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EFFECTS OF PERFORMANCE FEEDBACK AND GOAL SETTING ON THE
PRODUCTIVITY AND SATISFACTION OF CLERICAL WORKERS

by

Leslie Ann Wilk

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology

Western Michigan University
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EFFECTS OF PERFORMANCE FEEDBACK AND GOAL SETTING ON THE PRODUCTIVITY AND SATISFACTION OF CLERICAL WORKERS

Leslie Ann Wilk, Ph. D.

Western Michigan University, 1990

The objective of the present study was to evaluate the effectiveness of a Performance Management (PM) intervention designed to improve the productivity and job satisfaction of clerical employees in a university admissions department. During the first phase of the intervention, supervisors applied a PM program which included an individualized daily goal setting and verbal feedback program. During phase two, graphic display of individual performance levels was added to the goals and verbal feedback program. Productivity was measured via daily self reports of tasks completed. Job satisfaction was assessed by taking measures prior to and following the intervention using the Work Environment Scale (Moos, 1981), a standardized assessment of subjective responses to working conditions. Results indicated that (a) individual performance levels improved over baseline with the addition of a daily goal setting and feedback procedure, (b) individual performance levels were highest when the graphic display of task completion was added, and (c) job satisfaction increased following implementation of the PM intervention.

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Western Michigan University, 1990

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Leslie Ann Wilk

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CHAPTER I

INTRODUCTION

While our nation faces the greatest decline in high school students in its history (Breneman, 1983), *Enrollment Management* teams seek to develop ways to maintain college and university enrollments. Changing demographics, shifting student career interests, intensifying competition and scarcity of college financial resources are only a few of the concerns currently plaguing enrollment managers (Kellaris & Kellaris, Jr., 1988; Knight & Johnson, 1981). Admissions managers have only recently begun to examine other factors that may affect a student's choice to attend at one institution over another, such as application turnaround time, the frequency and type of contact between institution and student and the usefulness of informational materials.

Most of the strategies used by admissions officers have emphasized marketing and public relations and have not targeted the performance of administrative or processing staff members. In this regard, Rogers (1989) has suggested that admissions team building strategies which target philosophy, hiring, training and performance can solve many pressing admissions problems. Yet, areas such as selection, training, and retention of admissions support staff have been considered as critical factors, only in recent years (Hartnagel, 1986; Snyder, 1989).

The effects of employee performance on application turnaround time has recently come under close scrutiny by admissions managers. Additionally, concerns about support staff absenteeism, overtime costs, and attrition have been the focus of

several support staff development programs (Hartnagel, 1986). Approaches taken to address these *motivational* problems include programs such as pep talks, changing computer systems, hiring part time help, information sharing, career development, providing employee recognition and instituting mandatory overtime for all employees during peak processing months. One study conducted at a large university employed quality circles to examine the effect on absenteeism, performance evaluation, perceptions of the organization climate, job satisfaction and perceived growth of clerical employees (Kay & Healy, 1987). They utilized a pre-post quasi-experimental design with matched control and treatment groups. The researchers reported that circle members scored higher than matched controls on quality of work performance, job satisfaction, satisfaction with supervisors, and organizational climate. Furthermore, they reported that the quality circles made a difference in employees' perception of their work at the university, but the impact on work performance was not as clear (Kay & Healy, 1987). These strategies have emphasized general performance factors, but have failed to offer specific productivity improvement techniques for use by admissions managers. Additional research on precise methods and management training in performance improvement strategies is urgently needed.

Perhaps the most promising source of technology on productivity improvement can be found in the literature on Performance Management (PM). Performance Management (PM) is defined as a "data-oriented approach to managing people at work" (Daniels & Rosen, 1984, p. 3), and has provided the field of Organizational Behavior Management with replicable methods for addressing a variety of performance problems. A review of ten years of publications in the Journal of Organizational Behavior Management presented a range of behavioral interventions used by businesses and organizations, many of which include PM strategies (Balcazar, Shupert, Daniels, Mawhinney, & Hopkins, 1989). The appeal of PM to

managers lies in its effectiveness and ease of acquisition for those untrained in behavior analysis (Fairbank & Prue, 1982; Sulzer-Azaroff & de Santamaria, 1980).

Many organizations, both in the public and private sector, have utilized PM as a means of increasing overall efficiency and profits. Public sector applications have been done in educational and mental health treatment systems including hospitals (Kopelman & Schneller, 1981; Stephens & Burroughs, 1978) and service agencies (Kreitner & Golab, 1978). Private sector applications have most often been carried out in manufacturing (Wikoff, Anderson & Crowell, 1982; Zohar & Fussfeld, 1981), retail (Carter, Hanson, Holmberg, & Melin, 1979; Luthans, Paul, & Taylor, 1985), and food service (Komaki, Blood, & Holder, 1980; McNees, Gilliam, Schnelle, & Risley, 1979). The most commonly used behavioral interventions include performance feedback alone (Wikoff et al., 1982) and goal setting plus performance feedback (Balcazar et al., 1989; Fellner & Sulzer-Azaroff, 1984; McCuddy & Griggs, 1984).

Within the research literature on feedback and goal setting, several studies have targeted behaviors that are especially important in admissions processing including the rate at which employees process paper work transactions and general clerical tasks (e.g., Frost, Hopkins, & Conrad, 1981). Newby and Robinson (1983) utilized a multi-component PM program to reduce cash inaccuracies, increase punctuality, and increase the daily checkout proficiency of clerical employees in a retail business setting. Their intervention consisted of public posting of performance feedback (individual and group, respectively), and contingent rewards in the form of movie tickets, sodas, etc. They found that the use of individual feedback alone and rewards plus individual feedback increased efficiency substantially in all three areas: cash inaccuracies, punctuality and daily check out proficiency.

Brand, Staelin, O'Brien, and Dickinson (1982) utilized a PM program with the Department of Housing and Urban Development that was successful at increasing the speed with which transactions were completed, decreasing errors and improving the efficiency of office staff in handling many routine tasks. Their PM program included a goal setting and performance feedback component. A similar intervention was utilized by Jones, Morris, & Barnard (1985) to increase the accuracy of civil commitment forms filed by mental health workers. Their intervention included an instruction and graphic feedback program which resulted in immediate and significant increases in correct completion of forms with results that were maintained across six months of follow-up data collection.

While the effectiveness of PM interventions in improving productivity in clerical jobs has been well documented in business, industry, and human service settings (Andrasik, 1989; Merwin, Thomason, & Sanford, 1989), applications of this technology in higher education settings are rare. In fact, only one published study of the use of PM in admissions is available. Wilk and Redmon (1990) demonstrated positive changes in the performance levels of clerical processing staff utilizing a daily adjusted goal setting and feedback procedure. Furthermore, employee absenteeism was reduced, as were overtime costs. In particular this study showed that performance feedback delivered by a supervisor combined with daily goals led to improved performance and job satisfaction. However, more work in this area must be done to show that PM techniques are practical and efficient methods in admissions management.

Research on feedback strategies have shown that the design of the feedback element in a PM program is critical to success and that feedback interventions vary along several important dimensions (Balcazar, Hopkins, & Suarez, 1985-86). Prue and Fairbank (1981) identified the following five important parameters of feedback:

(1) recipients, (2) mechanism, (3) content, (4) timing and (5) source. In the present study emphasis was placed on mechanism and source.

Feedback Mechanism

The four basic feedback mechanisms are as follows: (1) verbal, (2) written, (3) mechanical, and (4) self-recorded. *Verbal feedback* is the most commonly used form of feedback and refers to a condition where an individual orally communicates information about another individual's performance. Written feedback includes information on past performance which may come in a variety of forms: written personal communications, newsletters, memos, and graphs. Written feedback can provide a product which allows a longitudinal assessment of the performance (Prue & Fairbank, 1981). Furthermore, written feedback or graphic feedback may provide information about the extent of errors being made so that corrective action can be initiated (Ivancevich & McMahon, 1982). Particularly with graphic feedback, the information content is greater since comparisons with earlier performance levels are possible. According to the review by Balcazar et al. (1985-86), the feedback interventions which utilized graphic information were much more consistently effective than the other three forms.

Self-recorded feedback is a mechanism of delivering feedback whereby employees generate their own feedback through their self-recorded performance (Komaki et al., 1980; Wilk & Redmon, 1990). This method provides a mechanism by which the employees may become involved in the day to day data keeping of a program. Furthermore, if employees are self-recording, they may, at all times, monitor their own performance and budget time accordingly. Particularly for repetitious, process work, self-recording provides an excellent component to be used with other forms of performance feedback.

Source of Feedback

The source of employee performance feedback can range from subordinates (Hegarty, 1974) to supervisors (Chandler, 1977), and include co-workers (Greller, 1980) and outside consultants (Komaki, Barwick, & Scott, 1978). There has been only one well-controlled study comparing the effects on performance of two different feedback sources. Fox and Sulzer-Azaroff (1989) conducted a study that assessed the effectiveness of supervisory and non-supervisory sources in promoting percentages of assigned fire evacuation training trials conducted by direct care staff at a residential facility for mentally retarded persons. Their results showed no differential effects in performance levels across the two types.

In a review of performance feedback interventions Balcazar et al. (1985-86) reported that feedback delivered by supervisors has been more frequently associated with consistent performance improvements than other sources. Furthermore they reported that graphs were the most frequently used feedback mechanism and also had the highest proportion of consistent feedback effects. However, no research has been done which directly compares the effects of different feedback mechanisms.

The purposes of the present study were to (a) add to the research literature on feedback effectiveness by studying the effects of different feedback mechanisms on clerical task completion rate, and (b) extend the work of Wilk and Redmon (1990) by addressing problems in admissions management which promise to have long-term implications for universities and other organizations that rely heavily on clerical processing. Specifically, this study compared the effects on performance of goal setting plus verbal feedback delivered by a supervisor, and goal setting plus verbal feedback applied in combination with a graphic display of performance trends. The

present study also examined employee job satisfaction prior to and following the introduction of the PM program.

CHAPTER II

METHODOLOGY

Sixteen clerical employees, in the undergraduate admissions department of a large midwestern university, served as subjects. All were full time employees of the university; their duration of employment ranged from 1.2 years to 26.5 years. Six of the employees worked in the mailroom; four of the employees worked as credit evaluators; three were data entry clerks; and three worked primarily with filing tasks. One supervisor oversaw all activities within the mailroom, and another supervisor oversaw the remaining three sections. The employees were made aware of the general purpose of the study at the outset and informed consent for participation was obtained from all subjects prior to the study. (See Appendix A for a copy of the letter of approval from the Western Michigan University Human Subjects Institutional Review Board)

Setting

There were three separate physical work sites for the four sections. The four credit evaluators worked together in one large room, where each had her own desk, computer terminal and telephone. The three data entry employees and the three filing employees worked in a separate large room, where each had her own personal workstation. The filing employees also used electronic filers.

The mailroom was situated in two separate adjoining rooms where the supervisor and her six employees were located. All mailroom employees had their

own work stations and mailroom supplies and file cabinets were located within a common area.

Entry and Relationship Building

The program was implemented by a researcher who served as an outside consultant. Prior to the implementation of the intervention described later in this chapter, several steps were taken to establish positive working relationships with supervisors and staff.

Employee section meetings were held in which the researcher asked the employees to provide their assessment of problems existing in their immediate work environment. This was done using a nominal group technique in which employees were asked to, first, brainstorm, and second, to rank order suggestions generated by the group in order of importance. They retained anonymity by writing their unidentified responses on a card and turning them in to the researcher who in turn posted them on a blackboard. In doing this, employees were asked to respond to such questions as: "What do you see as the (two) greatest obstacles/problems that negatively impact you in your job?" and "What changes could be made to things/people in your admissions work environment that would diminish or eliminate those obstacles/problems?" The information gained from the group meetings was used as a basis for identifying change targets later in the program.

Dependent Variables

The number of routine clerical tasks completed and recorded on a performance data sheet served as the dependent variable. A sample recording sheet is displayed in Figure 1. Regular duties performed by the employees were categorized along the top of each data sheet. Completion of any one of these activities constituted one task

PM CARD FOR FILING

Employee #:	DATE:																			
PHONE CALLS																				
CONSULTATIONS																				
Students	Staff																			
Social Security Number																				
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				

TOTAL # OF TASKS COMPLETED FOR TODAY:

Figure 1. Sample Data Sheet Used by Sections.

completed. The subjects indicated having completed a task by placing a check mark in the appropriate column. For each task, the student (i.e. the client) social security number were recorded so that the file could be checked to verify the report.

The tasks recorded varied from section to section and included the following: coding applications, entering applications, updating applications, mathematically computing grade point averages, finalizing credit evaluations, processing fees, sorting/opening/entering mail, transcribing, distributing mail, and updating files. The tasks for the various employees are included in Appendix B. In addition to raw productivity measures, performance efficiency was calculated using number of tasks completed divided by the number of person hours required to complete the tasks.

Employee satisfaction was measured using the Work Environment Scale (WES). The WES is a 90 question true/false battery which is comprised of ten subscales that measure the quality of the social and physical environments of a work setting (Moos, 1981). The ten WES subscales assess three main areas: Relationship dimensions, Personal Growth dimensions, and System Maintenance and System Change dimensions.

The Relationship dimensions are measured by Involvement, Peer Cohesion, and Supervisor Support subscales. These subscales assess the extent to which employees are concerned about and committed to their jobs; the extent to which employees are friendly to and supportive of one another, and the extent to which management is supportive of employees and encourages employees to be supportive of one another.

The Personal Growth, or goal orientation, dimensions are measured by Autonomy, Task Orientation, and Work Pressure subscales. These subscales assess the extent to which employees are encouraged to be self-sufficient and to make their own decisions; the degree of emphasis on good planning, efficiency and getting the

job done; and the degree to which the press of work and time urgency dominate the job milieu.

The System Maintenance and System Change dimensions are measured by Clarity, Control, Innovation, and Physical Comfort subscales. These subscales assess the extent to which employees know what to expect in their daily routines and how explicitly rules and policies are communicated; the extent to which management uses emphasis on variety, change, and new approaches; and the extent to which the physical surroundings contribute to a pleasant work environment.

The norms for the WES were determined from data collected on over 3000 employees in representative general work groups. Scoring of the WES was done using a template, after which raw scores were converted into standard scores and displayed graphically.

Reliability of Self-Recorded Data

Twenty percent of all tasks reported as having been completed were selected randomly and verified each week. This was done by checking the student information in computer files to determine if the data reported by employees agreed with physical records. Percent agreement was calculated using the following formula:

$$\frac{\text{Number of Agreements}}{\text{Number of Agreements} + \text{Disagreements}} * 100$$

where an agreement was defined as a case where data reported and physical file reports matched. Mean agreement on validity checks was 93.1% (range 86-99%) for filing, 98.2% (range 96-100%) for mailroom, 91.6% (range 88-97%) for credit evaluators, and 93.4% (range 90-100%) for data entry (See Table 1).

Table 1

Percent Agreement Between Tasks Reported as Complete and Products
(Reported Accuracy) and Between Supervisor Feedback Scheduled and Completed
(Supervisor Feedback Delivery)

Tasks Monitored by Section	Percent Agreement	
	Reported Accuracy	Supervisor Fdbk. Delivery
Filing	93.1%	97.0%
New applications Filing (Applications, papers, interview sheets)		
Mailroom	98.2%	97.5%
Entering requests Transcribing requests Sorting		
Credit Evaluators	91.6%	96.4%
Coding GPA Computing Application Entered Updates New Transfers Finalizing Evaluation		
Data Entry	93.4%	98.8%
Application loaded GPA Computation Review of new information Supplements Updates		

Independent Variables

Verbal Feedback and Goal Setting

A daily-adjusted goal setting and feedback procedure utilized by the supervisors served as the independent variable in the first intervention phase. The supervisor met with each employee during the first hour of work each day and

described the day's goal. A goal was defined as the performance criterion that the employee was to attain for that particular day. The goals were highly specific in that they included a precise number of tasks to be accomplished for that particular work day. For example, a goal might be to enter application information on 55 students and update the records on 15 files.

The supervisor used the following criteria when determining an employee's goal: (a) the past performance of the employee (e.g., selecting a goal that was between 10 tasks above and below the employee's highest number completed), and (b) the needs of the office. If, for example, an employee had completed an average of 62 tasks per day with a range of 45-78, the goal selected for that employee was a specific number between 68 and 88. Once an employee met or exceeded his/her daily goal, the following day's goal was to maintain the current level of performance, rather than imposing a higher goal level. The supervisor was careful not to punish meeting the goal by imposing a higher goal for the following day. However, if performance was maintained for two consecutive days, then a new, higher goal was set for the next work day.

In determining the mixture of tasks (e.g., applications loaded, records updated, etc.) within the day's goal, the supervisor considered the needs and seasonal demands of the office. This allowed for maximum flexibility and redirection of task accomplishment. Goals were stated only for behaviors that the supervisor considered important for a particular day and were recorded on a goal sheet in written form by the supervisor (Figure 2).

Verbal feedback describing employee performance was also delivered by the supervisor a minimum of two times during each work day (see Wilk & Redmon, 1990). Feedback identified current performance as consistent or inconsistent with the day's goal and included (a) praise if the employee was working on the goal behaviors

PERFORMANCE MANAGEMENT GOALS

Name of Employee: _____

Week Beginning: _____ Ending: _____

Date: _____
GOAL: _____

Date: _____
GOAL: _____

Date: _____
GOAL: _____

Date: _____
GOAL: _____

Date: _____
GOAL: _____

Figure 2. Sample Goal Sheet Used by Sections.

or (b) a prompt to focus on the goal behaviors, respectively. Corrective feedback included comments such as "While typing labels is an important job, right now it isn't our greatest priority. We really need to get these new applications loaded onto the database first, before worrying about the labels. I appreciate your hard work though; let's just make sure that it's productive use of time."

Verification of the Feedback Delivery

Percent agreement on supervisor feedback was 97% (range 94-100%) for filing, 97.5% (range 93-100%) for mailroom, 96.4% (range 91-100%) for credit evaluators, and 98.8% (range 95-100%) for data entry (See Table 1).

Graphic Feedback and Goal Setting

During the second intervention phase, individualized, graphic feedback was added to the goal setting and feedback intervention each morning. This consisted of the supervisor showing each employee a line graph of his/her daily overall productivity during the feedback and goal setting episode. While showing the employee his/her graph, the supervisors commented on any patterns or trends noted, in addition to pointing out and encouraging positive performance changes. All other conditions remained the same as in Phase I intervention.

The researcher verified the supervisor's intervention with the employees by examining (a) the goal sheet that the supervisor filled out and (b) the performance data sheets submitted by employees. Each employee was required to initial the goal sheet next to the written goal after it had been communicated by the supervisor each morning. After feedback was given to the employee by the supervisor during the work day, the employee was responsible for placing a check mark on their personal

performance data sheet beside the first entry completed following the supervisor's interaction.

Any instance of disagreement as indicated by (a) the absence of initials on the goal sheet, or (b) the absence of two check marks on the employee's data sheet was brought to the attention of the supervisor and counted as a "disagreement." The researcher met formally with the supervisors twice weekly during the first three months of the intervention, and once per week during the remainder of the program. It was during this time that any "disagreements" were brought to the attention of the supervisor. Percent agreement between planned supervisor contact and the number of contacts was calculated to indicate the degree of success in implementing the system.

Experimental Design and Procedures

A multiple baseline design across sections (with reversal for one subject) was used. The conditions of self-recording baseline (A), verbal feedback plus goal setting (B), and graphic feedback plus goal setting (C) were applied in a staggered fashion across four sections including credit evaluators, filing, mailroom and data entry.

Supervisor training in PM began six weeks prior to the beginning of the baseline phase. Specifically, this included one three-hour group training session per week, plus a one-hour individualized instructional session per week. All training materials were designed by the researcher, and all training was conducted by the researcher alone. Sections of a text on performance management by Daniels and Rosen (1984) were re-written with examples and practice exercises specific to admissions processing. During the group sessions, supervisors were given reading assignments on topics including pinpointing, measurement, operant analysis, rewarding/punishing behavior, setting goals, graphing responses and interpreting

graphic data. Written and verbal exercises were also conducted during the group training sessions.

Individual sessions included question and answer periods specific to the reading assignments and written exercises. Case studies written specifically for each area of admissions management also were used to apply principles learned from the readings. Supervisors were asked to problem solve and react to vignettes with proposed solutions using PM techniques. Practice exercises on goal setting, providing praise and corrective feedback were conducted using sample data sheets and graphs constructed by the researcher. Supervisors were required to demonstrate competence in plotting performance data on a graph and reading and interpreting graphic data.

Baseline

1. At the beginning of the baseline phase, the experimenter administered the Work Environment Scale ([WES], Moos, 1981) to all employees. The employees were asked to respond to each of the 90 items on the answer sheet provided by recording either "true" or "false." The WES was administered privately and confidentiality of the data was assured.

2. On the first day of the baseline phase, each supervisor held a section meeting with her group. During this meeting, data sheets were distributed and self-recording procedures were explained. Employees were asked to begin self-recording, and turn in their sheets at the end of each work day (5 p.m.). They began a new data sheet each work day. (See Figure 1.)

3. At the end of each work day, employees were instructed to place their data sheets in a box marked "PM BOX" that was attached to the front of the supervisor's desk. Total tasks completed by each employee were counted and graphed by the

supervisor on an individual basis. The graphs were **not** shared with the employees at this time; they were used by the researcher and supervisors as part of supervisor training in PM and goal setting. These graphs presented an overall output measure of the total number of tasks completed per day. No goal setting or feedback was used during the baseline period.

Verbal Feedback and Goal Setting

1. The supervisors provided each employee with an explanation of the goal setting procedure at the beginning of the day that the intervention with his/her group began. The verbal explanations were presented prior to communicating the employee's goal for the day and consisted of a description of how the goals were to be determined and when and how the goals would be communicated. The employees were told that PM provided a means of helping them to identify high priority tasks so that additional work backlogs would not develop.

2. During the first hour of work each morning the supervisors reviewed the data and determined goals for each employee for that day. The goal sheet (Figure 2) was used to record goals and to provide a written record of goal content. As described previously, goals were individualized and highly specific.

3. Supervisors communicated the goals and provided feedback to each employee on an individual basis. This feedback consisted of praise when the previous day's goal had been met or almost met (i.e., within 90-100% competence), or encouragement and instruction when the previous day's goal had not been met. This process required approximately 5 minutes per employee and supervisors were instructed to provide explanations for goals selected if employees asked.

4. A minimum of twice daily (once in the morning and once in the afternoon), the supervisor interacted with each employee and provided performance feedback. If

an employee was behaving in a manner consistent with the goal that was set for that day when checked, praise was delivered. If an employee was off-task or behaving in a way that was inconsistent with the goal, corrective feedback was given by redirecting him/her to tasks that were specified in the goal statement.

Graphic Feedback and Goal Setting

1. Supervisors showed each employee his/her individual performance in graphic form. This was done during the morning goal setting and feedback session only. The supervisors explained to the employees how to interpret the graphic information, and responded to questions anytime they were asked. The graphs were 8 1/2 x 11 sheets of graph paper that were kept in a binder with a separate section for each employee. The graphs included information on the number of total task completions (along the vertical axis) and the dates of the work weeks (along the horizontal axis). Graphs were not shown to employees during the feedback delivered at other times during the day.

2. If the employee's performance indicated a steady positive or increasing positive trend, praise was delivered. If the performance showed a negative change, the supervisor prompted the employee to indicate unusual difficulties s/he may have faced, or barriers to effective performance.

Withdrawal of Graphic Feedback

During this phase, one employee was no longer shown performance graphs during the morning goal setting and feedback meeting. Rather she continued to receive daily adjusted goals and feedback without graphic feedback. Originally, a withdrawal of graphic feedback was planned for one employee per section.

However, once a reversal was demonstrated with the first employee, the organization was unwilling to alter the intervention for any additional employees.

Follow-up

Six months following the onset of the intervention, the Work Environment Scale (Moos, 1981) was re-administered to assess change in satisfaction relative to pre-intervention levels. Employee responses expressed in terms of standard scores on each of the subscales at pre-intervention were compared with scores at post-treatment to assess these effects. Because raw scores were transformed to standard scores, some indication of satisfaction relative to reports by employees in other work environments can be obtained from these data. Thus, deviation from "expected" or normal range was assessed for each subscale prior to and following the intervention.

CHAPTER III

RESULTS

Employee Performance

Performance was measured on a daily basis for a total of 150 work days over a 30-week period. Figure 3 shows group performance data across the four different sections. Figures 4 - 7 show the number of tasks accomplished per week by selected individual employees from the four sections. These figures provide samples of individual response patterns to the intervention. Individual performance patterns resembled group patterns. Performance improvements relative to baseline were consistently demonstrated with the addition of the daily goal setting and feedback program. Performance was enhanced further when graphic feedback was added.

For the filing section, performance averaged 983 tasks per week during baseline (range 959 to 1,021), 1,703 during the goal setting and feedback condition, (range 967 to 2,749) and 4,188 with the addition of graphic performance feedback (range 3,081 to 4,959). A reversal was demonstrated with Filing Employee #3 when the graphic feedback was removed and performance decreased to the mean level achieved during the goal setting and verbal feedback intervention (See Figure 7).

The mailroom results were similar to those of the filing section. At Week 6 after the introduction of the daily goal setting and feedback program, mean performance levels for the group increased from 5,077 tasks per week (range 3,202 to 6,007) to 8,822 (range 7,477 to 10,760). Again, with the addition of the graphic feedback at

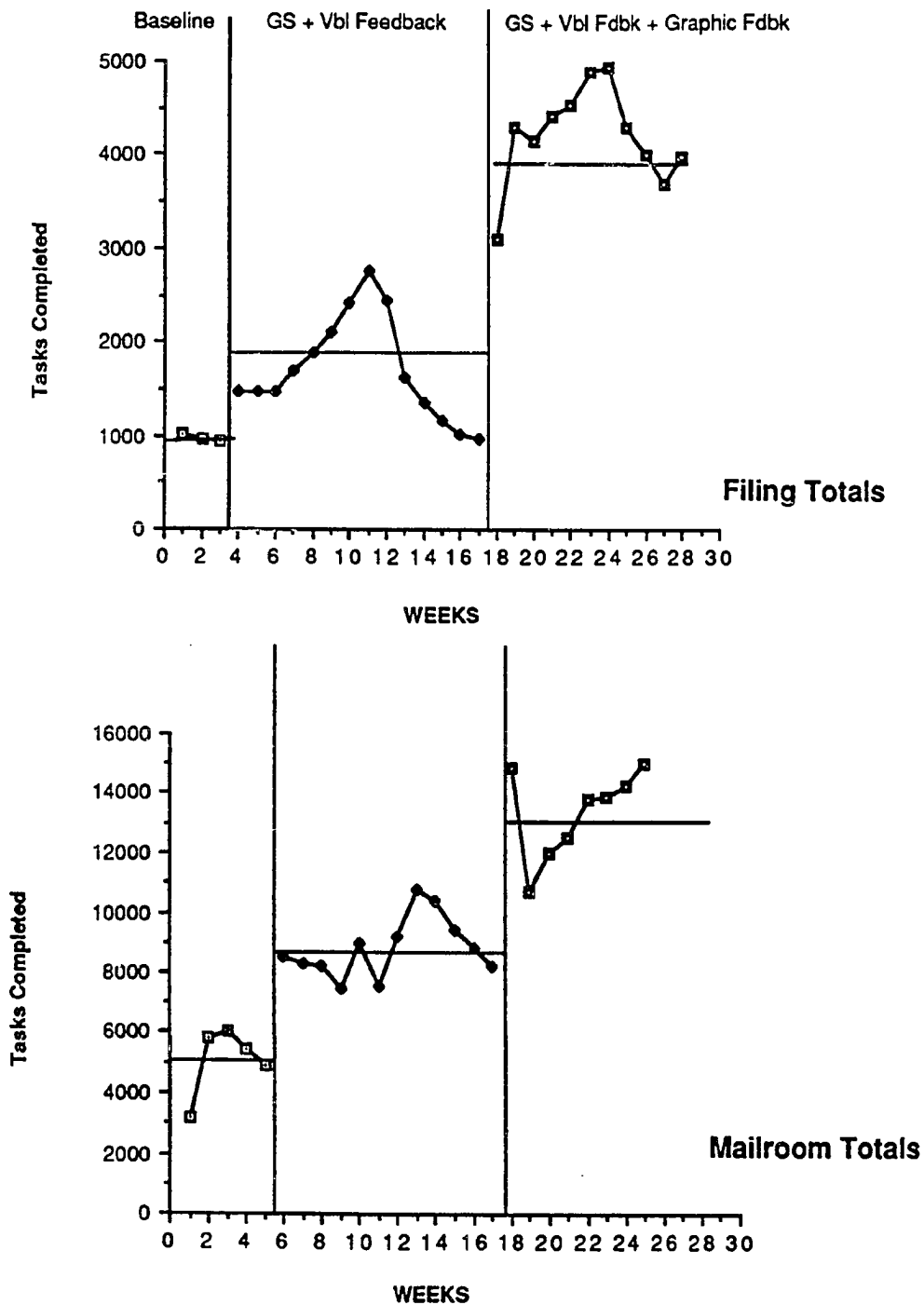


Figure 3. Total Task Completion per Week for Each Section Across Experimental Conditions.

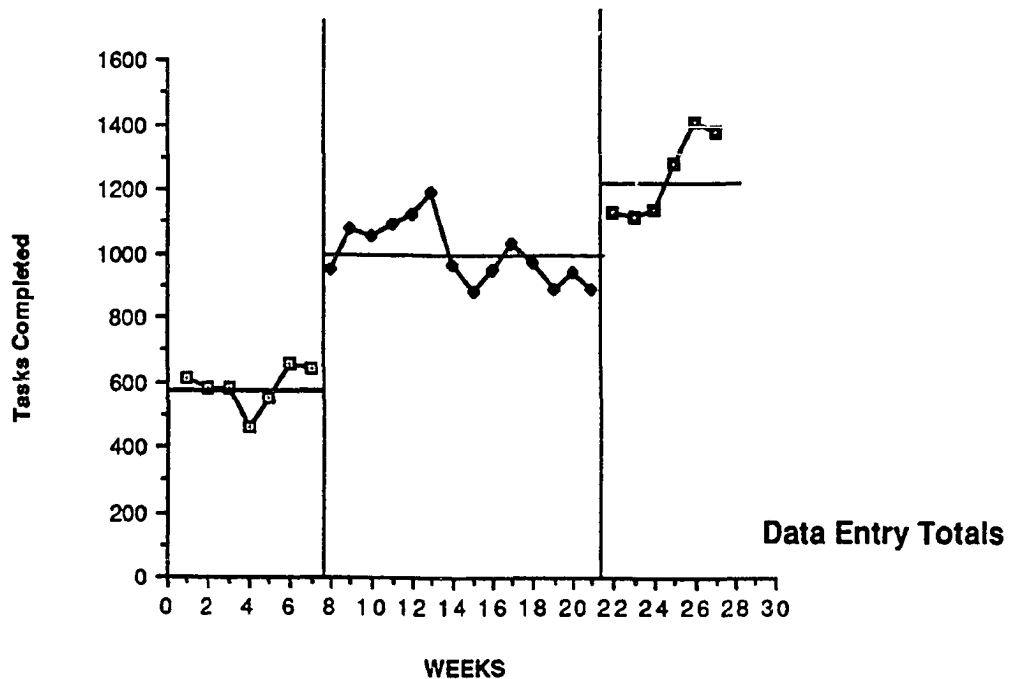
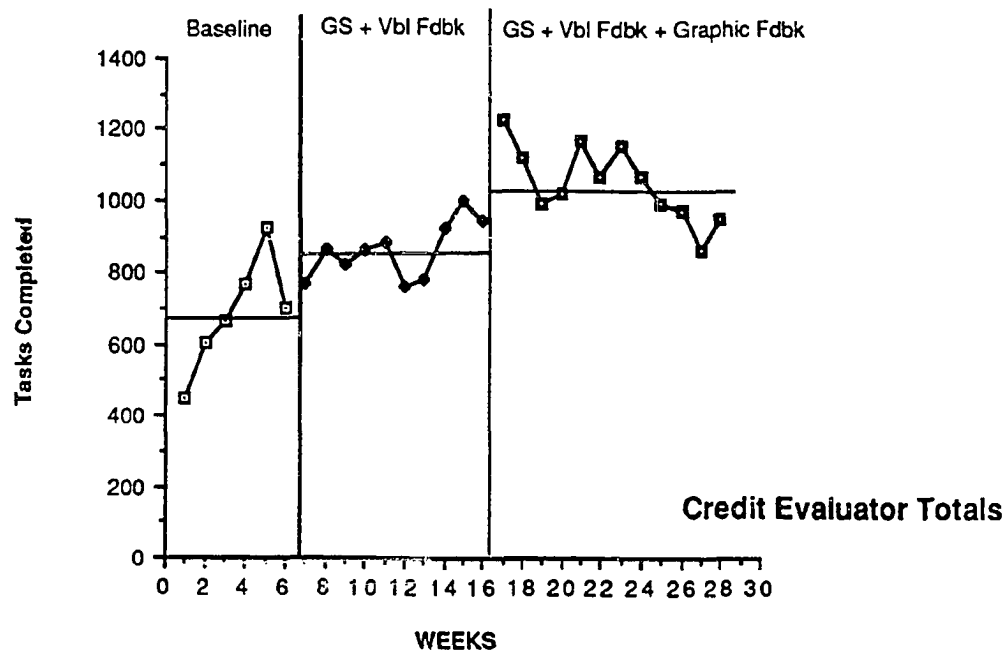


Figure 3 (cont'd). Total Task Completion per Week for Each Section Across Experimental Conditions.

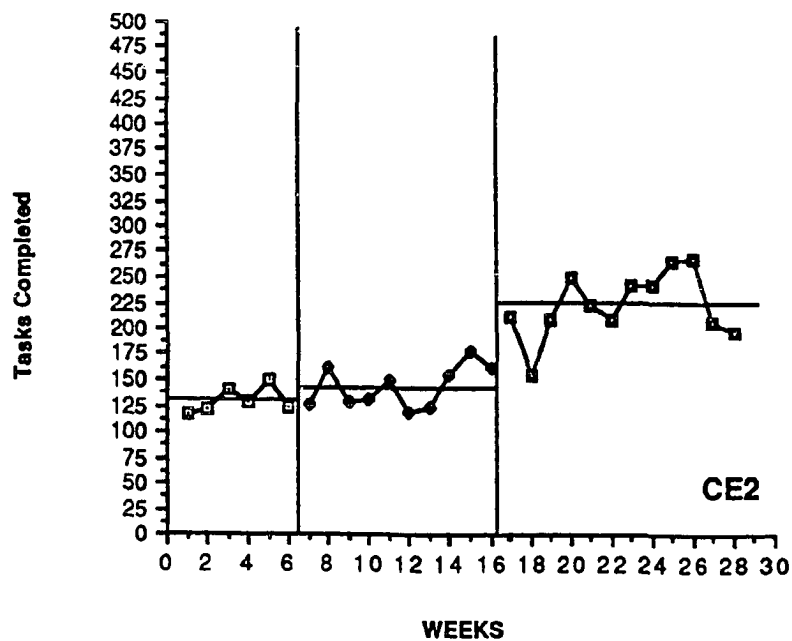
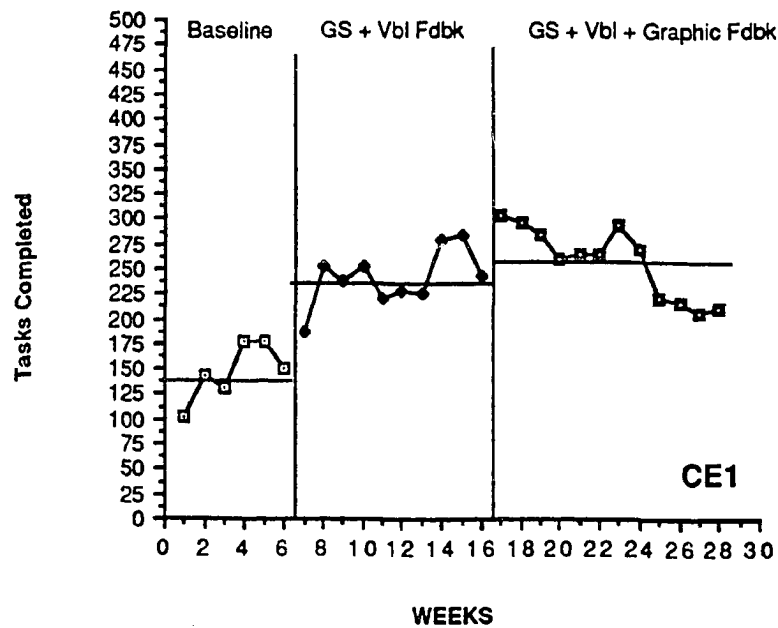


Figure 4. Sample Individual Graphs on Total Task Completion per Week for Credit Evaluators.

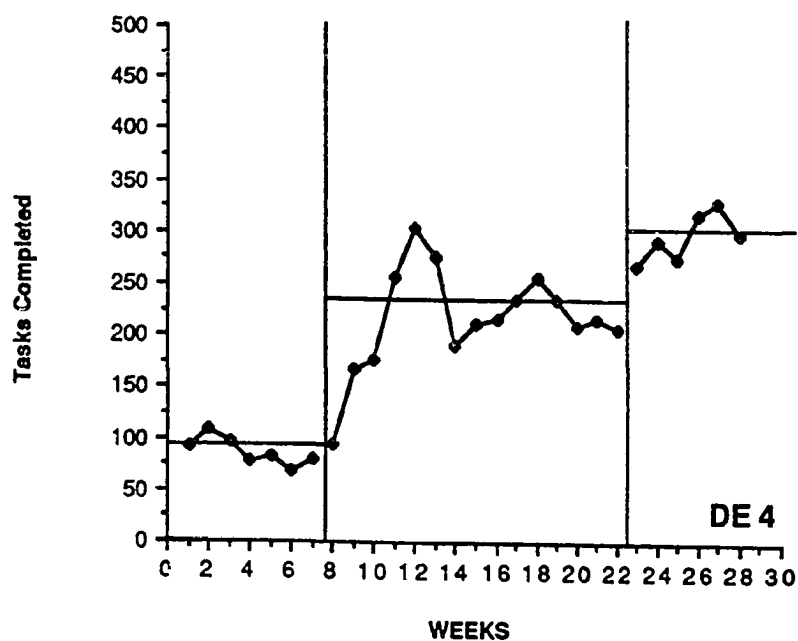
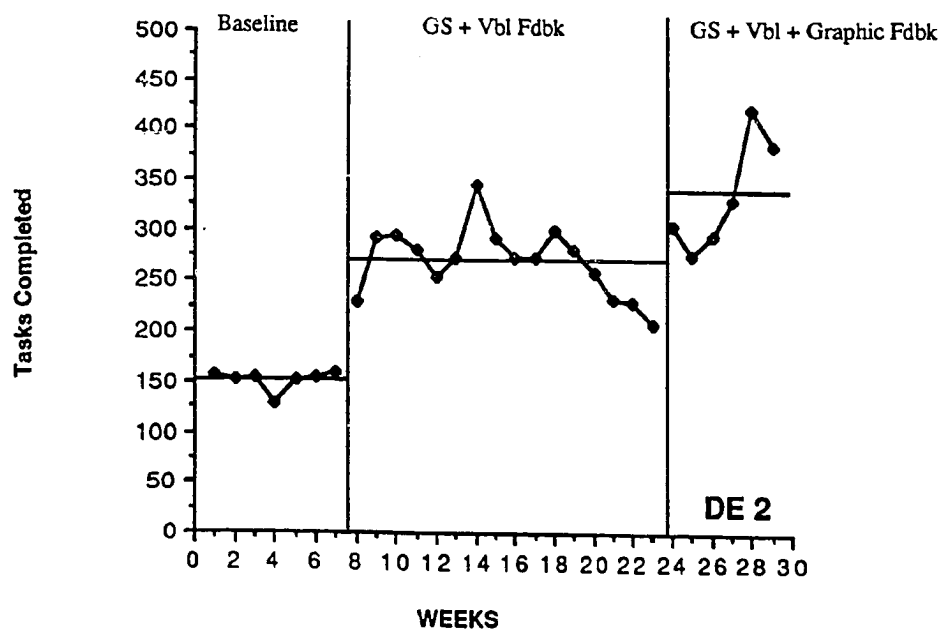


Figure 5. Sample Individual Graphs on Total Task Completion per Week for Data Entry.

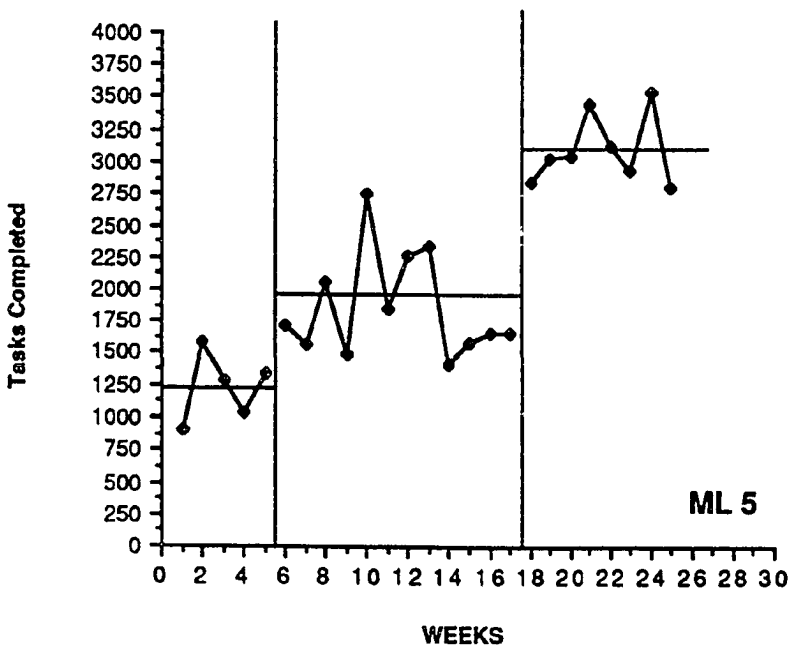
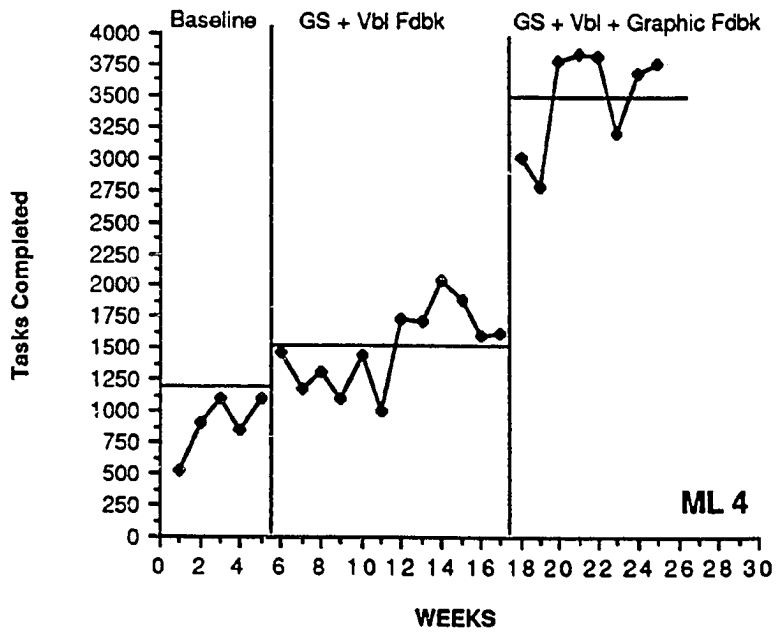


Figure 6. Sample Individual Graphs on Total Task Completion per Week for Mailroom.

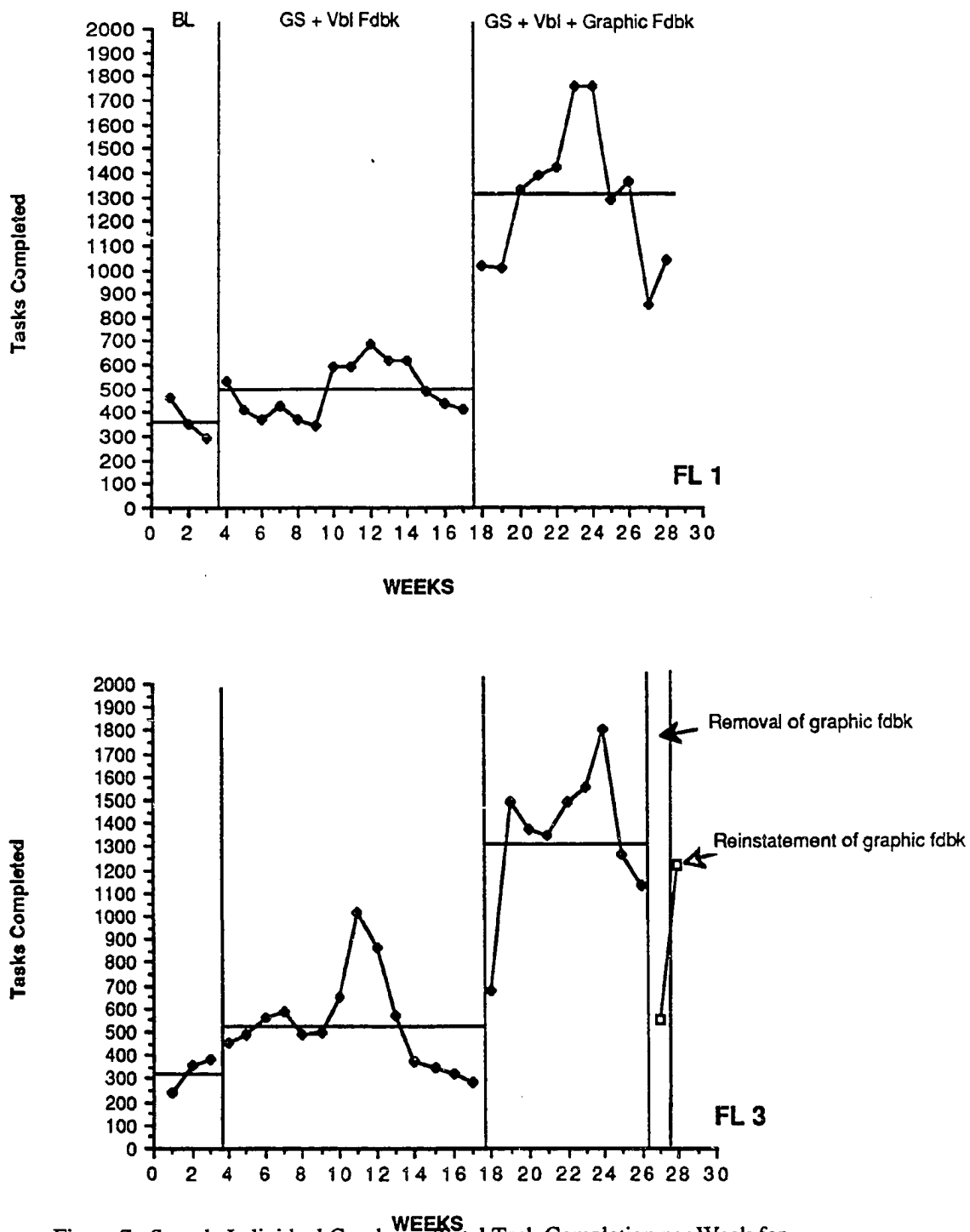


Figure 7. Sample Individual Graphs on Total Task Completion per Week for Filing.

Week 17, performance increased to an even greater mean of 13,389 tasks per week (range 10,703 to 15,052).

The smallest improvements were found in the credit evaluators section of the admissions department. This section averaged 685 tasks completed during baseline (range 449 to 926), while improving to 861 tasks per week during the goal setting and feedback intervention (range 764 to 1,002). Finally, performance stabilized at 1,049 tasks completed per week once graphic feedback was added (range 862 to 1,227).

Data entry employees averaged 582 tasks completed per week during baseline (range 458 to 657), while improving to 994 during goal setting and verbal feedback (range 949 to 1192), and completed 1243 tasks per week when graphic feedback was added (range 1,119 to 1,408).

The trends for all sections were similar. Performance levels well over those found during baseline were achieved during the daily goal setting and feedback intervention, with the greatest performance levels for all sections achieved once graphic feedback was added to the goal setting and verbal praise package. Performance varied considerably within phases. Most notable was a decline in performance during the verbal feedback and goal setting phase with mailroom and filing (weeks 11-14). It is unclear why this trend occurred; however, it may have been due to one or more of the following factors: (1) change in task size from day to day, (2) lower goals set by supervisors, and/or (3) seasonal variations in work demands.

The graphs for credit evaluators' and data entry sections show an upward trend beginning with the introduction of the daily goal setting and verbal feedback program. It appears as though performance improvements were achieved more steadily with these groups, with the greatest performance improvements found at the end of the graphic feedback component. The mailroom and filing sections, however,

show abrupt increases in performance with the introduction of each of the two components. Furthermore, the highest performance levels were not achieved toward the end of the graphic feedback phase, but, rather, somewhere in the middle of that phase, with performance leveling off toward the latter portion of the phase. Generally, however, performance improvements were maintained for all employees.

Tables 2 and 3 provide the mean tasks completed per week and standard deviations for each week for each section and employee, respectively, across experimental conditions. Mean changes were greater under the goal setting, verbal and graphic feedback condition and for most employees, variability in this phase increased as well.

Table 2

Mean (Mn) Tasks Completed per Week and Standard Deviations (SD) for Each Week for Each Section Across Experimental Conditions

Unit	Baseline		Goals + Feedback		Goals, Feedback & Graphs	
	Mn	SD	Mn	SD	Mn	SD
Filing	983	61	1,703	224	4,188	274
Mailroom	5,077	254	8,822	335	13,389	432
Credit Evaluators	685	33	861	25	1,049	39
Data Entry	582	26	994	45	1,243	39

Table 3

Mean (Mn) Tasks Completed per Week and Standard Deviations (SD) for Each Week for Each Individual Employee for All Phases

Department/ Subject #	Baseline Mn	SD	GS, Vbl Fdbk Mn	SD	GS, Fdbk, Graphs Mn	SD
Filing						
S#1	369	85	493	112	1,293	299
S#2	287	26	672	358	1,511	210
S#3	327	73	538	204	1,349	314
Mailroom						
S#1	697	261	1,195	264	2,375	475
S#2	1,013	276	1,789	459	15,106	707
S#3	889	274	1,225	236	1,620	289
S#4	893	239	1,513	320	3,493	423
S#5	1,229	218	1,864	397	3,104	266
Credit Evaluators						
S#1	147	29	241	28	258	35
S#2	130	11	144	20	224	32
S#3	225	60	277	26	315	50
Data Entry						
S#1	153	34	217	28	307	50
S#2	151	11	270	35	336	57
S#3	202	40	297	65	302	26
S#4	100	21	233	52	298	23

Employee Efficiency

Table 4 presents the mean efficiency levels by department. The efficiency calculation considers not only tasks completed, but also the number of hours required to complete the tasks; this measure is, therefore, an important way of determining if the department is simply using additional hours to complete more tasks (efficiency would remain constant), or if they are, in fact, completing more tasks in the same

amount of time. The results show that efficiency was clearly improved with the Performance Management intervention.

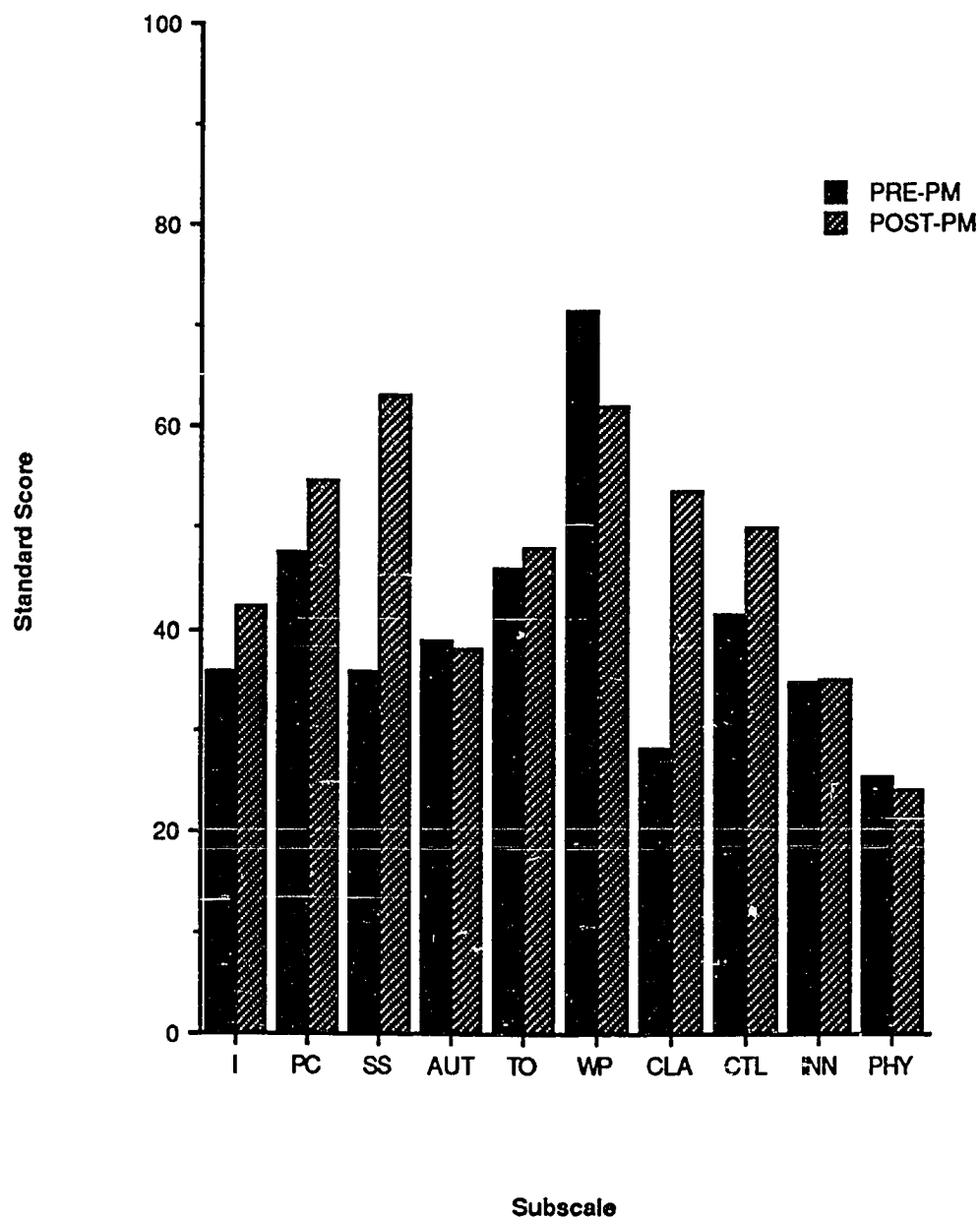
Table 4
Mean Efficiency Levels for Each Section Expressed in Terms of Tasks Completed per Hour

Section	Baseline	GS+Fdbk	GS+Fdbk+Graphs
Filing	8.19	14.19	34.90
Mailroom	21.16	37.81	55.79
Credit Evaluators	4.28	5.38	6.56
Data Entry	3.63	6.21	18.19

It is interesting to note that while efficiency improved for all sections with the addition of the goal setting and verbal feedback program, much greater improvements occurred after the graphic feedback was added to the goal setting and verbal feedback program. For example, in the data entry area, employees completed an average of 3.63 tasks per hour during baseline, 6.21 tasks per hour with the addition of goal setting and verbal feedback, and finally 18.19 tasks per hour when graphic feedback was included as part of the intervention.

Employee Job Satisfaction

Figure 8 represents the pre-post group data on job satisfaction. The changes presented are standard scores where the mean of the distribution is 50 and one



KEY:

I	Involvement	WP	Work Pressure
PC	Peer Cohesion	CLA	Task Clarity
SS	Supervisor Support	CTL	Control
AUT	Autonomy	INN	Innovation
TO	Task Orientation	PHY	Physical Comfort

Figure 8. Work Environment Scale Results: Pre- and Post- Administrations.

standard deviation unit equals 20. The scores represent employee responses relative to the standard group scores of the normative sample where a score of 50 is the mean. The intervention was assumed to have increased employee job satisfaction since positive changes were observed in the second administration of the test relative to the first administration in subscales representing measures sensitive to PM. Most importantly, Task Clarity and Supervisor Support were reported as greatly improved, while Work Pressure was reduced. Smaller positive changes were noted on Innovation and Peer Cohesion subscales. Table 5 includes the WES subscale data for each section. The changes were fairly constant across groups, with greater changes in the area of Supervisory Support, for example, noted by the mailroom employees. The greatest change in the area of Task Clarity was noted by the filing employees whose scores increased from 24 during baseline, to 67 after the addition of PM. Smaller changes in Task Clarity area were noted by the mailroom employees which may indicate that employees were aware of what was expected of them on a day to day basis. The greatest changes in Work Pressure were reported by the data entry employees, although improvements in this area were noted by all four sections.

The only potentially negative change observed on the WES occurred in the area of Control which is defined as the extent to which administration uses rules and pressures to control employee behavior. However, it is not surprising that this area showed an increase when a highly structured supervisory system was introduced.

Table 5

WES Subscale Standard Scores for Each Section Prior to (Pre) and Following (Post)
PM Program

	INV	PC	SSup	AUT	TO	WP	CLA	CTL	INN	PHY
Filing										
PRE	27	34	29	31	33	74	24	35	30	31
POST	33	40	54	32	36	67	67	41	30	31
Mailroom										
PRE	40	53	20	37	57	69	30	70	38	17
POST	53	58	60	39	59	58	45	79	39	14
Data Entry										
PRE	38	59	54	42	51	62	42	43	30	41
POST	40	68	80	43	52	44	61	46	30	41
Credit Evaluators										
PRE	38	44	40	46	43	81	17	18	41	12
POST	42	54	58	45	45	79	43	34	41	10
All Sections										
PRE	36	48	36	39	46	71	28	42	35	25
POST	42	55	63	38	48	62	54	50	35	24
KEY:										
	INV	Involvement				WP	Work Pressure			
	PC	Peer Cohesion				CLA	Task Clarity			
	SSup	Supervisor Support				CTL	Control			
	AUT	Autonomy				INN	Innovation			
	TO	Task Orientation				PHY	Physical Comfort			

CHAPTER IV

DISCUSSION

The results of the present study demonstrate the efficacy of a daily adjusted goal setting and feedback procedure for improving the performance, efficiency and job satisfaction of clerical employees in a university admissions department. Most importantly, this study revealed the critical role that graphic performance feedback plays in improving individual performance levels.

For each section, the number of tasks completed increased immediately over that of self-recording baseline levels when the goal setting and feedback program was added, and failed to increase in the sections where the intervention was not yet implemented. Furthermore, performance improvements were immediate when the independent variable was added and were sustained over time following the intervention. Pre-treatment baselines remained relatively stable except when the independent variable was added. This indicates that the Performance Management program was responsible for noted improvements in performance.

The findings of the present study are consistent with reports in the literature which show that feedback alone is effective, but more effective with the addition of goal setting (Balcazar et al., 1985-86). Furthermore, these results directly replicated the findings of Wilk and Redmon (1990) which demonstrated that a daily-adjusted goal setting and feedback intervention was effective at improving the performance levels of clerical admissions employees.

Unlike many other admissions staff development programs, this intervention offers a means of measuring and tracking performance, as well as assessing the accuracy of self reports of that performance across a variety of tasks. In this context, the verification process in this study was critical. Because files were checked for correct entry dates, typographical errors, etc., employees were reminded to maintain accuracy as well as output. This strategy helped to maintain quality within a program designed primarily to increase quantity of output.

The mean efficiency data for each section across experimental conditions is interesting and noteworthy. The greatest improvements were attained in the filing and mailroom areas where the tasks are relatively simple in nature, whereas smaller changes were detected in data entry and credit evaluation (See Table 4). The tasks completed by credit evaluators and data entry personnel are considerably more complex than the majority of mailroom and filing duties; thus the probability of altering performance in this area as a result of an environmental program designed to motivate employees may be less than for tasks that are relatively simple. Future research should address differences in outcomes across complex and simple tasks when feedback systems are used. This view is supported by O'Hara, Johnson, and Beehr (1985) who noted that most Organizational Behavior Management (OBM) interventions have dealt with simple rather than complex behaviors since observing and quantifying such behaviors are relatively easy. They also suggest that more attention to complex tasks is needed.

Because employees self-recorded their performance during the baseline condition, the possibility exists that those measures were, in fact, inflated. Self-recorded feedback serves as a mechanism of delivering feedback whereby employees are generating their own feedback through their self-recorded performance (Komaki

et al., 1980; Wilk & Redmon, 1990). However, it is clear that significant performance improvements occurred for all subjects with the introduction of the supervisor goal setting and verbal feedback phase leading to the conclusion that the effects of the self-recorded feedback were relatively minimal. Kim and Hammer (1976) noted that the process of goal setting plus feedback involving both self-recording and supervisor feedback is superior to that involving either self-recording or supervisor feedback alone. The findings of the current study certainly support this.

Even though feedback and goal setting have been shown to be effective in changing performance, some specific types of feedback appear to enhance the improvements more than others. In the present study, the data indicated that graphic feedback display combined with goal setting was more effective than verbal feedback combined with goal setting. Furthermore, these improvements were maintained and were consistent across individuals and sections of the organization. This finding is in agreement with other research which has shown graphic feedback to be superior to other types (Balcazar et al., 1985-86).

One possible reason for improvements noted during the verbal feedback plus graphic feedback phase is the value of the information being provided to the employees. With graphic feedback, employees can more closely monitor their individual performance levels and adjust it precisely to improve output; the relationship between behavior change and change in the numerical data on the visual display provides a more precise and sensitive indicator of performance than verbal descriptors. Prue and Fairbank (1981) noted that graphic feedback provides a product which allows a longitudinal assessment of the performance. It may simply be the case that graphic feedback increases the usefulness of the information

presented since precise comparisons with earlier performance levels are possible. Gilbert (1978) noted that "when working on independent tasks, improvement requires confirmation of one's present position so that necessary alterations can be made"(p. 53). Clearly, graphic feedback provides such performance data.

Fairbank and Prue (1982) also noted that verbal feedback interventions must take into account the social/interpersonal skills of the individuals delivering the feedback and the past history of interpersonal interactions between the providers and the recipients. Therefore, with the utilization of graphic feedback in conjunction with goals and verbal feedback, the emphasis on the social and verbal skills of the supervisor may be less than that of a purely verbal feedback interaction. Furthermore, the behavior of task completion might better come under control of the actual performance data, as opposed to the verbal statements of a supervisor.

The job satisfaction data from the Work Environment Scale (Moos, 1981) indicated that employees were more positive about the work environment in general following the PM program than prior to the use of the PM intervention. Additionally, WES subscales that showed the greatest change were those that were directly related to elements of the PM program. Significant positive changes were noted in the area of Task clarity. Task clarity is defined as the extent to which employees know what is expected of them on a day to day basis. With the addition of a goal setting program, as well as daily feedback on performance, it would be expected that employees would report having a clearer understanding of their daily job expectations and duties. Similar changes were noted in supervisor support. Since supervisors were required to meet with employees on a daily basis and engage in a positive performance-related interaction with them at least once a day, it is not surprising that

employees reported greater supervisor support under a PM program as opposed to less defined and irregular management systems.

Komaki et al. (1978) noted that changes in worker behavior can be initiated and maintained without reliance upon the use of disciplinary procedures. The WES results of this PM program certainly support this. Furthermore, a program such as this one was clearly designed with the intent of helping motivate employees to maximize their performance levels. For example, based on previous performance, daily goals were set for the following day. Generally the goals were determined by looking at goal attainments during the previous day(s), and stabilizing there or increasing slightly toward the upper ends of the employees' performance criteria. Thus, since the goal would be sustained until performance either stabilized or exceeded that level, employees had the opportunity to earn additional praise for performance improvements on a regular basis. Furthermore, goal setting by a supervisor allows employees to focus their performance and work towards a specific goal (Kim & Hammer, 1976; Latham & Baldes, 1975; Latham & Kinne, 1974).

Other more general factors involved in the present study were critical to success. One aspect of this study that proved to be a strong mechanism in gaining initial support and interest in the program was the self-recording performance data sheets. Employees were initially very hesitant to cooperate with the researcher; however, by instituting the data sheets prior to any intervention, the employees were eased into the program gradually and had the opportunity to ask questions and understand what a PM program entailed. Self-recording provided a mechanism by which the employees became involved in the day to day data keeping of a program. Furthermore, they could monitor their own performances and budget their time

accordingly. Particularly for repetitious, process work, self-recording provides an excellent content to be used with other forms of performance feedback.

In spite of overall positive outcomes, several shortcomings in this study should be noted. First, no control group was available for comparison of the work environment data. Thus, it is unclear whether factors other than the intervention were responsible for the changes seen. Campbell and Stanley (1963) noted that although pre-and post assessments are not sufficiently conclusive in and of themselves, they are certainly better than no comparison at all. With the applied nature of this study, there was, unfortunately, no other alternative readily available.

Second, all subjects received verbal feedback followed by the addition of graphic feedback. Therefore sequence effects cannot be ruled out and it is not known if the results would have been altered if graphic feedback plus goal setting were provided before the verbal feedback plus goal setting phase. A component analysis is needed to assess the relative contributions of these intervention elements in different sequences.

A third weakness was the inability to withdraw the graphic feedback intervention for more than one employee. Unfortunately, again, the applied nature of this research made this impossible. Once administrators observed the sharp performance decline of the one subject for whom the intervention was removed (See Figure 7), they withdrew their consent to carry out similar procedures with other subjects.

Consistent with other researchers' conclusions (Balcazar et al., 1985-86; Fellner & Sulzer-Azaroff, 1984; Kim, 1984; Komaki et al., 1978; Welsch, Ludwig, Radiker, & Krapfl, 1973; Wilk & Redmon, 1990), performance feedback clearly offers managers a powerful tool for motivating employees. It is critical, however,

that the elements of effective feedback be examined so that the critical aspects of it are better understood and may be most effectively utilized. The present study represents a step in that direction.

APPENDICES

Appendix A

Western Michigan University Human Subjects Institutional Review Board

WESTERN MICHIGAN UNIVERSITY

Date: March 23, 1990

To: Leslie A. Wilk

From: Mary Anne Bunda, Chair *Mary Anne Bunda*

This letter will serve as confirmation that your research protocol, "The Effects of Performance Feedback and Goal Setting on the Productivity and Satisfaction of Clerical Workers", was reviewed as expedited by the Board. The protocol can not be approved until the following revisions are made:

1. The Board needs to see a new Consent Form which clearly indicates that the participation in the intervention is a condition of employment and that the data are the only freely given item in this research.
2. However, if we have misunderstood and participation is truly voluntary as currently stated in the Consent Form, do not change your research project on our account.
3. Please describe to the Board how you have assurance from the supervisors not to use these data when they are clearly relevant to employee productivity and employees are requested to participate. If you can not provide sufficiently strong evidence, you may want to remove the assurance from the Consent Form.

Please submit the above changes in your protocol to the HSIRB at Research and Sponsored Programs.

xc: W. Redmon, Psychology

Appendix B

Definitions of Tasks

Definitions of Tasks

FILING

New applications and Filing involve placing new applications in hard files and recording completion of this on the computer database.

MAILROOM

Entering requests involves entering data from student information cards onto the university database.

Transcribing requests requires the employee to transcribe information from a computerized phone-mail system to the computer database so that requests for additional information, etc. may be filled.

Sorting entails sorting student information cards into geographic territories and recording this information on the university database.

CREDIT EVALUATORS

Coding, GPA Computing, Application Entered, Updates, New Transfers, Finalizing Evaluation all involve different data entry functions performed for transfer students.

DATA ENTRY

Application loaded, GPA Computation, Review of new information, Supplements, Updates all involve different data entry functions performed on the university database for beginner students.

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