associated with the behavior management program.
CHAPTER III

RESULTS

All individual performance measures were converted, using standard computational methods, into grouped data. Examination of the baseline level for each of the target areas shows that performance was generally high, but with sufficient room for improvement. This was especially true in the areas of work behavior and phone inquiry service.

Implementation of the behavior management program was followed by higher levels of performance in each of the target areas by the end of the first month of operation. At the end of the four month treatment period a probe was made to evaluate the relative effectiveness of the behavior management program. At this time, the overall performance mean score for each target area was compared to the corresponding baseline score.

Table 3 presents the mean scores and standard deviations for each of the target areas for the baseline period and for each month of the treatment period.

32

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
### Table 3

**Means and Standard Deviations of Work Performance Scores Expressed as Percentages**

<table>
<thead>
<tr>
<th>Area</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Work Behavior</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>91.63</td>
</tr>
<tr>
<td>SD</td>
<td>4.54</td>
</tr>
<tr>
<td>Statement Rendering</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>98.73</td>
</tr>
<tr>
<td>SD</td>
<td>2.85</td>
</tr>
<tr>
<td>Phone Inquiry Service</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>95.14</td>
</tr>
<tr>
<td>SD</td>
<td>1.65</td>
</tr>
<tr>
<td>Account Status Information</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>98.74</td>
</tr>
<tr>
<td>SD</td>
<td>.23</td>
</tr>
<tr>
<td>New Account Information</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>99.08</td>
</tr>
<tr>
<td>SD</td>
<td>2.70</td>
</tr>
</tbody>
</table>
For the work behavior category the CRT operators earned a mean score of 91.63 for the baseline period. The standard deviation was 4.54 at that time. The mean score indicated that, on the average, the employees were conducting themselves in an acceptable fashion 91.63 percent of the time over the baseline period. The relatively high standard deviation score associated with the mean score indicates that a good deal of variability existed among the individuals. In other words, there was a fairly large dispersion among the individual scores. Some employees were emitting appropriate behavior, whereas another group of individuals was not. This contrast resulted in the low overall mean score and the large standard deviation. At the conclusion of the intervention, performance was markedly improved. At the end of the intervention, the group mean score was 99.00, with a standard deviation of 1.83. Thus, not only did the performance score improve, the variability between individual scores decreased, which meant that individuals were behaving more appropriately as a whole. The dependent sample t-test conducted to determine the statistical significance of the improvement associated with the behavior management program indicated that the two performance levels were significantly different ($t$ (19) = 9.40, $p < .05$). A graph depicting overall performance levels for this target area is show in Figure 2.
Figure 2. Median and Range of Work Behavior Performance Scores for Baseline and Intervention Periods Expressed as Percentages.
When the work category of statement rendering was examined it was observed that baseline performance produced a mean score of 98.73. This indicated that as a group the CRT operators were performing extremely well in this area. The low standard deviation of 2.85 further supports this fact. Implementation of the behavior management program resulted in a mean score of 99.98. A standard deviation of 0.65 was associated with this high level of performance. Thus, performance improved and scores were more similar to one another following the intervention. The $t$-test indicated that a significant change had indeed occurred ($t (19) = 24.39, p < .05$). For this category, then, a 1.26% improvement in mean score resulted in a significant difference in performance. Performance for this area is shown in Figure 3. (see page 36)

In the area of phone inquiry service, the mean baseline score was 95.14, with a standard deviation of 1.65. This meant that approximately 5% of all customer inquiries were being mishandled; an unacceptably high figure. Implementation of the behavior management program was followed by a marked performance improvement. At the conclusion of the intervention phase the mean score had risen to 99.35. The standard deviation value at this time was 1.75. In general, the entire group had improved their performance in this area to the point
where less than 1% of the customer phone inquiries were being mishandled. The \( t \)-test indicated that a significant performance difference did exist between their baseline performance and later performance \( (t(19) = 14.58, p < .05) \). Figure 4 presents the performance levels associated with this work area. (see page 37)

The comparison of the mean performance scores for the area of account status information entry resulted in non-significant findings. As Table 2 indicates, the mean score for the baseline period was 98.74. The corresponding standard deviation was 0.23. These figures demonstrate the homogeneous nature of the performance of the CRT operators with respect to data entry. Variations between individuals were minimal: The CRT operators were virtually uniform in their high performance in this area. The behavior management intervention resulted in a slight increase in mean score, 98.97. The standard deviation also was slightly larger, 0.62, indicating that the variability between scores increased after the implementation of the program. Thus, implementation of the program did coincide with a marginal performance improvement. However, the \( t \)-test for the statistical significance of this difference in performance revealed that this improvement was not statistically significant \( (t(19) = 1.92, p > .05) \). The various performance levels for this category are displayed in Figure 5. (see page 38)
Figure 3: Median and Range of Statement Rendering Performance Scores for Baseline and Intervention Periods Expressed as Percentages.
Figure 4. Median and Range of Phone Inquiry Service Performance Scores for Baseline and Intervention Periods Expressed as Percentages.
Figure 5. Median and Range of Account Status Information Entry Performance Scores for Baseline and Intervention Periods Expressed as Percentages.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
The comparison of baseline and intervention performance scores in the area of new account information entry also yielded non-significant findings. The baseline performance probe produced a mean performance value of 99.08, with a standard deviation of 2.70. This exceptional mean score suggested that, as a group, the CRT operators were performing at near optimum performance, although the standard deviation value indicates that not everyone was meeting the standard with the same amount of success. The probe at the conclusion of the intervention revealed a mean score of 99.23. At this time, the standard deviation was 0.72. Thus, overall performance had not changed drastically during the treatment period. However, variability among individuals had decreased, as suggested by the lower standard deviation value at the conclusion of the intervention. This implies that the group was performing more similarly at a high level by the conclusion of the intervention than they were during the baseline period. The t-test indicated that the performance improvement was not statistically significant ($t (19) = 0.58, p > .05$). Figure 6 presents the performance levels associated with this category.

As the graph demonstrates, the performance was high throughout the intervention phase, although a performance decrement actually occurred during the third month of the intervention.
Figure 6. Median and Range of New Account Information Entry Performance Scores for Baseline and Intervention Periods Expressed as Percentages.
CHAPTER IV

DISCUSSION

The results of this study provide support for the hypothesis that a behavior management program would positively affect worker performance. This "field" research was undertaken in an attempt to demonstrate that a behavior management program can be implemented in a "real world" setting and still be effective. Although the simple baseline-treatment design used here does not allow a strong argument for causality, the obtained data indicate that the implementation of the behavior management program was followed by at least minimal performance improvements in each of the target areas.

It should be noted that management at the financial institution declined to pursue the suggestion of the researcher to induce a post-treatment period in which incentives and feedback were withdrawn. Management indicated that such a period would run counter to their objectives and philosophy. Thus, a reversal design was not able to be utilized in conjunction with the behavior management program.

The idea that behavior management can help to improve worker performance is certainly a valuable one; especially in today's competitive world where even minor
improvements can mean the difference between turning a profit and losing money. That difference in performance can possibly be realized if some sort of behavior management program is utilized.

This study demonstrated that a behavior management program utilizing feedback and incentives does indeed help workers to improve their performance, perhaps by allowing them to concentrate more fully on the intricacies of their tasks and to obtain greater reinforcement for properly executed tasks than would normally be possible.

However, a closer look at the data suggests that the behavior management program did not significantly improve worker performance in all of the areas sampled in this study. In the area of account status information entry, for instance, it appears that the group's performance improvement was almost imperceptible. By the same token, performance in the area of new account information entry remained essentially unchanged throughout the study. On the other hand, performance improvements in the areas of appropriate worker behavior, statement rendering and phone inquiry service were markedly impressive. This apparent dichotomy indicates that the positive effects of the behavior management program may be specific to certain areas and that behavior management may be relatively ineffective for highly technical tasks (e.g.,
data entry on a CRT).

The areas which showed the most change were primarily social in nature. For example, appropriate worker behavior involved presenting oneself in an appropriately professional manner in the work setting. Likewise, phone inquiry service consisted of answering customer's questions in a courteous, professional manner. Both of these areas assessed the appropriateness of the individual's behavior when interacting with other people. Statement rendering did not necessarily occur within an interpersonal context, as did the former categories. However, it did not involve the use of a CRT, which made it more alike the first two categories than dislike them. The last two categories involved the entry of data on a CRT. Both of these areas did not show the performance improvement that was apparent in the areas of work behavior, statement rendering and phone inquiry service. Perhaps some tasks involving the use of a computer are not suited for inclusion in behavior management programs.

This suggests that future research might well focus on why workers improved in some areas, and not in others. Research could focus on a behavior management program for individual target areas as a next step. A logical question to investigate might be: "Is there an inherent incompatibility which exists in computer-based tasks which precludes the positive effects of behavior
management?"

Another explanation of the results may be that the restructuring of the operations department resulted in an increase in worker motivation. Intrinsic motivational factors may have differentially interacted with the implementation of the behavior management program and this interaction might explain the data. A two-way design might be used to check the degree and type of relationship which exists between behavior management and motivational variables. The present situation suggests that behavior management was most effective with tasks not involving the use of a computer. These non-computer tasks may have been duties for which the employees were highly motivated. Computer-based tasks may have been tasks for which the subjects were not motivated. It is possible that the tedious nature of the data entry tasks resulted in a lowered motivation level for the CRT operators when compared with the other relatively provocative tasks which they performed.

Another implication with regard to motivation is that behavior management may be more effective for workers who are already highly motivated to achieve or to perform well on the job. Although this was not indicated by the data from the present study, it might be that the more competitive workers are, the more effective a behavior management program will be. Perhaps behavior
management is best suited for use with high achieving individuals or groups.

Another explanation of the results could be that the subjects had reached their maximum performance level with regard to the data entry tasks. In the areas of account status information entry and new account information entry, the subjects were performing at a very high level when the initial performance measure was made (baseline) and had, therefore, very little room for improvement (a "ceiling effect"). Perhaps in other target areas the subjects were farther away from their "ceilings" and could, therefore, produce greater gains in their performance.

A fourth possibility has to do with the "appropriateness" of the five target areas investigated in this study. The monotonous, repetitive nature of the CRT position made it a logical choice for inclusion in a behavior management program; something which would help to "make things more interesting." However, the technical aspects of the tasks the workers performed may have made the behavior management program an inappropriate intervention. When the workers were performing less technical tasks, they may have found the behavior management program to be beneficial. Perhaps behavior management is most appropriate for use with simple tasks which might include more overt, tangible
behaviors which are a prerequisite for a behavior management program.

Also, the data entry tasks may have been more demanding in their implicit expectations than the other tasks. For instance, in performing data entry there was no room for work which was not entirely accurate. Thus, the standards for performance were exceptionally high. Perhaps performance expectations in the other areas were less imposing, allowing for lower levels to be deemed acceptable.

Furthermore, the data entry tasks may have made providing feedback more difficult than for the other tasks. Feedback in this area was more likely to be self-generated, rather than provided by the supervisor. This inconsistency may have resulted in the lack of performance improvement which was observed in these areas.

Of the four explanations offered, two stand out as being most plausible: degree of motivation associated with the program, and "ceiling effects" on performance. In terms of the motivational aspects of this program, it was observed that the CRT operators voluntarily reported being more interested in their work after initiation of the program, than they had been prior to the study. In general, employee morale seemed to improve after the intervention began. Other positive side-effects of the program included an increase in supportive comments and
teamwork by the CRT operators. The "ceiling effect" explanation seems equally plausible. Baseline performance measurers indicated that the data entry tasks were being performed exceptionally well (both scores exceeded 99). It also seems logical that after four months that some improvements should have been made had the individuals not been performing at peak output. It follows, then, that significant improvements were observed in the other non-technical tasks, where room for improvement existed, while the data entry tasks remained relatively unchanged. This indicates that the data entry tasks were mediated by "ceilings" which prevented significant performance improvement.

The other explanations, appropriateness of target areas, and target area-specific effects of behavior management, are sound explanations, but are not as probable as the ones discussed above. A number of studies have reported that behavior management has been successfully employed with technical tasks. For instance, McAdams, McNally, and Dierks, (1985), in a setting similar to the present study, indicated that employee performance had improved in all areas of a bank following implementation of a productivity program. Thus, it appears that technical as well as non-technical tasks are viable options for inclusion in a behavior management program.
In general, the literature appears to be lacking in the area of the use of behavior management in organizations which utilize computers. This lack of research limits the degree to which the explanations concerning the nature of computer-based tasks and their effects on behavior management can be satisfactorily explained. Further research must be done to elucidate the importance of these possibilities.

In summary, the results of this study indicated that behavior management had a significantly positive impact on certain target areas and improved the performance of a group of CRT operators in all areas of their job. The results were consistent with the literature for performance improvement (e.g., Frederiksen & Lovett, 1980; Fulton & Malott, 1982; Kreitner, Reif, & Morris, 1977; Petrock, 1978; and Rogers et al., 1982).

For the most part, the results indicated that a behavior management program utilizing feedback and incentives had a positive effect on worker performance. The results for the computer-based tasks indicated a slight performance improvement associated with the behavior management program, although these results are somewhat suspect due to the minimal gain which was observed. The implications for future research direct attention to the importance of determining the degree to which behavior management interacts with motivational
variables. As was previously noted, a two-way design might be used to assess this relationship. The evidence from this study suggests that this relationship may play an important role in determining the success of a behavior management program. Additional investigation is also needed to explain why the behavior management program appeared to influence some behaviors to a greater extent than others. In order to examine this relationship further, a two-way design could be implemented to evaluate both main and interaction effects.

Investigating the effectiveness of a behavior management program as a possible strategy to enhance worker performance is a worthwhile undertaking. Behavior management, while a relatively new field, is continually receiving more attention from the business community. Industrial Psychology, as well as other related fields, needs to continue to study the ways in which behavior management can benefit the worker. The field of Industrial Psychology has long asserted that people who feel good about themselves produce good results. Finding a management paradigm which consistently produces these results has proved to be elusive, however. Perhaps a behavior management program can be a step in the right direction. This study appears to lend credence to that claim.
Appendix
Appendix

CRT Operator Job Description

POSITION TITLE: CRT Operator

GROUP: Operations

DEPARTMENT: Bookkeeping

REPORTS TO: Bookkeeping Supervisor

GENERAL FUNCTION: Responsible for entering, updating, and maintaining all account information in the bank's central information file on the CRT.

DUTIES AND RESPONSIBILITIES:

1. Enters all initial information pertaining to new accounts into the bank's central information file via CRT terminal.

2. Updates and maintains account status information on a daily basis.

3. Assists customers and bank employees with all phone inquiries concerning account numbers, change of address, and other related information.

4. Assists others in the bookkeeping department as directed.

5. Performs data entry for all bank computer systems.


McAdams III, H. H., McNally, K., & Dierks, W. (1985, September). Managing the work setting: The key to productivity. Colloquium conducted at Western Michigan University, Kalamazoo, MI.


