An Application of Operant Conditioning to Absenteeism in a Hospital Setting

1975

Tedd Andrew Stephens
University of Central Florida

Find similar works at: http://stars.library.ucf.edu/rtd

University of Central Florida Libraries http://library.ucf.edu

Part of the Industrial and Organizational Psychology Commons

STARS Citation

http://stars.library.ucf.edu/rtd/191

This Masters Thesis (Open Access) is brought to you for free and open access by STARS. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of STARS. For more information, please contact lee.dotson@ucf.edu.
AN APPLICATION OF OPERANT CONDITIONING TO ABSENTEEISM IN A HOSPITAL SETTING

BY

TEDD ANDREW STEPHENS
B.S., Rollins College, 1969

THESIS

Submitted in partial fulfillment of the requirements for the degree of Master of Science in the Graduate Studies Program of Florida Technological University

Orlando, Florida 1975
ACKNOWLEDGEMENT

A note of appreciation is extended to Wayne A. Burroughs, Ph.D., for his advice and guidance in both conducting this study and completing the manuscript.

Special thanks are given to Mrs. Shirley Stasiowski, R.N., Director of Nursing at Orange Memorial Hospital, Orlando, Florida, without whose cooperation this study could not have been possible. I would also like to thank Mrs. Dorothy Stephens for her efforts in typing the manuscript.

Additionally, I am grateful for the support and encouragement received from the administration of OMH Mental Health Center, especially Edmund S. Bartlett, Ph.D., Chief Clinical Psychologist.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>v</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vi1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Method</td>
<td>14</td>
</tr>
<tr>
<td>Results</td>
<td>18</td>
</tr>
<tr>
<td>Discussion</td>
<td>24</td>
</tr>
<tr>
<td>Summary</td>
<td>28</td>
</tr>
<tr>
<td>List of References</td>
<td>29</td>
</tr>
<tr>
<td>Table</td>
<td>Title</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>Means and Standard Deviations for Treatments</td>
</tr>
<tr>
<td>2.</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>3.</td>
<td>Point-Biserial Correlations of Income and Number of Absences</td>
</tr>
</tbody>
</table>
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design of Experiment</td>
<td>17</td>
</tr>
<tr>
<td>2.</td>
<td>Mean Index of Absenteeism for Treatment Groups</td>
<td>20</td>
</tr>
</tbody>
</table>
INTRODUCTION

The management and organizational literature has neglected, for the most part, the work of B. F. Skinner and other operant conditioners. Primary emphasis has been given to such behavioral scientists as McGregor, Maslow, and Herzberg. McGregor's theory places primary importance on the environment as the determinant of individual behavior. Similar emphasis is seen in Maslow's theory and his postulation of a need hierarchy. (Nord, 1969)

Herzberg (1968) cites numerous attempts in both the past and present to motivate employees. These attempts involve time off, human relations training, sensitivity training, communications programs, job participation, and employee counseling. He submits, as validated through investigations using subjects from various professions and vocations, that two sets of factors contribute to job satisfaction and dissatisfaction. The motivator factors are seen as intrinsic to the job and include achievement, the work per se, responsibility and growth or advancement. These factors are responsible for satisfaction on the job. Hygiene factors, on the other hand, are sources of unhappiness on the job. These include policy-administration, supervision, interpersonal relationships, salary, working conditions, and the like.

Herzberg suggests, where appropriate, job enrichment is a valuable tool to motivate employees. It is not just increasing the number of tasks to be done but allowing more in-
dividual authority, less rigorous supervision, increased accountability for own work, and introduction of new and more difficult tasks. (Herzberg, 1968)

Nord contends that Herzberg and McGregor have failed to recognize the variety of possible rewards in job design. He argues that job enlargement is simply an increase in the variety of tasks a person does and may in fact be intrinsically rewarding, in that numerous reinforcers are at work. He notes the self-stimulation and sensory deprivation studies that have found stimulation as reinforcing, in and of itself. Nord sees Herzberg's "satisfiers" as important motivators, perhaps because they are administered on a variable ratio schedule. (Nord, 1969)

Jablonsky and DeVries (1972) were prompted to expand upon Nord's model, developing a more predictive model of individual behavior based on both operant conditioning and management literatures. Their open systems model emphasizes not just a two-person exchange but a multi-person exchange by introducing the notion of the peer group(s). A matrix system is developed as a paradigm representing the various combinations of positive and negative behaviors and reinforcements occurring in job settings. The behaviors are directed by the individual toward either management or peer group(s) and subsequently receive either positive or negative reinforcement from each agent.

Operant conditioning carries the basic assumption that an individual learns mainly by producing changes in his envi-
ronment. Further, it is a process in which characteristics of operant behavior are modified through time by the environmental consequences of the behavior. Various characteristics of the individual's response such as rate, latency, probability, and so forth have been successfully manipulated experimentally. (Jablonsky and DeVries, 1972)

Environmental consequences are of three types. When applied to a behavior to increase the rate of response, the consequence is referred to as a "positive reinforcer". "Negative reinforcers" are those designed to, by their disappearance, increase response rate. The third type of consequence is a neutral stimulus which has no effect on the probability of the behavior. Although punishment is discussed by these authors, they fail to identify it, perhaps more appropriately, as a fourth environmental consequence. It is an aversive environmental event that has the effect of reducing the future probability of a given response.

Schedule of reinforcement is an important concept in operant conditioning. Continuous reinforcement schedules are those in which the consequence follows the behavior every time. Partial schedules allow for the consequence following the behavior some of the time. Partial schedules may provide for reinforcement on a ratio basis, where the consequence follows every nth behavior, or on an interval basis, where the consequence occurs after the behavior and subsequent to some time lapse.

Ratio and interval schedules are of two types, fixed or
variable. The fixed ratio schedule is one in which the number of responses required for the consequence to occur is constant from one reinforcement to the next. The required number of responses varies from a particular reinforcement to the next with the variable ratio. The time required to elapse is constant from one interval to the next, prior to a response being reinforced, in the fixed interval schedule. The time varies across reinforcements in the variable interval schedules. Other reinforcement schedules are to be found, but those mentioned have received more attention experimentally. (Jablonsky and DeVries, 1972)

Analytic behavioral application might be defined as a process of applying sometimes tentative principles of behavior to the improvement of specific behaviors, evaluating at the same time any changes due to the process of application. If there are changes, then the parts of the process responsible for them are identified as nearly as possible. (Baer, Wold and Risley, 1968)

Baer, Wold, and Risley (1968) discriminate applied and basic behavioral research. Basic research examines any behavior and variables related to it, whereas applied research is constrained to primarily those variables affecting only the behavior under study. A further constraint in applied research involves most often selecting behaviors considered socially important, in social rather than laboratory settings. Typically, the experimenter has achieved an analysis of a behavior when he can exercise control over it. In ap-
plied settings, however, the degree of control may not be so easily demonstrated. Hence, this requires over-replication and/or appropriate statistical tests to establish acceptable probability levels in such settings.

Control may be evinced reliably by two designs—"reversal" and "multiple baseline" techniques. The former involves measuring the behavior over time until its stability is clear. The experimental variable is then applied while the behavior continues to be measured. If change is affected, the variable is discontinued or altered to determine if the change noted does in fact depend on the variable. The multiple baseline is effective when the behavior may be irreversible or when reversing the behavior is undesirable. A number of responses are identified and measured to provide baseline data. An experimental variable is applied to one of the behaviors. If change is noted with concomitantly little or no change in the other behaviors, the variable is then applied to another of the set of behaviors. As this process continues, evidence is accruing as to the efficacy of the experimental variable. (Baer, Wold and Risley, 1968)

Rather few actual studies are cited in the literature with regard to the application of operant conditioning to industrial settings. Some of these are herein discussed. Gupton and LeBow (1971) reported using a high probability behavior as a reinforcer with two male part-time telephone solicitors in a large company. The opportunity to sell a very saleable product was made contingent upon the sale of
another not so easily saleable product. It was found that the low probability behavior increased and the sales of both products likewise increased. This technique avoids the use of more costly extrinsic stimuli.

Aspects of the effects of extrinsic regards on intrinsic motivation was examined by Deci (1972). Intrinsic motivation refers to no apparent reward beyond the activity per se or feelings resulting from the activity. The results indicate that money does not decrease intrinsic motivation for doing a task provided it is paid on a noncontingent basis. This may have implications in applied settings but remains tentative as the study was conducted in a laboratory setting.

Operant conditioning studies purport a variable ratio schedule of reinforcement as being preferable over a continuous schedule. Wexley, Yukl, and Seymour (1972) investigated the relative effectiveness of pay incentives under both reinforcement schedules. Their results demonstrated the variable schedule was more effective with the use of pay incentives. This would suggest particular effectiveness when the pay is supplemental to the regular pay program.

Burroughs and Richardson (1974) successfully applied behavioral contingencies to a group of venipuncture technicians to improve work performance. A "time off" contingency was utilized, based upon the number of days without any unfilled requests for blood samples. The mean of unfilled requests per day dropped from an initial 2.35 to 0.29 during the period in which the contingency was in effect.
Tardiness and absenteeism were target behaviors in a study by Knight (1974), involving 11 venipuncture technicians. A time off contingency was effectively administered to reduce both tardiness and total tardiness plus absenteeism to a statistically significant degree. Although absences were reduced during the contingency, the difference between pre-contingency and contingency periods was nonsignificant.

In Argyris' theories of human behavior in organizations, he suggests people will adapt to frustration, conflict, and failure by engaging in one or more of a number of behaviors. Prominent among the latter is absenteeism. (Dunnette and Kirchner, 1965) The American Medical Association's "Syllabus on Work Absences" states that a worker who is on the job must in fact be both able and willing to be there. If not, then he will be absent. (Bunde, 1967)

Limited pertinent research has been conducted on the problem of absentee rates and the cost of absenteeism. There are indications that American industry has a minimum absentee rate of 3.5 percent, and 2 percent is considered excessive. Often managers feel that absenteeism is not costly since employees may not be paid for time absent. There are, however, fringe benefits that continue to accrue. Expenses prevail within production when the absent employee must be replaced temporarily. It has been estimated that the cost for a plant of 1,000 employees experiencing a rise in absenteeism of one percent is around $150,000 per year. (Kearns, 1970)
Porter and Steers (1973) completed a current and comprehensive review of the literature pertaining to various factors related to employee turnover and absenteeism. They place emphasis on the impact of "met expectations" with regard to these forms of withdrawal. One study with oil refinery workers revealed the perceived fairness of pay and promotion was a primary cause of absenteeism. With regard to incentive plans, it has been found work groups able to develop their own incentive plans to reward good attendance, show significantly increased rates of attendance over control groups. There is some indication that absenteeism is higher in larger than in smaller firms. Among blue-collar workers, absenteeism (and turnover) is related to the size of the working unit; in other words, there is increased withdrawal with increased size of the work unit. The literature suggests a positive relationship between dissatisfaction with the content of the job and absenteeism (eg. Bass, 1965).

A number of studies are reported that examine job satisfaction and absenteeism. The kind of absence measure used has a large effect on the size and direction of any correlational values. Vroom (1964) cited the Fleishman, et al study which found a -0.25 correlation between morale and absence rates in one large corporation. Another study determined a correlation of 0.31 between job satisfaction and the favorableness of absenteeism in an oil refinery. The review by Porter and Steers (1973) discusses two additional studies in which inverse relationships were found between job satisfac-
tion and absenteeism among office and clerical workers.

Among personal factors, age has been observed to be positively albeit weakly related to absenteeism. Family size and family responsibilities are found positively related to absence rates for women, but mixed findings are reported for men. (Porter and Steers, 1973)

A number of studies have related absenteeism and attitudes. One such study reported a correlation of -0.47 between an average "morale index" in a mail-order house and absences. Questionnaire data in another study revealed much less satisfaction in work groups with higher absenteeism. In these same groups there were fewer expressed feelings of "group unity". (Tiffin and McCormick, 1965)

Bunde (1967) made reference to statements estimating that some 50 percent of all work absences are for psychological reasons. Results from one study of machine shop operators pointed to less emotional stability in high-absence employees as compared to low-absence employees. Among long-term female telephone company employees, the high-absence group was found to exhibit a greater number of emotional and other disorders than that of the low-absence group. (Dunnette and Kirchner, 1965)

Rather few studies are to be found in the literature addressing specific attempts to deal with absenteeism in general. Often, global comments are made related to the effects of management and/or supervisor-employee relations. Bunde (1967) suggests management can be instrumental in reducing
short-term absences by instilling in employees a desire to be present for work and by putting forth an effort to assist them in improving their health.

Absenteeism and turnover both tend to be greater with more authoritative management systems. Exploitive and benevolent authoritative systems will manifest high withdrawal when people are free to move. More participative systems evince low to moderate levels of absenteeism. (Likert, 1967)

In this vein, researchers in a paper products factory discovered that there was less absenteeism in work stations embodying conditions in which employees set their own pace and/or could adjust or correct the machinery. (Fried, Weitman, Davis, 1972)

Steinmetz and Schoderbeck (1967), after expressing that absenteeism is quite dependent upon supervisory potential, suggest use of such management techniques as frequent meetings of the entire work group, spending more time with all employees, more decision-making by employees, rotation of work assignments, and so forth. Dreyfack (1970) likewise attests to the importance of supervisory-employee relationships. He purports putting more responsibility on the employee regarding absenteeism. For example, he suggests that the employee should report his absence directly to the supervisor. Cultivating subordinates' feeling more responsible for the consequences of the absence is recommended. Stressing the importance of decreased absence rates and stimulating competition among work groups may additionally be helpful.
The results of a survey were reported in *Business Management* (1967). Of the 100 firms surveyed, 74 percent indicated they deducted pay when absenteeism became excessive. Some 25 percent reportedly used other methods, e.g. flunking an annual merit review. Only 12 percent of these firms indicated offering incentives to reduce absenteeism and tardiness. Usually these incentives involve trading stamps or cash, but time off was awarded by one company for each two weeks of perfect, on-time attendance. The percentage of absenteeism was cut in half in a division of clerks and technicians by instituting a program of rating employee attendance and counseling those who fail to respond. (*Supervisory Management*, 1970) Kearns (1970) discusses two programs that have been effective in dealing with the absentee problem. A warning slip is given on the first and second unexcused absence with termination mandatory for the third. One system assigning point values to certain types of absences was shown to reduce an absence rate of 3 percent to 1.5 percent.

As can readily be seen, programs to reduce absenteeism are quite often punitive. Punishment is the most widely used technique in our society for behavioral control. Its widespread use arises, more than likely, from the fact that rather immediate effects are seen. This method quite probably is inefficient in many instances, since the undesirable response may continue in the absence of the "threat". Punishment does not promote a more desirable response but serves only to reduce that which is deemed undesirable.
Detrimental effects may arise in production due to increased psychological tension. Further, punishment may prompt avoidance and dislike of the punishing agent. (Nord, 1969)

Aside from the study mentioned previously by Knight, little, if any, is reported in the literature of operant conditioning methods applied to absenteeism. Nord (1969) made mention of a program in a St. Louis hardware firm utilizing a lottery system that offers prizes. A drawing is held at the end of each month for cash prizes of $20 to $25, awarded at the rate of one for each 25 eligible employees. The latter are those with no tardiness for a month. At the end of 6 months, the employees with perfect attendance for the entire period become eligible for the drawing of a color television. Social reinforcement is provided by listing the names of those eligible for the drawing as well as all winners in the company paper. Following 16 months of operation, sick leave costs were reduced by 62 percent. During the first month, 151 of 530 employees were eligible. This number had grown to 219 in a much later month. Management reported considerable improvements within the organization. It appears such a program has promise and can be readily and inexpensively developed.

Almost no attention has been given to what might be applied to reduce the incidence of absenteeism among nursing personnel. One nursing administrator, who was interviewed, commented that absenteeism is frequently considered the largest problem in nursing departments. Franks (1971) sug-
gests the implementation of a central nursing office to deal with the problem. He stresses keeping accurate statistics on both frequency and severity of absenteeism and having first line management complete report forms for incidences of absenteeism. Meates (1971), after examining absenteeism over a year on four different nursing units, drew some tentative conclusions: 1) Nurses who are interested and encouraged in their duties are less likely to be absent or sick; 2) Nurses prepared for duty beforehand in a given specialty show less insecurity and become more deeply involved; 3) Nurses on a given team should be supported by good, reliable, permanent staff; and 4) Too many medical specialties in a given ward, accompanied by numerous consultants to attend to, is less ideal for management, administration, and nursing practice.

The current study involved the application of a contingency program designed to reduce absenteeism in the applied setting of a hospital. The primary purpose was to investigate the possible differential effects contributed by a variation of the conditions under which the contingency was offered.
METHOD

Six nursing units were arbitrarily selected from the nursing department of a large private hospital. These units were randomly assigned to two treatment groups. A total of 92 subjects were represented with 46 in each group. The sample consisted almost exclusively of females, with only one male subject. Each unit contained employees from 4 different levels of employment: registered nurse (RN), licensed practical nurse (LPN), ward clerk (WC), and nursing assistant (NA).

The experimental design called for two treatment groups. Treatment A subjects were told that individuals would become eligible for a lottery of cash prizes, if they were to have no absenteeism over a three week period. Treatment B subjects were told that individuals would become eligible for a cash lottery, if over the same three week period, they were not absent during all of the randomly selected eight dates. The subjects were not aware of the dates selected, since the dates were not randomly chosen until after the three week period ended. Each lottery allowed for one cash prize of $20 to be drawn for each 20 (or part thereof) eligible persons.

Three periods were demarcated during the course of this study. The pre-contingency period was the initial period and involved three weeks. During this time, subjects were unaware of baseline data being gathered on absenteeism. These data were collected for the purpose of comparison to
data gathered from each of the other periods.

Several days before the contingency period began, verbal mention was made at scheduled section meetings that a trial program would be initiated on a limited basis in the nursing department. Following this, personalized letters were distributed to each participant to read. The letters explained the nature of the respective program to reduce absenteeism. These were initialed when read and returned, thus insuring that all subjects were aware of the program in which they were to be involved. The contingency period lasted for three weeks, and during this time eligibility for the lottery was determined.

The final period, the post-contingency, was in effect for a two week period. Again, similarly to the pre-contingency period, subjects were unaware of data being collected on the absenteeism rate. This period provided some control for possible changes in absenteeism occurring during the contingency period and not related to the contingency per se.

In this study, absenteeism was the dependent variable and defined as failure to come to work when scheduled, regardless of reason or nature of the absence. Regularly scheduled days off, leave days, and vacation days were not considered absences. An absenteeism index was calculated for each subject using the following formula: \((\text{number of person-days lost through absence/number of work days scheduled}) \times 100\).

These data were analyzed in a one between-subject and
one within-subject repeated measures analysis of variance design. The design is shown in Figure 1. When significant F-ratios were obtained, comparisons of means were conducted to determine statistically significant differences of treatment effects among experimental periods.
FIGURE 1
Design of Experiment

<table>
<thead>
<tr>
<th>TREATMENT A</th>
<th>TREATMENT B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-C</td>
<td>CONTINGENCY</td>
</tr>
<tr>
<td>CONTINGENCY</td>
<td></td>
</tr>
<tr>
<td>POST-C</td>
<td>CONTINGENCY</td>
</tr>
</tbody>
</table>
RESULTS

Five of six units showed decreased absenteeism when the contingency was in effect. The other unit actually evinced an increase. Both Table 1 and Figure 2 indicate an effect of both treatment groups in the desired direction, in other words a decrease. The subsequent removal of the contingency led to an increase in absenteeism to levels somewhat higher than found in the pre-contingency period.

It can be seen that both treatment groups had somewhat similar levels of absenteeism at the outset. Treatment B promoted a slightly greater decrease in rate of absenteeism than did Treatment A. The difference between treatments was not, however, a significant difference \( (F=0.68, p>0.25) \). There was no evidence of a significant interaction between treatments across experimental periods.

Table 2 presents a summary of the analysis of variance. The overall contingency effect was found to be highly significant \( (F=5.66, p<0.01) \). Sample means were compared for the various experimental periods by using t-tests for dependent samples. The t-values for these comparisons were as follows: pre-contingency and contingency \( 2.34 \) \( (p<0.02) \); contingency and post-contingency \( -3.23 \) \( (p<0.01) \); pre-contingency and post-contingency \( -1.59 \) \( (p>0.05) \). Thus it was found, that the significant difference occurred between the pre-contingency and contingency, as well as the contingency and post-contingency. In other words, the contingency per se was
producing the difference.

The contingency period was marked by decreases in absenteeism across all levels of employment, even though specific analyses were not carried out to examine levels of employment as an independent variable.

Income level (above or below $6,000 per year starting salary) was correlated with amount of absenteeism, as an indicator of relationship in this sample between these two variables. Point-biserial correlation coefficients calculated for each experimental period were found to be low, ranging from -0.28 to 0.00 (see Table 3).

An additional concern to the researcher was the extent to which absenteeism, in this sample, was spread across employees. More than 40 percent of all subjects in each group were found to contribute to some absenteeism during the pre-contingency. This was reduced to a figure of about 30 percent during the contingency period.
FIGURE 2
Mean Index of Absenteeism for Treatment Groups

<table>
<thead>
<tr>
<th>Absenteeism</th>
<th>Pre-contingency</th>
<th>Contingency</th>
<th>Post-contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Experimental Periods
TABLE 1
Means and Standard Deviations for Treatments

<table>
<thead>
<tr>
<th></th>
<th>Pre-Contingency</th>
<th>Contingency</th>
<th>Post-Contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.84</td>
<td>3.57</td>
<td>6.70</td>
</tr>
<tr>
<td>S. D.</td>
<td>7.52</td>
<td>7.89</td>
<td>9.97</td>
</tr>
<tr>
<td><strong>Treatment B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.19</td>
<td>2.65</td>
<td>5.17</td>
</tr>
<tr>
<td>S. D.</td>
<td>5.28</td>
<td>4.89</td>
<td>8.74</td>
</tr>
</tbody>
</table>
TABLE 2
Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatments (A)</td>
<td>1</td>
<td>73.38</td>
<td>0.68</td>
</tr>
<tr>
<td>Subjects (C)</td>
<td>90</td>
<td>108.50</td>
<td></td>
</tr>
<tr>
<td><strong>Within Subjects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periods (B)</td>
<td>2</td>
<td>183.29</td>
<td>5.66**</td>
</tr>
<tr>
<td>A x B</td>
<td>2</td>
<td>4.69</td>
<td>0.14</td>
</tr>
<tr>
<td>B x C</td>
<td>180</td>
<td>32.41</td>
<td></td>
</tr>
</tbody>
</table>

**p < 0.01**
<table>
<thead>
<tr>
<th></th>
<th>Pre-Contingency</th>
<th>Contingency</th>
<th>Post-Contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment A</td>
<td>-0.06</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Treatment B</td>
<td>-0.16</td>
<td>-0.28</td>
<td>-0.16</td>
</tr>
</tbody>
</table>
DISCUSSION

As previously mentioned, one unit showed an increase in absenteeism with the initiation of the contingency. This remains unexplained but perhaps resulted from a legitimate rise in absenteeism due to an increased incidence of illness and/or hospitalization at this particular time. This was reported by the head nurse of the unit subsequent to the study.

The difference between Treatments A and B was not significant. Intuitively, a difference might be expected, as the individual who is absent at any time during the contingency may realize she still has an opportunity to be eligible for the cash lottery, under the terms of Treatment B. An absence during the contingency period in Treatment A might be expected to lessen the incentive to avoid additional absences, in view of the need to have perfect attendance.

It is suspected that had the absenteeism levels been higher initially, a greater likelihood of a significant difference between treatments may have existed. A kind of "floor effect" is operating to effect a lower limit. Some basal level of absenteeism above zero is to be expected at any time, as certain absences will occur for legitimate reasons.

Since the overall contingency effect did significantly reduce absenteeism, it follows that this reduction resulted when some reward system was offered. It is apparent from
the comparison of means that significant differences exist between the pre-contingency and contingency, as well as the contingency and post-contingency periods. In other words, the contingency was the primary influence in the reduction of absenteeism. This finding lends still further support for the principles of operant conditioning as applied to business and industrial settings.

The prominent rise in absenteeism in the post-contingency was more than likely a function of the disappointment of the employees at the withdrawal of the contingency. This period lasted for only two weeks. If extended for a greater length of time, the level would be expected to return to a level nearer that of the pre-contingency. The latter idea is supported by similar research using post-contingency periods longer than the two weeks here. As it was, the difference in the means between these two periods was not significant.

To maintain reasonable control, representation of all levels of employment was assured in each nursing unit. It might be expected that rate of absenteeism would be related to income level. Point-biserial correlations of these variables, calculated for all experimental periods, yielded only small coefficients that were not statistically significant. Most of the latter were slightly negative, suggesting a tendency toward increased absenteeism with lower income level.

The differential effect of treatment on absenteeism according to job level was examined briefly. Failure to
provide equal numbers of subjects from each job level, left this impossible to analyze appropriately. In fact, the number of subjects for each job level was quite discrepant. It is obviously difficult to assure this equality in the applied setting. Although these data are herein discussed, small sample numbers preclude adequate generalization.

The data indicated that for the RN, it made no difference which treatment was used. Each reduced and sustained absenteeism almost equally. Treatment B offered more reduction in absences among LPNs than did Treatment A. In fact, Treatment A subjects had a slight increase in absences during the contingency. The absence rate for ward clerks was reduced similarly for both treatments; but Treatment B allowed for a sustained decrease, whereas the other treatment left a marked increase within post-contingency. Absenteeism among nursing assistants increased in the group offered Treatment B. Treatment A promoted a decrease, however. This area could be given more careful consideration in a study designed to properly analyze the differential effect of a contingency program considering job level.

The findings of this study have particular implications for hospital and nursing administrators. A program offering contingencies, similar to this one, might be conducted three or four times a year. The specific times could come unannounced, with only general knowledge of the program conveyed to employees. Reasonably inexpensive prizes, cash or otherwise, might be provided. The limited expenditure is particu-
larly impressive when compared to the detrimental expenses associated with absenteeism.
SUMMARY

Six nursing units were randomly assigned to two contingency programs designed to reduce absenteeism. Eligibility for cash lotteries was offered through two different treatment conditions: (A) no absences for a three week period; and (B) no absences for all of the randomly chosen eight dates, selected from the same three week period. The analysis of the data was treated in a one between-subject and one within-subject analysis of variance design. The hypothesis of a difference between treatment conditions was not supported statistically. However, the overall reduction of absenteeism was such that a highly significant contingency effect was found. Differences between job levels and implications of the findings were discussed.
LIST OF REFERENCES


