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A Comparison of Supervisor Graphing and Self-Graphing of Performance in a Procedure for Controlling Time on Scheduled Tasks

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A COMPARISON OF SUPERVISOR GRAPHING
AND SELF-GRAPHING OF PERFORMANCE IN A PROCEDURE
FOR CONTROLLING TIME ON SCHEDULED TASKS

by

Sheldon L. Stone

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

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Sheldon L. Stone

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People often seem to spend too much time off task, too much time in nonproductive activities. This seems to be a common problem in both self-management and staff management. To our knowledge, no one has dealt directly with this problem by using a general supervisory procedure applicable to all employees, though the effectiveness of the various features of such a system have been well documented in dealing with other problems. These features might include self-recording, feedback, public posting of performance, and special incentives contingent upon performance.

Self-recording can increase worker performance. Burg, Reid, and Lattimore (1979) used self-recording as a component of a supervision program to change institutional staff behavior. Lamal and Benfield (1978) used self-recording to decrease the instances of tardiness of a draftsman and increased his percentage of time spent working. In another study, workers reduced waste using self-recording and feedback of performance in an industrial setting (Eldridge, Lemasters, & Szypot, 1978). Self-recorded feedback proved cost effective in increasing performance in a household salvage operation (Stoerzinger, Johnson, Pisor, & Monroe, 1978). And Chandler (1977) reported that self-recording helped decrease the number of negative comments a supervisor made.

General feedback on performance has proven effective in a wide range of settings (see Appendix A). Runnion, Johnson, and McWhortor (1978) used various schedules of feedback in decreasing truck turnaround time in materials transportation for a textile company. McCarthy (1978) showed that posted feedback of group performance was

effective in decreasing material waste in a textile spinning department. Case studies reported by Miller (1978) showed that publicly posted feedback was effective in increasing work output in business and industry settings, with both production workers and office staff.

Others have shown that the effects of feedback can be temporarily enhanced with the addition of public posting of performance records at least temporarily (Pommer & Streedbeck, 1974) or with the addition of other incentives. For instance, Pommer and Streedbeck (1974) also found that feedback through public notices did not maintain staff performance over time without added rewards. Kent (1977) added contingent bonuses when feedback alone was not sufficiently effective in getting tasks completed by managers in a food cooperative. Miller (1978) showed that feedback combined with edible and monetary rewards was more effective than feedback alone to get employees to wear ear-plugs in a noisy factory setting. Dillon, Kent, and Malott (in press) showed that proposing to use performance data in future letters of recommendation improved performance over feedback alone for graduate students working on their master's theses. In addition, self-posting versus supervisor posting were compared. And Pomerleau, Bobrove, and Smith (1973) and Martin (1972) also found that the effects of feedback were not as great as those obtained when feedback was associated with other incentives, either rewarding or aversive.

The present study was an attempt to develop and evaluate a cost effective supervisory procedure based on public posting of performance data. One issue was whether the workers would accurately self-record their performance with only occasional reliability checks by the

supervisor. A second issue was whether the procedure would be just as effective if the workers graphed their own results, thereby saving additional supervisor time, or whether workers knowing that the supervisor closely inspected the graph each day, in the graphing process, would be necessary for the procedure to be effective.

METHOD

Subjects and Setting

Four paraprofessional tutors served as subjects in a classroom of the Croyden Avenue School, a special education unit of the Kalamazoo Valley Intermediate School District. The tutors ranged from 18 to 22 years old. The first tutor worked 30 hours per week in the classroom, while working on his bachelor's degree in special education. The tutor was also enrolled in a course designed to teach behavioral techniques to tutors who were working in the program more than 10 hours per week. Two of the remaining tutors were working on their bachelor's degree in psychology, and the third was an undecided major. Each worked in the classroom 9 or 10 hours each week. Only one of the tutors had no prior history in the application of behavioral techniques.

Performance evaluations took place with the classroom staff every seven weeks (see Appendix B). The classroom supervisor, who was also the experimenter, conducted these evaluations; they addressed tutoring skills, social skills, and skills displayed in weekly staff meetings.

The students in the classroom were six severely mentally impaired people, ranging from 12 to 21 years of age and displaying a wide range of maladaptive behaviors, such as temper tantrums, excessive activity, lack of speech, and lack of self-care skills, like dressing, feeding, and toileting.

In evaluating the supervisory procedure, data were used from four types of tasks: (a) the primary task, training educational skills,

such as color discrimination, vowel articulation, and object identification; (b) training self-help skills, such as taking on and off coats, toileting, and teeth brushing; (c) providing physical aid by securing the three nonambulatory students in their wheelchairs and feeding them at lunch; and (d) monitoring the training sessions of the other tutors (only done by the 30-hour per week tutor).

The tutors were instructed verbally and in writing that their scheduled tasks should last 20 to 30 minutes and to start the tasks every half hour, no later than five minutes past the hour or half hour. The tutors received these instructions when they were assigned to the classroom, at the start of baseline recording, and at the start of the first intervention. The supervisor posted each tutor's schedule on the front of the tutoring booths, listing each task and the time they should work on it.

Measuring the Dependent Variable

The supervisor (primary observer) recorded the initiation and termination times (to the nearest minute) of each tutor's scheduled task at each occurrence. He did this during all phases of the experiment, including those where the tutors self-recorded. The initiation of the education, self-help, and physical assistance tasks was defined as the tutor's starting to gather the materials needed for the training session. The termination was defined as the tutor and the student leaving the training area. (Termination in terms of putting away of materials was not defined because the tutors often became involved in other activities between the time they left the training area and the

time they put away the materials.)

The initiation of the monitoring task was defined as the tutor's taking a monitoring sheet from the file cabinet prior to proceeding to the area where the monitoring was to take place. The termination of the monitoring task was defined as the tutor giving the monitoring sheet to the person monitoring.

Reliability

An instructional specialist (secondary observer) made independent reliability checks on a regular basis to document the initiation and termination of all four types of tasks. The supervisor gave the reliability check sheet to the observer 15 minutes before the reliability check was to take place. The secondary observer conducted the reliability check in an observation room containing one-way glass and located adjacent to the classroom. The primary observer was located so that he could not see the secondary observer and, therefore, could not be influenced by this recording of the activities. One reliability check was conducted each week for each tutor throughout the study. All checks yielded 100%.

Supervisory Procedure

The following components comprised the supervisory procedure to control the duration of scheduled tasks.

Self-recording with self-graphing

The supervisor modified the individual tutor's task schedule by

adding two boxes, one to record the initiation time of the task and one to record these times each half hour. During all phases, the supervisor also recorded those data covertly; and the data are presented as the primary results. The supervisor also publicly posted graphs next to the task schedules for the plotting of mean duration of scheduled tasks for each tutor for each working day of intervention. During the self-graphing condition, the tutor plotted the data on his own graph at the end of each day.

Self-recording with supervisor graphing

This condition was similar to the self-graphing condition in that the tutors recorded their own behavior on the task schedule and the supervisor recorded them covertly. However, in this condition, the supervisor (not the tutors) plotted the mean duration of tasks on the tutors' graphs at the end of each day.

Performance evaluation

Just before the tutors signed the informed consent form for this study and also just before they started the self-recording phase, the supervisor told them they would receive feedback in the form of a performance evaluation for future letters of recommendation. The supervisor also indicated the various therapy and professional skills on which the performance evaluations would be based. The supervisor conducted performance evaluations every seven weeks in individual meetings with each tutor. Feedback was given on amount of time on task solely on the basis of the tutor's performance during baseline, and an

indication was given as to whether performance was satisfactory or should be improved.

Experimental Design

Before implementing the supervisory procedure, a stable baseline was required such that mean performance did not fluctuate more than three minutes throughout the previous five sessions. Then the procedure was implemented according to a multiple baseline across subjects design. The basic design was an ABACABAB design, though it differed slightly across tutors due to time constraints. The components in the design were A--baseline; B--supervisor graphing with self-recording and public posting; and C--self-graphing with self-recording and public posting.

Throughout intervention, two of the tutors always self-graphed. However, the supervisor informed the other two tutors that he would graph data during the supervisor graphing condition. These two conditions were compared to see if there would be a difference in duration when the supervisor graphed the data as opposed to when the tutors graphed their own data. In neither condition did the tutors receive any vocal feedback during intervention.

~

RESULTS

The supervisory procedure increased the time the tutors spent on scheduled tasks, from a median of 15.1 minutes per half hour during the baselines, to 24.0 minutes during the times that the procedure was in effect. The increase in duration was primarily due to earlier initiation times by tutors. During intervention, the tutors started their scheduled tasks an average of 7 minutes closer to the scheduled time; and they increased the number of trials for each task by an average of 12 trials.

Insert Figures 1 and 2 about here

The performance was essentially the same for the self- or supervisor graphing condition as can be seen from the data for Tutors 1 and 2; their time spent on task was a median of 23.5 minutes for self-graphing and 22.5 minutes for supervisor graphing condition.

After the experiment, the tutors reported that they had been unaware that the supervisor was also recording the initiation and termination times, yet the reliability with which they agreed was 96.8% for the group. This was computed by dividing the number of agreements (to the nearest minute) by the number of agreements plus the number of disagreements and multiplying that number by 100.

The tutors' data show a generally rising performance across the replications of baseline. The median level during the first baseline

FIGURE CAPTION

Figure 1. The average duration of minutes spent on scheduled tasks for Tutors 1 and 2. Each point represents the average of all scheduled tasks for one school day. BL--Baseline; TG--Tutor Graphing; and SG--Supervisor Graphing.

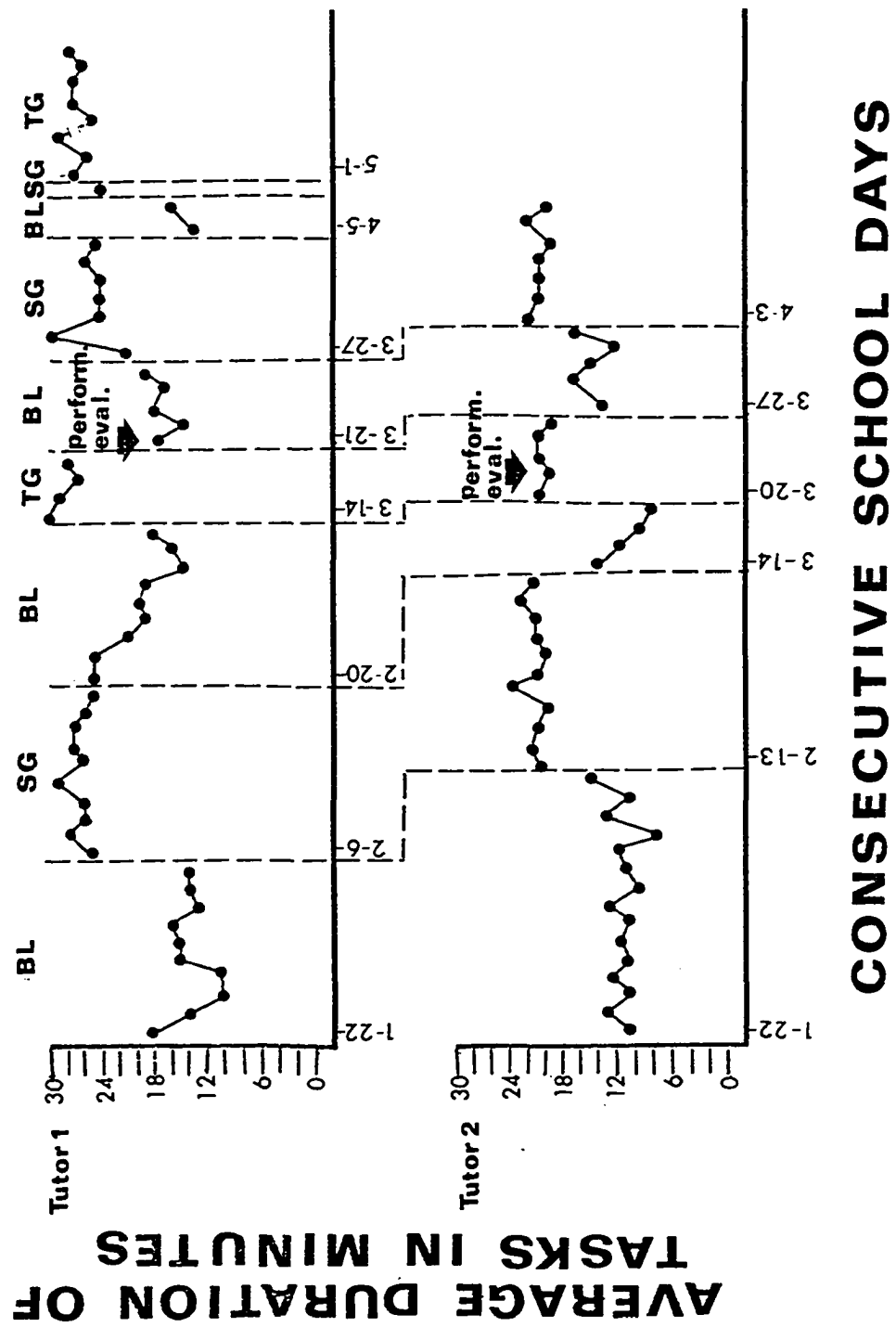
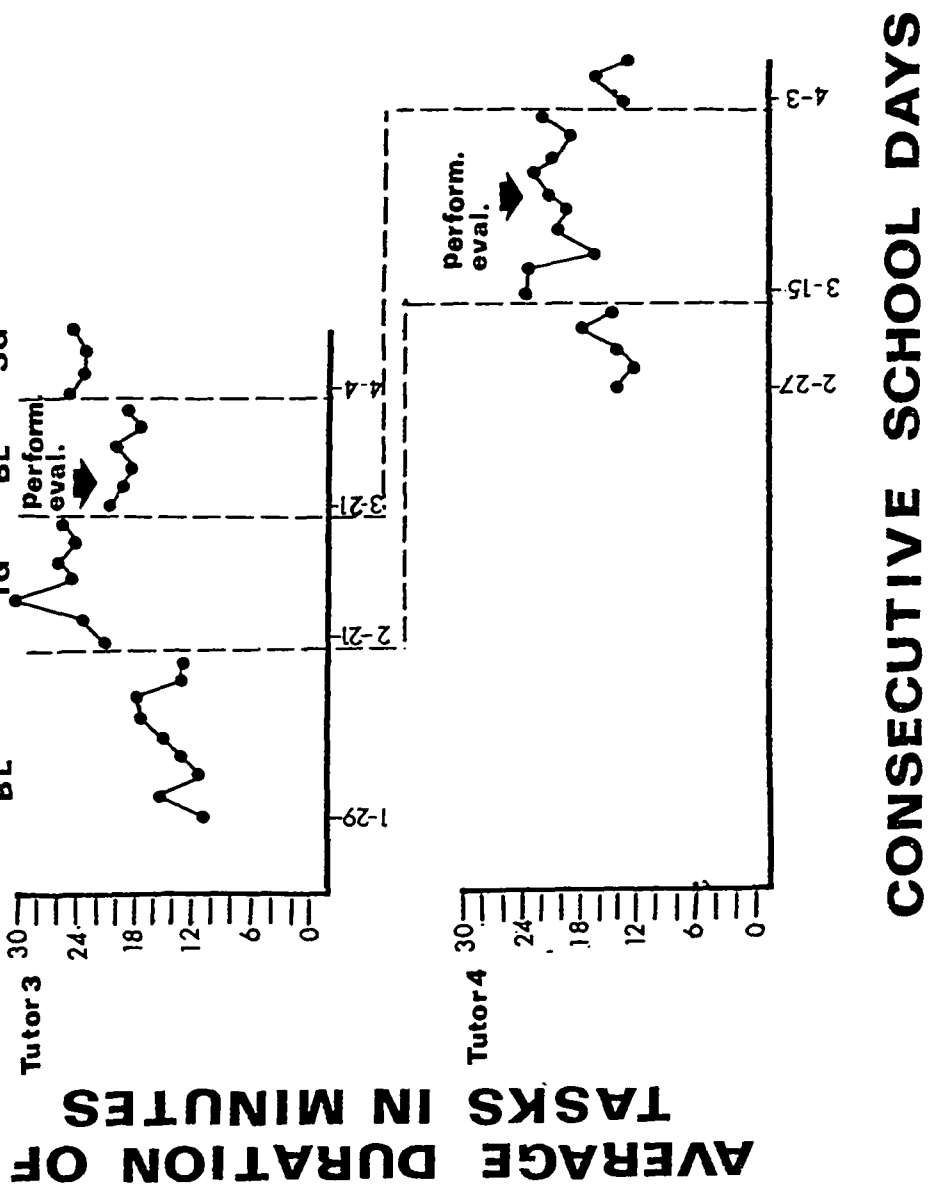


FIGURE CAPTION

Figure 2. The average duration of minutes spent on scheduled tasks for Tutors 3 and 4. Each point represents the average of all scheduled tasks for one school day. BL--Baseline; TG--Tutor Graphing; and SG--Supervisor Graphing.



was 13.4 minutes per half hour as compared to the second baseline which was 16.4 minutes per half hour. The median level of performance was 16.7 minutes in the third baseline, which only included Tutors 1 and 2.

The break in the graph for Tutor 1 in the last intervention represents a three-week period. The school was closed for part of this time; and immediately after it reopened, there were no scheduled tasks. When scheduled tasks resumed, the tutor's performance was at the same level for the five-day follow-up as it was prior to the three-week break.

Appendix C shows the median values of performance for the four types of tasks that data were taken on. As presented in the Appendix, each tutor's times are consistent across the different tasks. This shows that there is generality of the supervisory procedure across the different types of tasks.

DISCUSSION

Features of the Procedures

The supervisory procedure greatly increased the amount of time tutors spent on scheduled tasks. This raises the question: Which of the various features of the procedure were crucial?

First, consider the self-recording; this in itself also involved an element of public posting since the tutors recorded their initiation and termination times for each session on their publicly posted task schedules. However, it is relatively difficult to ascertain an individual's overall performance from those raw data. Still, we should probably look at self-recording and public posting of the raw data as two separate features.

Another issue is the public posting of the graphs of the average daily performance. Again, this also seems to involve two separable elements: feedback to the individual and the public posting of that feedback. As mentioned in the Introduction, past research supports the notion that self-recording, feedback, and public posting can each improve performance. Only further research can ascertain the importance of these various features in the current procedure.

Since the self-posting of the graph was as effective as supervisor posting, the supervisor posting may be eliminated from the supervisory procedure. This should allow supervisors more time for other tasks with only periodic checks of task duration, yet employee performance should remain at a satisfactory level. Thus, such a pro-

cedure seems feasible with respect to maintaining the procedures because it does not place demands on managers' time.

We should also consider the role of the statement that the tutors would receive a performance evaluation every seven weeks and that the evaluation would go into their permanent file. The information in the tutor's permanent file could be used to write any future letters of recommendation. Thus, such a statement should act as a discriminative stimulus or cue indicating that satisfactory performance would produce desirable personal outcomes. It is a common assumption that people's performance affects their career success. However, the supervisor making that statement about the evaluation going into the tutor's permanent file may have suggested an even stronger than normal relationship between performance and success. This might in turn increase the personal value of good performance and, thereby, enhance the stimulus control exerted by the self-recording, the feedback, and the public posting.

But, of course, ultimately only further research can determine whether statements about future performance reviews (or the performance reviews themselves) enhance the control by self-recording, feedback, and public posting, in conjunction with the generally understood rule that people's performance affects their success on the job (in this research setting and in other settings as well).

The actual occurrence itself of this particular type of performance review had no appreciable effect on the amount of time on task as there seemed to be little systematic difference between the pre- and post-performance review data, other than the generally increasing baseline.

Cost Analysis

Not only was this supervisory procedure more effective than the typical procedure (instructions only as in baseline), it was also more cost effective. Using this procedure, the cost per time unit of direct service to the client was only 60% of that using the typical supervisory procedure. This conclusion was reached as follows. The tutors provided direct service for 48 minutes out of every hour with the behavioral supervisory procedure as compared with 30.2 minutes per hour with traditional supervision. At a wage of \$2.90 per hour, the cost for tutor time per minute of service was \$.06 for the behavioral procedure and \$.10 for the traditional procedure; thus, the behavioral procedure only cost 60% of the traditional procedure.

For purposes of this presentation, the experimenter did not include the estimate of the negligible costs of the supervisor's time, five minutes per week (involving only periodic reliability checks with the tutors posting their own performance records), the two and one-half hours per week that the 30-hour tutor spent at lunch, or the cost of initially starting the program.

Social Validation

After the completion of the study, a group discussion was held with all the tutors to find out their observations on the supervisory procedure. All of them indicated that they felt that it was beneficial in keeping them on task for a longer duration. They also pointed out that it was not taxing on them in any way and they enjoyed it.

Since this study, the program has continued using a similar supervisory system with the same beneficial results presented in this report. There were three new tutors that the procedure was used with for a three-month period. Thus, the performance will maintain in a nonexperimental context for at least three months, and the behavioral supervisory procedure itself also survives. The supervisory procedure met the approval of the school principal and was implemented in six additional classrooms since the termination of the study.

REFERENCES

- Burg, M. M., Reid, D. H., & Lattimore, J. Use of a self-recording and supervision program to change institutional staff behavior. Journal of Applied Behavior Analysis, 1979, 12, 363-375.
- Chandler, A. B. Decreasing negative comments and increasing performance of a shift supervisor. Journal of Organizational Behavior Management, 1977, 1, 99-104.
- Comstock, R., Mayers, R., & Folsom, J. Simple physical activities for the elderly. Hospital Community and Psychiatry, 1969, 20, 377-380.
- Dancer, D. D., Bruakmann, C. J., Schumaker, J. B., Kirigin, K. A., Willner, A. G., & Wolf, M. M. The training and validation of behavior observation and description skills. Behavior Modification, 1978, 1, 113-134.
- Dillon, M. J., Kent, H. M., & Malott, R. W. Supervisory system for accomplishing long-range projects: An application to master thesis research. Journal of Organizational Behavior Management, (in press).
- Eldridge, L., Lemasters, S., & Szypot, B. A performance feedback intervention to reduce waste: Performance data and participant responses. Journal of Organizational Behavior Management, 1978, 1, 258-267.
- Iwata, B. A., Bailey, J. S., Brown, K., Foshee, T. J., & Alpern, M. A performance based lottery to improve residential care and training by institutional staff. Journal of Applied Behavior Analysis, 1976, 9, 417-432.

- Kazdin, A. Methodological and assessment considerations in evaluating reinforcement programs in applied settings. Journal of Applied Behavior Analysis, 1973, 6, 517-531.
- Kent, H. M. A behavioral analysis of job performance in a food co-operative. Unpublished dissertation, Western Michigan University, 1977.
- Lamal, P. A., & Benfield, A. The effect of self-monitoring on job tardiness and percentage of time spent working. Journal of Organizational Behavior Management, 1978, 2, 142-149.
- Martin, G. L. Teaching operant technology to psychiatric nurses, aides, and attendants. In F. W. Clark, D. R. Evans, & L. A. Hammerlynck (Eds.), Implementing behavioral programs for schools and clinics. Champaign, IL: Research Press, 1972, 63-87.
- McCarthy, M. Decreasing the incidence of "high bobbins" in a textile spinning department through a group feedback procedure. Journal of Organizational Behavior Management, 1978, 1, 150-154.
- Miller, L. M. Behavior management: The new science of managing people at work. New York: John Wiley & Sons, 1978.
- Pierce, C. H., & Risley, T. R. Improving job performance of neighborhood youth corps aides in an urban recreation program. Journal of Applied Behavior Analysis, 1974, 7, 207-216.
- Pomerleau, O., Bobrove, P., & Smith, R. Rewarding psychiatric aides for the behavioral improvement of assigned patients. Journal of Applied Behavior Analysis, 1973, 6, 383-390.
- Pommer, D. A., & Streedbeck, D. Motivating staff performance in an operant learning program for children. Journal of Applied Behavior

Analysis, 1974, 7, 217-222.

Quilitch, R. H. A comparison of three staff-management programs.

Journal of Applied Behavior Analysis, 1975, 8, 59-66.

Runnion, A., Johnson, T., & McWhorter, J. Energy savings in inter-state transportation through feedback and reinforcement. Journal of Organizational Behavior Management, 1978, 1, 180-191.

Stoerzinger, A., Johnson, J. M., Pisor, K., & Monroe, C. Implementation and evaluation of a feedback system for employees in a salvage operation. Journal of Organizational Behavior Management, 1978, 1, 268-281.

Van Houten, R., Hill, S., & Parsons, M. An analysis of a performance feedback system: The effects of timing and feedback, public posting, and praise upon academic performance and peer interaction. Journal of Applied Behavior Analysis, 1975, 8, 449-456.

APPENDIX A

Public posting of service delivery data could help managers account for and improve performance of workers in human service settings. A small percent of improvement of (or increase in) service delivery could have an effect not only on the repertoire in which a handicapped person lives but once their educational program has terminated, it could have a lasting effect on their day-to-day living conditions (Comstock, Mayers, & Folsom, 1969).

Since the advent of PL-94-142, educational managers have had to establish systems of accountability to ensure that the educational objectives of the handicapped will be carried out. This involves training and management of on-line staff of the educational facilities (Quilitch, 1975). This point is also stated by Kazdin (1973) who maintains that successful program implementation cannot occur unless desirable staff performance is both developed and maintained.

APPENDIX B

Informed Consent Winter 1979

I, _____, the undersigned, have read the following description and fully understand its content.

There is a new procedure in this Classroom whereby staff will be required to chart their start and stop times of scheduled tasks for each day they work in the Elementary II Classroom. The purpose of this form is to obtain consent to collect data in order to validate the procedure's effectiveness. We expect this to be an improvement, but we would like to empirically demonstrate it. You will fill in the chart accordingly at the beginning and the end of each half hour, i.e., filling in the time you start and stop your scheduled task.

The chart and graph of each participant will be posted in the Elementary II Classroom.

The start and stop times of tasks will be accounted for in the seven-week evaluation conducted in the Elementary II Classroom. This evaluation will be handed into the Instructional Specialist responsible for the Elementary II Classroom. These evaluations will remain in that person's file with the SMI Program and may be used in writing letters of recommendation.

For reporting this Study, all data compiled will be completely anonymous, i.e., no names of any participants will be tied to any of the data. This will include all stages of the project write-up, including the final write-up and any other publication and any presentation at a conference, convention, symposium, or class. Raw data will be deleted at the end of the Study.

Since the new recording will be standard procedure, participants will be expected to continue in it throughout the semester but maintain their right to withdraw consent for use of the data in research purposes outside the SMI Program. This can only be done by contacting the Experimenter.

I hereby volunteer to participate in the Study described above for the duration of Winter Semester 1979 and give consent for all my data to be used.

Signature _____

Date _____

APPENDIX C

Table 1

Median Values of Performance for the Four Types of School Tasks in Minutes

| Tutor | Baseline | Self-graph | Baseline | Supervisor Graph | Baseline | Self-graph | Baseline | Supervisor Graph | Self-graph |
|---------------------|----------|------------|----------|---------------------|----------|------------|----------|---------------------|------------|
| Education Training | | | | | | | | | |
| Tutor 1 | 13.62 | 26.75 | 17.80 | 26.83 | 17.71 | 25.23 | 16.28 | 24.90 | 27.10 |
| Tutor 2 | 11.32 | 22.01 | 15.03 | 21.75 | 16.32 | 22.87 | -- | -- | -- |
| Tutor 3 | 14.01 | -- | -- | 24.32 | 17.75 | 24.25 | -- | -- | -- |
| Tutor 4 | 15.23 | -- | -- | 21.02 | 14.98 | -- | -- | -- | -- |
| Self-help Training | | | | | | | | | |
| Tutor 1 | 13.82 | 25.83 | 18.81 | 27.93 | 18.01 | 25.17 | 15.13 | 25.00 | 26.66 |
| Tutor 2 | 10.08 | 20.08 | 11.75 | 19.32 | 14.48 | 18.76 | -- | -- | -- |
| Tutor 3 | 14.23 | -- | -- | 25.01 | 18.66 | 23.83 | -- | -- | -- |
| Tutor 4 | 14.03 | -- | -- | 20.12 | 14.07 | -- | -- | -- | -- |
| Physical Assistance | | | | | | | | | |
| Tutor 1 | 14.30 | 25.93 | 17.83 | 27.27 | 18.00 | 24.74 | 15.31 | 24.80 | 26.88 |
| Tutor 2 | 14.32 | 21.32 | 13.23 | 20.10 | 15.12 | 20.15 | -- | -- | -- |
| Tutor 3 | 14.15 | -- | -- | 24.73 | 18.42 | 23.01 | -- | -- | -- |
| Tutor 4 | 14.63 | -- | -- | 19.47 | 14.81 | -- | -- | -- | -- |
| Monitoring | | | | | | | | | |
| Tutor 1 | 14.01 | 27.72 | 18.48 | 26.98 | 17.32 | 24.92 | 15.07 | 25.00 | 27.45 |

APPENDIX D

During baseline, the posted task schedule served as a goal for the tutors. It told them what their task was and when it was scheduled to start. Based on the data, it was not an effective discriminative stimulus for starting the scheduled task. But the data do indicate that it was an effective discriminative stimulus for terminating the tasks. This indicates that the clock was too complex to be an effective discriminative stimulus for terminating the tasks.

When the supervisory procedure was implemented, the tutors had a permanent record of their initiation time through the self-recording component of the procedure. This made the clock an effective discriminative stimulus for initiation of the tasks. The situation is still complex, but the permanent record makes it easier for the tutors to discriminate the rules.

Having the tutors record the initiation time makes the clock more effective as a discriminative stimulus for initiating the task because the tutors are more aware of the clock. Also, writing down the initiation time is an automatic consequence for the tutor. Since there are limits on the duration of the task, such that initiating after the limit eliminates the occasion for a reinforcing consequence.

Feedback of the posted daily average duration of scheduled tasks for the tutors probably did not affect the behavior as a discriminative stimulus because it was too abstract; there was no point-to-point correspondence. Though, this feedback did provide reinforcement or

punishment for the tutors meeting or not meeting the goal. The average duration affected the tutors this way because it was new information for them; it was not redundant information.

In summary, self-recording produces automatic reinforcement or punishment (depending on whether the recorded time fell within the limit). The initiation time produces the automatic consequence because of the opportunity for success, and the termination time produces the autoconsequence for meeting the goal. The duration of the tasks sets the occasion for certain initiation times to act as discriminative stimuli. That would be only those times that do not eliminate the opportunity to meet the goal.