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A DESCRIPTIVE STUDY OF AN OCCUPATIONAL PROGRAM'S IMPACT ON EMPLOYEES' ABSENTEEISM AND HEALTH CARE COST IN STATE GOVERNMENT

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A DESCRIPTIVE STUDY OF AN OCCUPATIONAL PROGRAM'S IMPACT ON EMPLOYEES' ABSENTEEISM AND HEALTH CARE COST IN STATE GOVERNMENT

By

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ABSTRACT

A DESCRIPTIVE STUDY OF AN OCCUPATIONAL PROGRAM'S IMPACT ON EMPLOYEES' ABSENTEEISM AND HEALTH CARE COST IN STATE GOVERNMENT

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The intent underlying this study was to explore, in retrospect, the effect of rehabilitation services on absenteeism and health care cost for classified employees of the State of Michigan who were experiencing behavioral/medical problems. The rehabilitation services were offered in conjunction with the State of Michigan's occupational program. Behavioral/medical problems experienced by the employees included alcoholism, other drug abuse, and emotional and family relationship problems.

An occupational program can be viewed as a set of three systems that are linked together by program staff functions (Erfurt & Foote, 1977). In the context of this study, the three systems included classified employees of the State of Michigan, the Employee Service Program, and the providers of rehabilitation services in the community. The staff of the program perform functions which link employees in the work setting who are experiencing behavioral/medical problems together with providers of rehabilitation services in the community. The major linking staff functions

are training and consultation with supervisors and employee organization representatives, employee problem assessment, referral to treatment, and follow up. In this study the effect of the three systems on employee absenteeism and health care cost was examined.

Evaluation studies of occupational programs in state governments have not been reported in the published literature. Where other studies have been reported, the results have not consistently demonstrated a reduction in employer cost except for absenteeism and sick benefits.

In order to establish realistic objectives for occupational programs, it is important to understand what programs can accomplish. The focus of this study, then, was to examine the program's effect on two of several possible outcome variables for occupational programs.

Subjects of the study were 122 employees referred to the Employee Service Program from 15 of the 19 departments in state government.

Independent variables were established by using the naturally occurring subgroups within the program. They were a treatment versus a no-treatment group and a supervisor referral versus a self-referral group.

Of the eight client characteristics analyzed, two--age and problem type--were significantly proportionally different across levels of the independent variables.

Employee absenteeism and three types of health care cost were established as dependent variables. The health

care cost variables were hospital and surgical, diagnostic, and major medical. Measures of the dependent variables were taken during a three month period before and a nine month period following referral to the program and then used in a regression analysis to adjust for pre-referral differences on the dependent variables between groups included in the study. A multivariate analysis of variance was used to test three hypotheses which involved simultaneous comparisons between treatment and no-treatment groups, supervisor-referral and self-referral groups on the dependent variables.

The main hypothesis of the study was concerned with effect of treatment versus no treatment and supervisor-referral versus self-referral on the rate of absenteeism and the three types of health care cost. The results of the analysis did not support a statistically significant difference at an alpha of a .05 level of significance for either of the two comparisons. The findings suggest clients in the treatment and no-treatment groups made similar changes on the dependent variables. The same relationship held for the supervisor-referral and the self-referral groups.

Finally, mean rates of absenteeism were calculated for employees in the treatment and no-treatment groups who had absenteeism rates greater than the mean rate for all classified state employees. Biweekly rates of absenteeism were reduced from 7.09 to 4.42 mean hours for the treatment group and 5.11 to 5.01 hours for the no-treatment group. These findings represent reduction in employee absenteeism

within the study groups, during the period of the study, however, the findings cannot be generalized beyond the period of the study or to other groups because statistical hypothesis testing was not possible.

To my wife, Allison K. Dowling and to
our sons John Patrick and Michael David

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CHAPTER I

THE PROBLEM

Introduction

A movement is under way throughout the United States which has a concern for American workers who are experiencing behavioral/medical problems. This movement is referred to as occupational programming and has a focus on the general well-being of the worker and the deteriorating effects that behavioral/medical problems can have on an employee's job performance.

A basic premise underlying the occupational program movement is that employees who experience problems such as alcoholism and other substance abuse, emotional, marital, family, and financial problems, in most instances are not able to clearly separate their personal life from their life as an employee. The employee's personal problems tend to be expressed in the work environment. Frequently, those problems have a deteriorating effect on the employee's job performance and contribute to higher cost of operating an organization.

According to Eurfurt and Foote (1977), an occupational program is created by linking together three

separate systems. These systems are the employees in the work environment, program staff and their related functions, and providers of rehabilitation services in the community. The program staff can be located either internal or external to the organization and have responsibilities to the employees in general, the supervisors, and the providers of rehabilitation services in the community. The various functions of the program accomplish the linking of the systems. The major functions are (further explanation in Appendix A):

1. Casefinding
    (a) Training of supervisors and union representatives
    (b) Education and information to employees in general
    (c) Consultation with supervisors
2. Employee problem assessment
3. Referral of employee to providers of rehabilitation services in the community
4. Follow-through and follow-up with clients, supervisors, and treatment professionals
5. Program maintenance
6. Program evaluation

An occupational program is a system organized to minimize the effect of those factors which work against the resolution of personal and job performance problems.

This system also provides employees with a means of minimizing the disruption and suffering in their personal lives, helps them to develop in the area of personal interaction, and provides them with a greater sense of control over important aspects of their lives. When an employee is faced with unresolved alcohol or other mental health problems, there is an increase in absenteeism, utilization of health care benefits, long-term disability claims paid out, lost time, accidents, use of staff time to process employee grievances, and a decrease in job performance and overall staff morale.

The relationship between employee personal problems and their expression in the work environment was demonstrated by Winslow, Hayes, Prentice, Powles, Seeman, and Ross (1966) through a study where cost factors for three matched employee samples were compared. The cost to the companies involved was approximately $1,650 per worker per annum for the suspected problem drinking and miscellaneous problem samples and $867 for the problem-free sample. This relationship of employee personal problems to cost factors in an organization has been further supported by a number of studies involving problem drinkers. Employee absenteeism, sickness payments, and cost time accidents were studied by Observer and Maxwell (1959). Pell and D'Alonzo studied cardiovascular diseases (1968), sickness absenteeism (1970), and mortality rates (1973).

A related but different view of the association of employee personal problems and cost factors in an organization involves issues such as the nature of work, the work environment, job stress, and job satisfaction. Alfred Meyer (1976) believes that the modern business and industrial organization, through the application of organizational theory, has been transformed into a bureaucratic, artificial subculture having characteristics much like a machine: rigid, inflexible, and dispassionate. Therefore, this dehumanized organization produces alienated workers. Investigators in the study, Work in America, concluded that "The human costs of this state of affairs are manifested in worker alienation, alcoholism, drug addiction and other symptoms of poor mental health" (U.S. Government, 1973).

Issues related to the alienation of the worker are being addressed through principles of organizational and social psychology. But these efforts produce long-range solutions to human and organization problems, and workers experiencing major personal problems in the work environment today will find little satisfaction or immediate assistance through the application of these long-range strategies. However, this does not suggest that the long-range strategies are not worthy of considerable attention. However, in order to improve the quality of the work life of the American worker and to minimize the cost

of producing goods and providing services, there must be a focus on both the short-term and long-term strategies.

This study will focus on the more pragmatic short-term issue of examining the impact of identifying and providing rehabilitation services to employees who are experiencing personal problems, without focusing in the etiology of these problems or the relative merits of either position.

When the employee has experienced significant personal problems, the employer, represented by the first-line supervisor, has demonstrated minimal effectiveness in resolving job performance problems (Lotterhos, 1975; Presnall, 1976; Edwards, 1975). Often, the supervisor's response results in a delay in correcting these problems. There are a number of reasons for this. Presnall talks about the mystique associated with alcoholism (1967). He believes that the mystique excuses the alcoholic from responsibility to seek help and that the supervisor is rewarded for concealing his "troubled" employees.

The mystique that is expressed in concealment or delay in response can be related to organizational, cultural, and personal factors. Employees are sometimes transferred as an organizational response to job performance problems rather than correcting these problems. Societal attitudes may be reflected in a supervisor's emotional response to certain human problems. Further,

a supervisor's inability to firmly and directly confront an employee, and the employee's own defensive responses, combine to prolong these problematic situations.

This concealment--or perhaps, more appropriately, the ineffective handling of employees with behavioral/medical and job performance problems--is a relatively frequent occurrence within a work setting. A major reason, then, for establishing an occupational program is to provide management with an effective method of helping employees who have personal problems that cause deteriorating job performance. These programs provide employees with personalized mental health service while achieving cost-avoidance benefits for the employer.

A small number of formal studies have been undertaken to determine the prevalence of behavioral/medical problems among various employed populations. In 1968 the National Council on Alcoholism completed one of the most extensive studies of prevalence rates of employee alcoholism. This study involved five different types of industries which had established occupational programs (National Council on Alcoholism, 1968). The industries' experience in referred cases of employees with alcoholism was used as a baseline for the estimates. These estimates were based on average age and male-female ratio within the employee population, and the industries were characterized as heavy, medium, and light. Using the

data from the five original industries, the authors then established estimates of prevalence rates for alcoholism among the 58,285,000 workers within the U.S. labor force.[1]

These estimates for prevalence rates for alcoholism within the U.S. labor force were: 10% for heavy industry with an average age of 40 or more and 90% or more male; 5.9% for medium industries with an average age of 38-40 and 60 to 89% male; and 1.9% for light industry with an average age of 37 or less and 59% or less male. The average rate reported for the combined categories was 5.3%. The authors also completed a number of intensive surveys of large governmental employee populations, but there was no evidence that prevalence rates of alcoholism differ substantially between governmental employee and private employee populations.

Other studies of the prevalence of alcoholism among working populations are consistent with the findings of the National Council on Alcoholism. The light industries, of Eastman Kodak and Consolidated Edison Company, report a 3% incidence of alcoholism (Edwards, 1975; Franco, 1957). The heavy industries, of Kennicott Copper and Burlington Northern, report 5 to 10%, respectively (Edwards, 1975). Further, the results of a national survey with 65 companies reporting indicated that in the

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[1]A number of occupational categories totaling 16,000,000 employees were excluded.

production and service occupations it was estimated that 7.7% of the workers had problems involving alcoholism (American Society for Personnel Administration and the Bureau of National Affairs, 1978). The estimated average rate was 4.3% for the remaining occupational categories, while the average rate for all occupational categories was 5.1%. Data were collected on a number of personal problem categories and were the bases for estimating that 21% of the total workers were experiencing serious personal problems.

In a self-report survey of workers in a clothing factory, Blanco and Akabas (1968) found that 13% of the workers experienced mental health problems. But the worker reports are likely to be an understatement of the extent of mental health problems, because the respondents were identified.

MacIver (1969) estimated that 25% of the industrial population have significant emotional problems. Ten percent are estimated to "have serious psychiatric impairment requiring an inordinate amount of supervision and medical time and energy" (p. 270). In a less direct manner of estimating the prevalence of employees with personal problems, Finkelstein and Ziegensuff (1978) reported that one-third of the workers in a bank said they would seek information about alcoholism, drugs, and psychological problems in a counseling session if services were available.

But caution should be observed in attempting to use the findings from any one study to generalize to populations of workers outside the original population studied. A pattern has developed, however, in the replications of the studies involving the incidence of behavioral/medical problems among workers. The general reported incidence of worker mental health problems ranges from 13 to 25%, with the lighter industries experiencing lower rates and the heavier industries experiencing higher rates. The rates of employee alcoholism appear to vary in the same manner and range between 2 and 10% of the worker population.

Some general statements can be made regarding the incidence of mental health problems among the population of state governmental workers in Michigan included in this study. First, state government is considered a light industry since it is made up of a large number of workers in the clerical, service, technical, professional, and managerial occupational categories. Approximately 51% of the workers are female, with an average age of 37 years for all workers. This suggests that the rate of alcoholism is relatively low. When we consider other behavioral/medical problems in general, it is a little more difficult to determine their relative incidence. Nevertheless, if the lower figure of 13% is used, this suggests that a substantial number of employees are experiencing behavioral/medical problems.

Historical Development

Occupational programs are historically linked to the founding of Alcoholics Anonymous in 1935 and the later activities of recovering alcoholics in work settings. These programs began in the early 1940s as employees who were recovering alcoholics performed "twelfth step work" in the work setting. The recovering alcoholic offered a helping hand to other employees who wanted to stop drinking, and these early efforts were formalized into company-sponsored programs to assist employees who were alcoholics. The philosophical basis for these programs has evolved in two important ways. First, programs moved from the narrow focus on the employee who is an alcoholic to the employee who may be involved in a wide range of human problems that have a potential for negatively impacting job performance (Presnall, 1970). Today, individual programs within business, industry, and government offer rehabilitative services to employees experiencing the broad range of behavioral/medical problems. Secondly, the rationale for developing an occupational program has evolved from the early work of recovering alcoholics to include both general humanistic concerns and cost reduction considerations that are important to the employer.

Efforts to disseminate occupational programs throughout the nation were formalized in 1972 through the establishment of an Occupational Branch within the

National Institute on Alcohol Abuse and Alcoholism (NIAAA). NIAAA has established the objective that the rehabilitative services of an occupational program will be available to 50% of all workers by 1983 (Godwin, 1977). Donald Godwin, in 1978, as Chief of the Occupational Branch of NIAAA, estimated there were 2,500 programs nationally (American Society for Personnel Administration and the Bureau of National Affairs, 1978).

In 1971 the professional organization of the Association of Labor-Management Administrators and Consultants on Alcoholism (ALMACA) was formed, and local chapters have been established throughout the country. This organization devotes its full attention to issues related to occupational programming.

Also, the International United Automobile Workers has assigned a full-time staff person to develop occupational programs within work settings that have collective bargaining agreements. The initial efforts will focus on Michigan.

Purpose

This study will involve an examination of selection outcomes of the State of Michigan's occupational program. In the systems approach (Erfurt & Foote, 1977) described earlier in this chapter, an occupational program is made up of the three separate systems. For the purposes of this study, the systems will include classified state employees, the

Employee Service Program, and the providers of rehabilitation services in the community. In this study, the effects of these three systems as a unit on employee absenteeism and health care cost will be examined. The examination of the individual systems and their corresponding functions will be left to future studies of occupational programs.

Because this study will involve one program rather than a representative sample of occupational programs, the generalizability of the findings will be limited. Selected population characteristics will be provided, so the reader can make a judgment regarding the generalizability of the findings to other employee populations.

Rationale

Employers are becoming increasingly concerned about the cost impact of such work-related factors as absenteeism, sick benefits, medical claims, accidents, employee turnover, grievances, and deteriorating job performance. Personal and family problems of employees tend to be expressed in the work setting in a manner that results in these work-related factors increasing the cost of operating an organization. The literature in the field of occupational programs typically reports the above work-related factors as outcomes of program

evaluation (Foote, Erfurt, Strauch, & Guzzardo, 1978; Alander & Campbell, 1975; Lotterhos, 1975; Presnall, 1970; Skidmore, 1974).

Evaluation studies of occupational programs in state government have not been reported in the literature. Where other studies have been reported, the results have not consistently demonstrated a reduction in cost factors, except for absenteeism and sick benefits. Further, an increase in health care cost may be a desired program outcome. Case finding, as a major function of an occupational program, can be expected to increase at least that portion of health care cost resulting from identifying and referring employees to treatment. An initial increase in health care costs may, therefore, be an indicator of successful program activity. But before program outcomes can be selected, we need to understand more clearly what occupational programs can accomplish.

Description of the Employee Service Program

The Employee Service Program began as a pilot program in August, 1974 with the objective of providing rehabilitative services to classified state employees. A grant application had been previously submitted to the Department of Health, Education, and Welfare for funds for an occupational program to serve classified employees in the 19 state departments. But the grant application was

not approved. The program was later expanded from the original two departments to three departments. As funds could be developed, it was planned that the program would be formally implemented into the remaining 16 state departments; but the funds did not become available for the expansion of the program as originally expected.

Program services were available to employees in the remaining 16 state departments as services were requested and as staff time was available. No formal case finding activities were directed toward the employees in the latter 16 departments. Two of these departments, however, placed articles describing the program in their in-house paper. Two articles appeared in an employee association newspaper.

Case finding activities in the pilot department were intended to result in a dual system of employee referrals to the program. The first is the supervisor-referral, which is typically based on deteriorating job performance. The second is the self-referral in which the employee initiates contact with the program for a number of reasons that are typically independent of the supervisor. A more accurate description for the self-referred employee would be a nonperformance-based referral. Casefinding activities for the self-referred employee were typically letters, brochures, newsletters, and posters.

Orientation/training sessions for supervisors were used as a casefinding activity to encourage supervisor referrals to the program. The sessions included a description of services available through the program. The major focus of these sessions was on the supervisor role and its relationship to motivating employees to take responsibility for personal and job performance problems. Supervisors were encouraged to direct their attention toward job-performance issues and minimize the attention given to the specific nature of an employee's personal problems. This approach combines the offer of professional help with the use of a system of progressive corrective action.

Progressive corrective action was presented as a method of communicating to an employee. This communication typically includes the following:

1. A statement about the existence and nature of a specific job performance problem(s).

2. Information to help the employee understand what he or she can do to correct the performance problem(s).

3. Creating the expectation that the employee must correct the performance problem(s) if he/she is going to continue in the job.

The overall objective of the orientation/training session is to give supervisors information and skills which would result in employees being referred to the Employee Service Program or result in supervisors

contacting the program's staff for consultation services regarding an employee with chronic job performance problems.

Research Questions

The overall purpose of this study is to determine the effect the State of Michigan's occupational program has on employee absenteeism and health care cost. The research hypotheses will be stated in the form of questions.

Question 1:

Of those employees referred to the program, will the rate of absenteeism be different between those employees who received treatment and those employees who did not receive treatment?

Question 2:

Of those employees referred to the program, will the rate of health care cost be different between those employees who received treatment and those employees who did not receive treatment?

Definition of Terms

Job performance.--Job performance will be used in a broad sense to include such factors as quantity and quality of work, timeliness of work completion, judgment, initiative, cooperativeness with other employees, and attendance.

Progressive corrective action.--Progressive corrective action is action that is typically initiated by

the first-line supervisor and intended to correct the employee's job performance deficiency. Each step of progressive corrective action taken is more intense than the previous step. For example, the beginning point of this system is usually a verbal discussion, and the ending point is termination from employment. The intensity of the action taken is most likely related to the method used in taking corrective action and the immediacy of possible loss of the job. For example, a corrective memorandum, when compared to a corrective interview, is a more intense statement about an employee's job performance problem. Also, movement from a corrective interview to a corrective memorandum is movement along a continuum of corrective action and, therefore, represents a point closer to termination from employment.

Behavioral/medical problems.--This term is used in a general way to represent such personal problems as alcoholism and other substance abuse problems, and emotional, marital, family, and financial problems.

Treatment.--Treatment was provided on an inpatient or outpatient basis for such problems as alcohol and other substance abuse problems, and emotional, family, and marital problems. Outpatient treatment occurred if the employee completed at least four outpatient therapy sessions, and inpatient treatment occurred when an employee completed a scheduled treatment program. No treatment is a

situation where treatment was recommended by program staff, but the employee refused to enter treatment; or he/she agreed to engage in treatment but completed three or fewer out-patient therapy sessions.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Authors of a number of studies of occupational programs have reported changes in organizational cost factors such as sick benefits and lost productivity, absenteeism, health care benefits, long-term disability, accidents, employee turnover, grievances filed, and job performance. The cost factors of absenteeism and health care benefits have been selected for this study because of the availability of the data and the potential effect these factors can have on operating cost. In a review of occupational program literature, Ruby, Thompson, Vincent, and Weymouth (1976) found that employee absenteeism was the most frequently used dependent measure in the evaluation of occupational programs, while health care costs were used less frequently.

It is likely that absenteeism was used more frequently than health care costs because program staff have easier access to information about employee absenteeism than health care benefit usage. Information about absenteeism is generally viewed as less sensitive from

the perspective of confidentiality than information about employees' health care usage. Additionally, information about health care benefit utilization is frequently stored by an insurance company outside the employing organization.

Edwards (1975), reporting on a review of evaluation in occupational programs, points out that the research methodology used in the majority of the studies has been inadequate. In offering an explanation, Edwards takes a developmental view of program evaluation. He states that only within recent years has the field of occupational programming emerged as an effective approach to offering mental health services to the American labor force. According to him, program staff must first become familiar with the use of descriptive data, then with pretest-posttest comparisons; and finally, at a more sophisticated level, staff must become involved with controlled evaluation studies. The early research questions asked by program personnel were likely to be "What has happened?" and "How much has happened compared to doing something?" A later and more sophisticated question might be, "How much has happened compared to doing nothing?" According to this view, the adequacy of research methodology can be expected to improve as the field of occupational programs matures. Even if Edwards' developmental view of field research in

occupational programs holds for the future, there remains a dearth of evaluative research studies which include strong research designs such as experimental and control group comparisons.

Most evaluative studies of occupational programs have involved a one-group pretest and posttest research design. The absence of equivalent nontreatment control groups, or the failure to use statistical methods to adjust for initial group differences, increases the likelihood that there are explanations to the observed changes which are not accounted for by the research hypothesis. Events independent of the treatment could have caused the observed changes.

The one-group pretest-posttest designs frequently used in occupational programs are vulnerable in varying degrees to threats of internal validity described by Campbell and Stanley (1963). Evaluation studies of occupational programs are most vulnerable to the effects of history and regression being confounded with the effect of the experimental treatment. Whether maturation is an issue would be related to the length of time involved in the study and perhaps related to particular characteristics of the group being examined.

The effect of testing is not an issue when data on a dependent variable are routinely recorded and stored in institutional records for all employees. The effects

of instrumentation can be an issue if there are no clear definitions of the dependent variables involved. If, for example, a change occurred in what would constitute sick leave during the period of the study, then instrumentation could be an issue of concern.

The pre- and posttreatment design creates the possibility that regression effects will be misinterpreted as treatment effects (Campbell & Stanley, 1963). When the criteria for selection into a program correlate positively with an extreme value of a dependent variable used in the study, regression can be expected to occur. Then there is the possibility that improvement in the posttreatment scores may be due to regression effect rather than to treatment effect.

The high rates of absenteeism typically experienced at the time the employee is referred to a program leave studies involving employee absenteeism vulnerable to the effects of regression. Frequently, the employee's own concern or the supervisor's concern for the employee's absenteeism rate is at least indirectly a factor in referring the employee to a program. The employee's selection for program services, then, is to some extent based on extreme rates of pretreatment absenteeism, which can be expected to correlate positively with the dependent measure, posttreatment absenteeism. Subsequent observations of employees with initial extreme rates of

absenteeism may reveal a tendency for a movement of absenteeism rates toward the mean of the group. This change in the rate of absenteeism is confounded with treatment effect.

A number of studies have been identified which relate to the stated hypothesis involving the Employee Service Program's impact on employee absenteeism and health care cost. These studies will be presented in three groupings. The first group consists of evaluative studies which include employee absenteeism and/or health care cost as a dependent variable. The second group of studies is evaluative in nature but includes general health variables as measures of outcome. The third group of studies is descriptive in nature and involves attempts to describe absenteeism and health problems experienced by specific groups of employees.

The first group of studies, which includes absenteeism and health care cost as dependent variables, provides information which is directly related to the hypotheses of this study. The second and third groups of studies, those including general health variables, and the descriptive studies are related indirectly to this study's hypotheses. They do form a logical basis for these hypotheses.

A further method for grouping studies related to occupational programs is by employee problem type.

Programs tend to provide services to employees with alcohol problems or are comprehensive and provide services to employees experiencing a wide range of possible human problems. But most studies of occupational programs, which included absenteeism and health care cost as dependent variables, involve employees who have had alcohol-related problems. The reason is that programs initially began in the 1940s with a focus on the employee with alcohol-related problems.

It was not until 1972 that Harrison Trice and the National Institute on Alcohol Abuse and Alcoholism began to advocate that program efforts be expanded to include a number of human problems which potentially could have a deteriorating effect on the employee's job performance (Edwards, 1975; Trice, 1972). This expanded focus includes alcoholism and other substance abuse problems and emotional, marital, family, and financial problems.

Evaluative Studies with Employee Absenteeism and/or Health Care Cost as Dependent Variables

Byers and Francek (1975) reported the results of a pretreatment and posttreatment interview survey with 49 volunteer male alcoholics. The men interviewed reported that before treatment 59% had frequent absenteeism problems and that after treatment 4% had frequent absenteeism problems. However, methodological weaknesses of the study limit the generalizability of the finding.

The major methodological limitation involves the inherent problems of the pretest-posttest design and the volunteer nature of the selection process.

Alander and Campbell (1975) studied 117 employees with alcohol and drug problems who accepted treatment and, as their control, 24 employees with alcohol and drug problems who did not participate in the program. The 117 employees in the experimental group were selected because of their active involvement in the program from approximately 600 employees who had come to the attention of management because of alcohol and/or drug use and abuse. The 24 employees in the control group had not participated in the program but had come to the attention of management and were known to have drug- or alcohol-related problems. The employees in the experimental and control group were observed pre- and posttreatment on seven selected cost factors. The changes in the two groups were then compared independently with each other. The following table (Table 2.1) presents only those cost factors relevant to this study, along with the respective percentage changes for the experimental and control groups.

This study was strengthened beyond a pretest-posttest design by including a control group. There are limitations to the study, however, in that the authors do not report how the 117 employees were selected from those who were involved in the program; nor was there

information on how the 24 control subjects were selected. Also, no information was given regarding the comparability of the time periods representing each group.

Table 2.1

Findings from Selected Pretest-Posttest Independent Comparisons of an Experimental Versus Control Group of Employees with Alcohol and Other Drug Problems on Selected Cost Factors

Cost Factor	Percentage Change	
	Experimental Group (n=117)	Control Group (n=24)
Lost man hours	-48	+9
Sick and accident benefits	-33	+60
Leave of absence	-53	+60

This study reveals something about the 117 employees who had substance abuse problems, who participated in the program, and were selected for the study. It also reveals something about the 24 employees who had substance abuse problems who did not participate in the program. It does not reveal anything about those employees who participated in the program who were not selected for the study. The findings of this study by themselves have limited generalizability.

Schinderle and Dowling (1976) used a pretreatment-posttreatment design involving a treatment group (n=23) and a no-treatment group (n=16) in a pilot study of

absenteeism for state employees referred to the Employee Service Program involving a variety of personal problems. The first 39 employees referred to the program were involved in the study. The study included periods of four months before and after referral to the program. The investigators found reduction in absenteeism of 53% for the treatment group and a 16% reduction for the no-treatment group.

The major limitations of this study were the lack of representativeness of the sample and the smallness of the sample.

Skidmore, Balsam, and Jones (1974) reported an evaluation study involving 150 male employees who had used the INSIGHT program. These employees were observed on the dependent variables of absenteeism and health care cost for a period of six months prior to and following treatment. It was learned that attendance was improved by 52%; weekly indemnity was reduced by 74.6%; and hospital, medical, and surgical costs were reduced 55.4%. The same investigators studied another group of 83 employees who were not necessarily problem drinkers but who had chronic absenteeism problems. Their attendance was improved by 44.4%. In both studies the focus was expanded beyond alcoholism as an employee problem to include family, legal, marital, financial, and drug abuse problems. However, the generalizability of the findings is limited because the selection process is unclear.

Winslow et al. (1966) found that hospital, medical, and surgical claims averaged $373 per annum for a suspected problem drinking group, $248 for a miscellaneous problem employee group, and $162 for a problem-free group. This demonstrated increased cost to the insurer for the two problem employee groups.

In order to measure changes in the variables and to calculate economic value resulting from remediation activities, in this study three groups of employees were identified and then observed on eight dependent variables at an interval of 27 months. Eighty-seven employees were subdivided into the three groups: (1) no treatment recommended, (2) recommendations for treatment not followed through, and (3) recommendations for treatment followed through. An economic value resulting from remediation was not demonstrated, because the change in the dependent variables was not significantly different among the three groups. Caution should be used in generalizing from this study. As the authors stated, a major purpose of the study was to demonstrate methods for calculating economic estimates of job disruption. Also, small samples were used to simplify this effort. Due to the fact that selection procedures are unclear, and the subjects are not described according to major characteristics, the report of findings is limiting. In addition, the problem-free sample used as a comparison in the

authors' words could be considered "super" employees, and this tended to exaggerate the differences between the problem-employee groups and the problem-free group.

Asma, Eggert, and Hilker (1971), of Illinois Bell Telephone Company, reported on a number of occupational program outcomes which impact sickness disability payments. Their study comprises the period five years before and five years after referral to the program, and data are reported for those employees whose illnesses lasted in excess of seven days and who, therefore, qualified for disability benefits. Four hundred and two employees with alcohol-related problems had 662 cases of sickness disability absences five years before participating in the program. In the subsequent five years, the same employees had only 356 cases. This was a reduction of 46% in sickness disability.

Again, this study is limited by its lack of a control group and is particularly vulnerable to events occurring independent of program services because of the relatively long periods of time involved in the study.

Evaluative Study Involving General Health as a Dependent Variable

Byers and Francek (1975), cited earlier in this chapter, reported that 12% of the sample of volunteer alcoholics rated their health as unconditionally good before treatment; but after treatment the number rose

to 44%. Sixty-five percent reported specific health problems that were verified through plant medical records before treatment, and 28% reported verified specific medical problems after treatment. There is limited generalizability of these data for reasons stated earlier in this chapter.

Studies That Are Descriptive in Nature

Observer and Maxwell (1959) found in a sample of 48 problem drinkers that the problem drinkers were absent 2.5 times as many days, cost 3 times as much in sickness payments, and had 3.6 times as many combined on-the-job and off-the-job accidents as their matched controls. They acknowledge that the subjects in the sample were not representative of the prevalence of the problem in the company. Subjects were selected by individuals in the company by memory or familiarity with the subject. Therefore, it is questioned whether or not the sample was representative of the alcoholic population within the company.

In a series of three descriptive studies over a five-year period involving 920 problem drinking employees and their matched controls, findings were reported on cardio-vascular diseases, employee absenteeism, and mortality rates (Pell & D'Alonzo, 1968, 1970, 1973). Pell and D'Alonzo (1968) found that hypertension and

cirrhosis of the liver were the only cardiovascular diseases that were strongly associated with alcoholism. No relationship was found in the rest of the disease categories except kidney stones. The findings, however, were generally inconclusive because of the small number of cases in many of the diseased categories and because of the loss of subjects. (It should be noted that 23 alcoholics and one control were lost to the study through death or termination of employment.)

In 1970, Pell and D'Alonzo found that alcoholics experienced 70% more absences than nonalcoholics. When alcoholic employees were absent and this came to the attention of the medical department, the company medical personnel accurately diagnosed alcoholism only 2.5% of the time. Absenteeism data were presented for alcoholics and their controls for respiratory infections and selected digestive and muscular-skeletal disorders. Also, frequency rates for alcoholics with digestive and muscular-skeletal disorders were about three times those of their controls and about two times those of their controls for respiratory infections. In 1973, Pell and D'Alonzo found that the mortality ratio was 3.22 for alcoholics compared to their controls. These findings are consistent with findings of other investigators.

Cole and Shupe (1970), in a four-year follow-up study of former psychiatric patients in industry, reported findings on several dependent variables, including

sickness absenteeism. The former patients were grouped according to the diagnostic categories of schizophrenics and psychoneurotics and then paired with matched controls. The average hours of sick leave used by these groups were: schizophrenics 94.3, their controls 74.4; psychoneurotics 77.4, their controls 47.2. The differences between the experimental groups and their controls were statistically significant. However, the authors cautioned that the former patients should not be viewed as having chronic psychiatric problems. Further, they viewed the company as being relatively paternalistic and philosophically committed to employee retention.

Summary

In most of the evaluative studies used, the relatively weak one-group pretreatment--posttreatment design was used (Asma, Eggert, Hilker, & Robert, 1971; Byers & Francek, 1975; Skidmore, Balsam, & Jones, 1974). These studies were further weakened by methodological problems such as selection of participants and the loss of subjects. Alander and Campbell (1975) and Schinderle and Dowling (1976) strengthened their pre-treatment--post-treatment designs somewhat by including a nonequivalent control group. Winslow et al. (1966) provided the strongest evaluative design by including a matched control group. With the exception of Alander and Campbell (1975), Schinderle and Dowling (1976), and Winslow et al.

(1966), investigators in the above studies attempted to answer the research question, "How much has happened?" These latter investigators have attempted to answer the question, "How much has happened compared to doing nothing?"

The descriptive studies demonstrated more research sophistication in their methodologies in that, typically, matched control groups were included (Cole & Shupe, 1970; Observer & Maxwell, 1959; Pell & D'Alonzo, 1968, 1970, 1973). Studies concerned with employee absenteeism showed pretreatment differences in employee absenteeism between employees with emotional problems (Cole & Shupe, 1970) and alcohol-related problems (Observer & Maxwell, 1959; Pell & D'Alonzo, 1970). These investigators were not concerned with treatment outcomes in these studies. The findings, however, do support the notion that if treatment effects are present, they are likely to be of a magnitude to be observed through the dependent variable--employee absenteeism.

The finding of this group of studies is less clear regarding the existence of employee health factors relating to impaired health. In one study, Pell and D'Alonzo (1968) found limited association between a group of employees with alcohol-related problems and the presence of cardio-vascular diseases. In another study, Pell and D'Alonzo (1970) found that the frequency

rates for alcoholics with digestive and muscular-skeletal disorders were about three times those of their controls and about two times those of their controls for respiratory infections. Also, Pell and D'Alonzo (1973) found that the mortality ratio was 3.22 for alcoholics when compared to their controls.

The findings of the relatively weak one group pretreatment--posttreatment designs gain strength through replication. In all of the evaluation studies cited, with the exception of Winslow et al. (1966), large reductions in employee absenteeism following treatment were reported, thereby lending support to the possibility that treatment offered by the programs had the effect of reducing employee absenteeism. Therefore, the findings support research Hypothesis 1 concerned with employee absenteeism.

The presence of one study which demonstrated a reduction in health benefit usage is not sufficient to provide direction for research Hypothesis 2 concerned with health benefit usage (Skidmore et al., 1974). Studies replicating the Skidmore et al. findings have not been identified.

Winslow et al. (1966) failed to demonstrate the economic value of treatment in the evaluative component of the study. One of the factors examined was health benefit usage. The descriptive part of the study

did show a difference in health benefit usage among employees with suspected alcohol problems, miscellaneous problems, and a problem-free group. This finding, along with the improved health of treated alcoholics reported by Byers and Francek (1975), only indirectly relates to health benefit usage and, therefore, the directionality of the hypothesis.

The study presented in the following chapters involves a test of the effect of treatment on absenteeism and on health care cost among state classified employees referred to the Employee Service Program.

CHAPTER III

DESIGN OF THE STUDY

Limitations Placed on the Study

This study involved the application of research designs and statistical procedures in a field setting in an attempt to maximize control of extraneous variables which might be confounded with treatment effect.

There were factors present in this field setting which place limitations on the study. Some of these factors were:

1. The study is retroactive in nature. This limits the nature of research questions that can be asked to those questions that relate to the data that had already been stored in organizational records.

2. The component of the study involving health care cost could not extend beyond October 1, 1978, without losing subjects, because after that date, some employees involved in the study elected to receive health care through a Health Maintenance Organization rather than through an insurance carrier.

3. Equivalent experimental and control groups could not be established, for ethical reasons, by withholding or delaying services to employees.

4. There was a limited amount of resources available to apply to the research effort.

Sample

The sample for this study included 122 classified employees of the State of Michigan who were referred to the Employee Service Program for rehabilitation services from 15 of the 19 state departments during the period of March 20, 1977 through June 10, 1978.

Sixty-three additional employees referred during the same period were not included in the analysis. Fourteen of these employees who did not receive a recommendation for treatment had complete data on the dependent variables. They were excluded from the analysis in order to form a more homogeneous no-treatment group.

These employees did not receive a recommendation for treatment from program staff. By dropping these employees from the analysis, a no-treatment group was formed that included only subjects who received a recommendation for treatment but did not enter treatment; or if they did enter treatment, were involved with three or fewer sessions; or did not complete an in-patient treatment program. Further, 39 employees who did not have complete data on the dependent measures were also excluded from the analysis. Finally, there were 13 employees for which no data were available on the dependent measures.

Some of the reasons employees were dropped from the primary analysis included not being able to locate data on the dependent variables, extended medical leaves, retirements, and separations. (Refer to Appendix B for data on available client characteristics and dependent variables for groups not included in the study.)

It was assumed that there were no important differences between those employees referred from the departments where the program has been formally implemented versus departments where there is an informal relationship with the program. Employees from each of the state departments who were supervisor referrals had experienced deteriorating job performance problems and followed through with a supervisor's recommendation to become involved in the Employee Service Program. Consultative services were provided to supervisors from each of the departments by program staff when requested without regard to the formal relationship to the program. Employees in each of the departments who were self-referrals may or may not have had job performance problems, but they generally referred themselves to the program for a number of reasons typically independent of their supervisors.

Independent Variables

It was not possible, for ethical reasons, to randomly assign subjects to treatment and control conditions. Instead, naturally occurring groups of clients were used as independent variables in the study. The 85 employees

who followed through with staff recommendations for treatment by completing an inpatient hospital program or at least four outpatient therapy sessions became the treatment group. A no-treatment group included 37 employees where treatment was recommended by staff and the employee did not enter treatment; or treatment was recommended, the employee entered treatment but withdrew after three or fewer sessions or withdrew before completing an inpatient treatment program.

A treatment group, then, was compared to a group who received a recommendation for treatment but did not follow through with that recommendation. Treatment was provided outside state government by community agencies, hospitals, and private practitioners. These groups differ beyond the treatment-no treatment dimension. The employees in the treatment group had chosen to enter and follow through with treatment, while the employees in the no-treatment group had, in most instances, chosen to not become involved or not follow through with treatment. The personal factors which influenced their choice were not controlled in this study.

The type of employee referral to the program, supervisor and self, was also included as an independent variable in the study. The type of referral was selected for inclusion in the study because the two levels might respond differentially to treatment and, therefore, have implications for emphasizing or improving a particular type of referral as a casefinding activity. (Refer to Table 3.2

for the number of subjects in each level of the independent variables.)

Demographic Data

Selected client characteristics are reported in Chapter IV in order to describe the sample so that the reader can determine the extent to which the findings from this study can be generalized to other populations. The client characteristics include:

1. Age
2. Classification level
3. Employing department
4. Employee personal problem
5. Occupational category
6. Race
7. Sex
8. Years employed with the State of Michigan
9. Hourly wage

In order to determine the similarity of the four subgroups in the study regarding the client characteristics, a chi square analysis was performed and reported in Chapter IV.

Dependent Measures

Health Care Cost

Health care costs were those costs which were incurred by the employee and submitted to the Aetna Life and Casualty Company for reimbursement at a predetermined

Table 3.2

Independent Variables of Treatment and No-Treatment Groups, and Supervisor and Self-Referral Groups Included in the Primary Analysis of the Study

	Type of Referral		
	Supervisor	Self	Total
Treatment Group			
Completed 4 or more outpatient therapy sessions or completed a scheduled inpatient treatment program	39	46	85
No Treatment Group			
Did not follow recommendation for treatment	6	15	21
Followed recommendation by beginning treatment and completing from 1 to 3 outpatient therapy sessions or began but did not complete an inpatient treatment program	8	8	16
Total	53	69	122

rate. Health care costs were recorded in five sub-categories. They are:

1. General hospital and surgical
2. Diagnostic
3. Major medical (80% paid by insurance carrier after a deductible is fulfilled)
4. Outpatient alcoholism and general psychiatric treatment (50% paid by the insurance carrier after a deductible is fulfilled)
5. Inpatient alcoholism treatment
6. Inpatient psychiatric treatment

The first three categories--general hospital and surgical, diagnostic, and major medical--were included in this study as dependent measures. Outpatient alcohol and general psychiatric treatment, inpatient alcoholism, and inpatient psychiatric treatment were not included as dependent measures, because the treatment group can, in the short run, be expected to incur costs as it follows through with staff recommendations for treatment that would not be incurred by the no-treatment group.

Absenteeism

There are two types of employee absenteeism. In the first type, sick leave, the employee receives compensation equal to his/her rate of pay. Sick leave was earned at the rate of four hours biweekly and accumulated to cover the time off the job for illness or for other designated

purposes. The second type, lost time, involved time off the job for illness and other designated purposes where the employee was not reimbursed for wages, because the employee did not have accumulated sick leave. The two types of absenteeism were treated as one dependent measure.

Time off the job (absenteeism) resulting from an employee accepting a referral to treatment for personal problems is viewed as a positive outcome. Absenteeism other than absenteeism incurred while attending treatment was a primary focus of this study. For this reason, when absenteeism as time off the job for treatment was identified, it was factored out of general absenteeism for the analysis of the data.

Data Collection

Measures of the dependent variables were taken from historical records. Absenteeism data were obtained by hand from microfiche cards located in a state government records center. This involved searching 50 sets of microfiche cards, each containing biweekly absenteeism records for 68,000 state classified employees. Information on health care cost was provided by the Aetna Life and Casualty Company. The data were drawn by hand from individual case files and were provided without identifying employees.

Measures

Measures were taken on the dependent variables for a three-month period immediately preceding referral to the

program and were used in a regression analysis to adjust for prereferral differences on the dependent measures between groups included in the study. Additionally, measures were taken on the dependent variables for a nine-month period following client referral to the program.

Analysis

The Statistical Package for the Social Sciences for multivariate analysis was used in order to simultaneously examine employee absenteeism and the three types of health care cost data (Bent, Hadlaihull, Jenkins, Nie, & Steinbrenner, 1975). Comparisons on the dependent measures were made between the treatment and no-treatment groups (refer to Figure 3.1 for a graph of the design matrix). An alpha level of .05 was established for the analysis.

	Treatment	No Treatment
Supervisor-Referral	39	14
Self-Referral	46	23

Figure 3.1

2 x 2 Design Matrix and Cell Sizes

Hypotheses

Three hypotheses were developed to make comparisons between the treatment and the no-treatment groups, the

supervisor-referral and self-referral groups, and to test for their interactions on the four dependent variables.

Hypothesis 1:

Of those employees referred to the program, there will be no difference between those employees who received treatment and those employees who did not receive treatment on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

Hypothesis 2:

Of those employees referred to the program, there will be no difference between those employees who were supervisor-referrals and those employees who were self-referrals on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

Hypothesis 3:

Of those employees referred to the program, there will be no interaction effect between treatment and type of referral on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

Summary

In this study an attempt was made to evaluate the effect of treatment on absenteeism and health care cost for State of Michigan classified employees. The 122 employees as subjects of the study were referred to the Employee Service Program for rehabilitation services by their supervisors or they came as self-referrals. They were referred during the period March 20, 1977 through June 10, 1978, from 15 of the 19 state departments.

Study groups that were established as independent variables were treatment and no-treatment, and supervisor-referral and self-referral. The main hypotheses tested made comparisons between the treatment group and the no-treatment group, and the supervisor-referral group and the self-referral group on absenteeism and three types of health care cost.

Prereferral measures on the four dependent variables were used in a regression analysis to adjust for prereferral differences between the study groups on the dependent variables. The adjusted dependent variables were then analyzed through a multivariate analysis for a period of nine months following referral to the program.

There are factors present in this field setting which placed limitations on the study. These include the retroactive nature of the study; the possible loss of subjects; ethical considerations which prohibit establishing equivalent treatment and no-treatment control groups; and the limited amount of resources available for the study.

CHAPTER IV

ANALYSIS OF DATA

This chapter includes client descriptive data, the results of the hypothesis-testing, and supplemental analysis.

Client Characteristics

Client characteristics have been reported in this chapter primarily for two reasons. First, in this study it was not possible to randomly assign clients to the groups of treatment (two levels) and referral types (two levels). The data analyzed and reported on client characteristics form the basis for making decisions about the equivalence of the groups involved in the study. The regression analysis discussed in Chapter III provided only partial control over possible group differences by using prereferral values on the dependent variables to adjust the dependent values in the measures following referral to the program.

Second, the data about client characteristics will allow readers of this study to make decisions regarding the extent to which the subjects in this study are representative of potential subjects drawn from another population in the future and, therefore, make a decision about the generalizability of the findings of this study to other populations.

The study included 122 classified state employees who were involved in at least one intake interview with the Employee Service Program staff. Out of the 122 clients, 85 were involved in at least four outpatient therapy sessions, or inpatient hospital alcohol or psychiatric treatment. The remaining 37 clients did not meet the criteria established for treatment.

A chi square analysis was performed to examine the proportional representation of each of eight client characteristics for each of the four subgroups included in the study. The four subgroups in the study were treatment, no-treatment, supervisor-referral, and self-referral. The client characteristics were age, classification level, employing department, occupational category, problem type, race, sex, wages, and years employed. Of the eight client characteristics tested, two--problem type and age--yielded a probability of less than .05 and therefore, suggested a significant difference in proportional representation across the two treatment dimensions for problem type and age, and across the two referral dimensions for problem type. Data regarding client characteristics have been reported in more detail below.

Age

The clients ranged from 19 to 66 years of age. Eight-five percent of the clients were between 21 and 40

years of age. The mean age of the entire group was 35.7 years (refer to Table 4.1).

Classification Level

The state civil service classification levels of the clients ranged from level 01 to level 19. This was out of a possible range from level 01 to level 21. Employees with supervisory responsibility can be represented in classification levels between 05 and 21. Classification levels 12 and above are generally considered management levels. Clients in management classifications, then, made up 7.3% of the sample. Data on the representation of supervisors in the sample were not collected (refer to Table 4.1).

Employing Department

The clients in the study were from 15 of the 19 state departments with the majority, 77 out of the 122, coming from four departments. Three of these departments had a formal relationship with the program as described in Chapter I.

Occupational Category

The occupational categories examined were: managers and officials, professionals, technicians, officers, and clerical, skilled craft, service maintenance, paraprofessional, and protective services. The categories including the largest number of clients were clerical (43.4%) and

Table 4.1

Client Characteristics of the Study Groups of Treatment, No-Treatment, Supervisor-Referral and Self-Referral

	All Clients		Treatment		No Treatment		Test of Significance			Supervisor-Referral		Self-Referral		Test of Significance		
	%	(N)	%	(N)	%	(N)	X^2	P	DF	%	(N)	%	(N)	X^2	P	DF
Age																
18-20	1.6	(2)	0.0	(0)	5.4	(2)	12.462	.0142	4	1.9	(1)	1.9	(1)	3.325	.505	4
21-30	41.0	(50)	42.3	(36)	37.8	(14)				46.1	(25)	36.7	(25)			
31-40	28.7	(35)	27.1	(23)	32.5	(12)				20.4	(11)	35.4	(24)			
41-50	14.8	(18)	20.0	(17)	2.7	(1)				16.7	(9)	13.1	(9)			
51-66	13.9	(17)	10.6	(9)	21.6	(8)				14.8	(8)	13.1	(9)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Classification Level																
01-05	51.6	(63)	49.4	(42)	56.8	(21)	2.103	.551	3	48.1	(26)	54.4	(37)	1.622	.655	3
06-11	41.1	(50)	43.5	(37)	35.1	(13)				46.3	(25)	36.7	(25)			
12-14	5.7	(7)	4.7	(4)	8.1	(3)				3.7	(2)	7.4	(5)			
15-21	1.6	(2)	2.4	(2)	0.0	(0)				1.9	(1)	1.5	(1)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Department																
7	14.8	(18)	14.1	(12)	16.2	(6)	16.600	.412	16	13.0	(7)	16.2	(11)	16.600	.412	16
11	1.6	(2)	2.4	(2)	0.0	(0)				1.9	(1)	1.5	(1)			
19	3.3	(4)	4.7	(4)	0.0	(0)				3.7	(2)	2.9	(2)			
23	4.9	(6)	5.9	(5)	2.7	(1)				5.5	(3)	4.4	(3)			
27	13.9	(17)	16.5	(14)	8.1	(3)				7.4	(4)	19.1	(13)			
31	1.6	(2)	0.0	(0)	5.4	(2)				1.9	(1)	1.5	(1)			
35	14.8	(18)	12.8	(11)	18.9	(7)				18.5	(10)	11.7	(8)			
37	0.8	(1)	0.0	(0)	2.7	(1)				0.0	(0)	1.5	(1)			
39	1.6	(2)	2.4	(2)	0.0	(0)				3.7	(2)	0.0	(0)			
43	19.7	(24)	17.6	(15)	24.2	(9)				22.2	(12)	17.6	(12)			
47	1.6	(2)	2.3	(2)	0.0	(0)				1.9	(1)	1.5	(1)			
55	3.3	(4)	3.5	(3)	2.7	(1)				0.0	(0)	5.9	(4)			
59	7.4	(9)	7.1	(6)	8.1	(3)				9.2	(5)	5.9	(4)			
63	2.5	(3)	1.2	(1)	5.4	(2)				0.0	(0)	4.4	(3)			
67	6.6	(8)	7.1	(6)	5.4	(2)				7.3	(4)	5.9	(4)			
75	0.8	(1)	1.2	(1)	0.0	(0)				1.9	(1)	0.0	(0)			
79	0.8	(1)	1.2	(1)	0.0	(0)				1.9	(1)	0.0	(0)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			

Table 4.1 (continued)

	All Clients		Treatment		No Treatment		Test of Significance			Supervisor-Referral		Self-Referral		Test of Significance		
	%	(N)	%	(N)	%	(N)	X^2	P	DF	%	(N)	%	(N)	X^2	P	DF
Occupational Category																
Managers and Officers	3.3	(4)	4.7	(4)	0.0	(0)	5.8638	.556	7	1.9	(1)	4.4	(3)	7.865	.345	7
Professionals	20.5	(25)	17.5	(15)	27.0	(10)				22.2	(12)	19.1	(13)			
Technicians & Officers	11.5	(14)	14.1	(12)	5.4	(2)				13.0	(7)	10.3	(7)			
Clerical	43.4	(53)	43.5	(37)	43.2	(16)				38.9	(21)	47.1	(32)			
Skilled Craft	4.9	(6)	4.7	(4)	5.4	(2)				7.3	(4)	2.9	(2)			
Service Maintenance	7.4	(9)	5.9	(5)	10.9	(4)				3.7	(2)	10.3	(7)			
Paraprofessional	8.2	(10)	8.2	(7)	8.1	(3)				13.0	(7)	4.4	(3)			
Protective Services	0.8	(1)	1.2	(1)	0.0	(0)				0.0	(0)	1.5	(1)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Problem Type																
Alcohol	17.2	(21)	20.0	(17)	10.8	(4)	14.052	.015	5	25.9	(14)	10.3	(7)	13.846	.0166	5
Emotional	59.0	(72)	63.5	(54)	48.6	(18)				63.0	(34)	55.8	(38)			
Family Relationships	17.3	(21)	12.9	(11)	27.1	(10)				7.3	(4)	25.0	(17)			
Drugs	0.8	(1)	1.2	(1)	0.0	(0)				0.0	(0)	1.5	(1)			
Physical	0.8	(1)	1.2	(1)	0.0	(0)				1.9	(1)	0.0	(0)			
Undetermined	4.9	(6)	1.2	(1)	13.5	(5)				1.9	(1)	7.4	(5)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Race																
White	84.4	(103)	85.9	(73)	81.1	(30)	3.076	.380	3	77.7	(42)	89.6	(61)	4.085	.253	3
Black	9.9	(12)	9.3	(8)	10.8	(4)				13.0	(7)	7.4	(5)			
Indian	1.6	(2)	2.4	(2)	0.0	(0)				1.9	(1)	1.5	(1)			
Hispanic	4.1	(5)	2.4	(2)	8.1	(3)				7.4	(4)	1.5	(1)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Sex																
Male	40.2	(49)	38.8	(33)	43.2	(16)	.066	.797	1	48.1	(26)	33.8	(23)	2.008	.156	1
Female	59.8	(73)	61.2	(52)	56.8	(21)				51.9	(28)	66.2	(45)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			
Years Employed																
0-7	59.9	(73)	62.4	(53)	54.1	(20)	.946	.8143	3	63.0	(34)	57.4	(39)	.410	.938	3
8-14	22.1	(27)	20.0	(17)	27.0	(10)				20.3	(11)	23.5	(16)			
15-21	5.7	(7)	5.8	(5)	5.4	(2)				5.6	(3)	5.9	(4)			
22-	12.3	(15)	11.8	(10)	13.5	(5)				11.1	(6)	13.2	(9)			
Total	100.0	(122)	100.0	(85)	100.0	(37)				100.0	(54)	100.0	(68)			

professional (20.5%). The next largest representation was found in technician (11.5%), paraprofessional (8.2%) and service maintenance (7.4%). There was minimal representation from the skilled craft (4.9%), managers and officials (3.3%), and the protective service (0.8%) categories (refer to Table 4.1).

Problem Type

The breakdown by percentages of the client problem categories as determined by program staff was: emotional, 59.0; family relationships, 17.3; alcohol related, 17.2; undetermined, 4.9; drugs, 0.8; and physical, 0.8. Emotional, family relationships, and alcohol-related client problem categories included 93.5% of the clients in the study (refer to Table 4.1).

Race

The racial distribution by percentage was: White, 84.4; Black, 9.9; Hispanic, 4.1; and Indian, 1.6. Slightly over 15.6% of the clients were of minority races (refer to Table 4.1).

Sex

The sex distribution of the overall sample was: females, 59.8% and males, 40.2% (refer to Table 4.1).

Hourly Wage

The mean hourly wage for the overall sample was $7.28 (refer to Table 4.2).

Table 4.2

Mean and Standard Deviation for Hourly Wage for the Total Sample

	Mean	S.D.	N
Hourly Wage*	7.28	2.16	122

*The hourly rate of pay was based on pay rates for classified State of Michigan employees for the 1979/80 fiscal year.

Years Employed

The number of years clients were employed by the state ranged from less than 1 to 35. The largest groups representing years of employment were 0 through 7 (59.9%) and 8 through 14 (22.1%) (refer to Table 4.1). The mean years of employment for the study group was 8.12.

Hypothesis Testing

Three hypotheses were tested. Two hypotheses were tested for the main effects of treatment with two levels and the type of referral with two levels. The possible interactive effects of treatment and type of referral were also tested.

Hypothesis 1

Statement of Hypothesis:

Of those employees referred to the program, there will be no difference between those employees who received treatment and those employees who did not receive treatment on the rate of absenteeism and

three types of health care cost when adjusted by pretreatment scores.

The study failed to reject this hypothesis. Results of the multivariate test for treatment were not significant at a .05 alpha level, p = .212. This means that during the period 0 through 9 months following employee referral to the program and recommendation for treatment, no difference in the mean values between employees receiving treatment and not receiving treatment on the rate of absenteeism and the three types of health care cost was found.

Hypothesis 2

Statement of Hypothesis:

Of those employees referred to the program, there will be no difference between those employees who are supervisor-referrals and those employees who are self-referrals on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

This hypothesis was not rejected. The results of the multivariate test for referral types were not significant at a .05 alpha level, p = .340. This means that during the period 0 through 9 months following employee referral to the program and recommendation for treatment, no difference in the adjusted mean values between a supervisor-referral and a self-referral on the adjusted values on the rate of absenteeism and the three types of health care cost was found.

Hypothesis 3

Statement of Hypothesis:

Of those employees referred to the program, there will be no interaction effects between treatment and type of referral on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

This hypothesis was not rejected. The results of the multivariate test for interaction were not significant at a .05 alpha level p = .585. This means that during the period 0 through 9 months following employee referral to the program, and a recommendation for treatment, no interaction effect between the two levels of treatment and the two levels of referral type on the adjusted mean values on the rate of absenteeism and the three types of health care cost was found.

Table 4.3

Multivariate Analysis of Variance for Treatment, Type of Referral, and Treatment by Type of Referral for Four Dependent Variables

	F-Ratio	df	P
Hypothesis 1: Treatment Effect	1.483	4.00	.212
Hypothesis 2: Referral Type Effect	1.142	4.00	.340
Hypothesis 3: Treatment by Referral Type Effect	.713	4.00	.585

The adjusted and unadjusted means and standard deviations are presented for the eight dependent variables in Tables 4.4 and 4.5.

Supplemental Analysis

A supplemental analysis was undertaken in order to explore possible effects of variables which could not be controlled in the original multivariate analysis. Earlier in this chapter it was reported that of the eight client characteristics analyzed, only age and employee problem type were proportionally different across the independent variables, treatment and referral type to a level of significance. Employee problem type, as an independent variable, was not included in the original design and its analysis, because some cells would have been without subjects or with too small a number of subjects.

In order to attempt to understand the influence the employee's type of problem might have on the employee's response to treatment and, in turn, on the dependent variables, a multiple dependent T-test statistical procedure was implemented.

The problem types of alcohol, emotional, and family relations were included in the analysis. Drug, physical, and undetermined problem types were not included because of small cell sizes (refer to Figure 4.1). The dependent variables of absenteeism, general hospital and surgical, diagnostic and major medical were included in the analysis.

Table 4.4

Adjusted Means and Standard Deviations for the Dependent Variables by Treatment and No Treatment and Supervisor-Referral and Self-Referral

Dependent Variable	Treatment (N = 85)		No Treatment (N = 37)	
	Mean	S.D.	Mean	S.D.
V1	2.17	.33	2.10	.20
V2	7.42	1.89	7.38	1.52
V3	2.14	.56	2.00	.00
V4	2.25	.79	2.03	.16
	Supervisor (N = 53)		Self-Referral (N = 69)	
	Mean	S.D.	Mean	S.D.
V1	2.19	.36	2.11	.24
V2	7.27	1.51	7.50	1.97
V3	2.09	.35	2.10	.55
V4	2.11	.37	2.24	.85

Table 4.5

Unadjusted Means and Standard Deviations for the Dependent Variables by Treatment and No Treatment and Supervisor-Referral and Self-Referral

Dependent Variable	Treatment (N = 85)		No Treatment (N = 37)	
	Mean	S.D.	Mean	S.D.
PV1	4.56	4.97	3.75	3.13
PV2	10.16	43.21	8.91	35.91
PV3	2.29	7.74	.75	1.76
PV4	3.59	9.15	1.06	2.41
V1	4.01	3.50	4.52	3.41
V2	7.69	21.12	8.43	22.56
V3	2.49	6.77	2.59	5.35
V4	3.15	6.62	3.63	12.94
	Supervisor (N = 53)		Self-Referral (N = 69)	
	Mean	S.D.	Mean	S.D.
PV1	5.00	5.43	3.76	3.53
PV2	7.09	35.00	11.92	45.33
PV3	1.41	4.97	2.15	7.62
PV4	2.05	4.68	3.44	9.61
V1	4.92	4.33	3.57	2.46
V2	5.70	16.47	9.68	24.72
V3	2.00	4.59	2.94	7.47
V4	3.25	11.09	3.33	6.92

The dependent variables of outpatient alcoholism and general psychiatric treatment, inpatient alcoholism treatment and inpatient psychiatric treatment were not included in the analysis because it was expected that the cost of these health care variables would increase in the short run as clients were referred to treatment and subsequently submitted claims to the insurance company for payment of the treatment (refer to Figure 4.1 for a graph of the design).

Results

Twenty-four dependent T-Tests were completed for subjects in the treatment and no-treatment groups who were in the problem categories of alcohol, emotional, and family relations. Four dependent variables were included in the analysis. They were sick-leave, general hospital and surgical, diagnostic and major medical cost. Of the 24 dependent tests completed, none were statistically significant at $p < .002$. The alpha level was determined by dividing .05 by 24, which was the number of separate analyses (refer to Table 4.6).

	Treatment			No Treatment		
	A (n=17)	E (n=54)	FR (n=11)	A (n=4)	E (n=18)	FR (n=10)
Pre-Referral						
Post-Referral						

A = Alcohol
E = Emotional
FR = Family Relationships

Prereferral period = 3 months prior to referral to the program

Postreferral period = 0 to 9 months after referral to the program

Figure 4.1

Design for Multiple Dependent T-Test for Alcohol, Emotional and Family Relationships Types Each across Four Dependent Variables for Treatment and No Treatment

Table 4.6

Multiple Dependent T-Test for the Problem Types of Alcohol, Emotional, and Family Relationships for Four Dependent Variables by Treatment and No Treatment

	Mean Pre	Standard Deviation	Mean Post	Standard Deviation	Mean Difference	T Value	2-Tail Probability
Treatment							
Alcohol (n = 17)							
V1	6.43	7.58	3.00	2.89	3.43	2.04	.059
V2	17.53	71.12	4.20	12.54	13.33	.93	.367
V3	3.51	13.24	1.20	3.14	2.31	.72	.483
V4	1.08	4.04	2.69	7.68	-1.61	-1.65	.119
Emotional (n = 54)							
V1	4.17	4.04	4.42	3.50	-.25	-.32	.749
V2	10.12	37.28	8.66	24.23	1.46	.23	.818
V3	1.84	6.13	3.09	7.96	-1.26	-1.35	.184
V4	4.56	10.67	3.79	6.97	.77	.74	.460
Family Relationships (n = 11)							
V1	2.40	1.97	2.67	1.51	-.27	-.46	.652
V2	1.55	5.13	2.71	8.83	-1.16	-.36	.726
V3	1.37	2.09	.46	1.08	.92	1.17	.270
V4	3.08	7.36	1.59	2.90	1.49	.63	.545

Table 4.6 (continued)

	Mean Pre	Standard Deviation	Mean Post	Standard Deviation	Mean Difference	T Value	2-Tail Probability
No Treatment							
Alcohol							
(n = 4)							
V1	4.21	3.54	8.06	5.55	-3.86	-2.67	.076
V2	14.04	28.08	.97	1.94	13.07	.91	.431
V3	.00	.00	2.61	5.22	-2.61	.00	1.000
V4	.96	1.21	22.32	37.24	-21.36	-1.13	.341
Emotional							
(n = 18)							
V1	4.10	3.32	4.78	3.54	-.68	-.56	.586
V2	1.63	6.67	8.12	16.19	-6.49	-2.47	.024
V3	.75	1.68	2.57	6.14	-1.82	-1.20	.246
V4	1.46	3.11	1.59	3.86	-.13	-.38	.707
Family Relationships							
(n = 10)							
V1	3.72	3.14	3.40	1.29	.32	.26	.798
V2	3.25	6.85	15.87	37.65	-12.62	-1.00	.341
V3	.68	2.16	1.77	3.91	1.08	-.73	.485
V4	.23	.78	.88	1.74	-.65	-1.03	.330

CHAPTER V

SUMMARY

The intent underlying this study was to evaluate the effect of rehabilitation services on absenteeism and health care cost for classified employees of the State of Michigan who were experiencing behavioral/medical problems. The rehabilitation services were offered in conjunction with the State of Michigan's occupational program. Problems experienced by the employees included alcoholism, other drug abuse, and emotional and family relationship problems.

An occupational program can be viewed as a set of three systems that are linked together by program staff functions (Erfurt & Foote, 1977). In the context of this study, the three systems included classified employees of the State of Michigan, the Employee Service Program, and the providers of rehabilitation services in the community. The staff of the program performed functions which link employees in the work setting who are experiencing behavioral/medical problems with providers of rehabilitation services in the community. The major linking staff functions were training and consultation with supervisors and employee organization representatives, employee problem assessment, referral to treatment, and follow-up. This study

involved an examination of the effect of the three systems on employee absenteeism and health care cost.

Evaluation studies of occupational programs in state governments have not been reported in the published literature. Where other studies have been reported, they have not consistently demonstrated a reduction in employer cost, except for absenteeism and sick benefits. Further, an increase in absenteeism and/or health care cost may be a desired program outcome during an initial period following the referral of employees to treatment. Casefinding, as a major activity of an occupational program, can be expected to increase that portion of health care cost or absenteeism resulting from identifying employees with personal problems and referring them to treatment.

In order to establish realistic objectives for occupational programs, it is important to understand what programs can accomplish. This study, then, examines the program's effect on two of several possible outcome variables for occupational programs.

Research Design

Subjects of the study were 122 employees referred to the program from 15 of the 19 state departments. A treatment group of 85 employees was compared to 37 employees who received a recommendation to enter treatment, then did not enter treatment; entered treatment and withdrew after three or less sessions; or terminated from an

inpatient treatment program. Fifty-four employees referred by their supervisors were experiencing a deterioration in their job performance. Sixty-eight employees referred themselves to the program without a recommendation for referral by their supervisors.

Independent variables were established by using the naturally occurring subgroups within the program. They were a treatment group versus a no-treatment group and a supervisor-referral group versus a self-referral group.

Eight client characteristics were analyzed. They were age, classification level, department of employment, occupational category, problem type, race, sex, wage, and years employed.

Of the eight client characteristics analyzed, two--age and problem type--were significantly proportionally different across the levels of the independent variables.

Employee absenteeism and three types of health care cost were established as dependent variables. The health care cost variables were hospital and surgical, diagnostic, and major medical. Measures of the dependent variables were taken during a three month period before and a nine month period following referral to the program and then used in a regression analysis to adjust for prereferral difference on the dependent variables between groups included in the study.

A multivariate analysis was used to make simultaneous comparisons between treatment and no-treatment groups,

and supervisor-referral and self-referral groups on the rate of absenteeism and three types of health care cost.

The main hypotheses written in the null form are:

Hypothesis 1

Of those employees referred to the program, there will be no difference between those employees who received treatment and those employees who did not receive treatment on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

Hypothesis 2

Of those employees referred to the program, there will be no difference between those employees who are supervisor-referrals and those employees who are self-referrals on the rate of absenteeism and three types of health care cost when adjusted by pretreatment scores.

Results

In the primary analysis of this study, comparisons were made between treatment and no-treatment groups, and supervisor and self-referral groups on the rate of absenteeism and three types of health care cost. A test for interaction effects was also included. The three hypotheses were tested at $p < .05$. None of the hypotheses were rejected.

For those employees referred to the Employee Service Program, there was no basis for a statistically significant difference in the mean scores on the dependent variables between those who went into treatment and those who did not enter or follow through with treatment. This relationship also held for employees referred by their supervisor versus those who were self-referred.

The analysis of the client characteristics indicated that the four groups included in the study, treatment, no-treatment, supervisor-referral and self-referral, did differ proportionally by problem type. Additionally, the same relationship held for age across the treatment and no-treatment groups. The relatively small sample size did not allow problem type or age to be included in the multivariance analysis of variance as independent variables. Also, the size of the sample and the type of analysis did not allow for controlling quantitative levels of the dependent variables.

Multiple dependent t-tests were used to examine the four dependent variables for the problem types alcohol, and emotional, and family relationships, and the treatment and no-treatment groups for the original sample. None of the 24 tested subgroups produced significant findings at $p < .002$ (refer to Table 4.6).

Discussion

The results of the multivariate analysis of variance provide no basis for claiming a statistically significant difference in the mean scores between those employees in the treatment and the no-treatment groups, or the supervisor-referral versus the self-referral group at an alpha level $p = .05$. In other words, the groups that were compared did not differ in their response to their involvement in the program as reflected in the dependent measures.

Also, a visual inspection of the unadjusted mean scores suggests there were no general prereferral to postreferral reductions in the dependent measures for the groups in the study. The largest reduction for the dependent variable absenteeism, for example, was 10%. All groups appeared to respond in a similar way (refer to Table 4.5).

There are a number of possible reasons for the failure to find support for the main hypothesis of this study and for the apparent lack of general pre-to-post reduction in mean values on the dependent measures.

First, the study did not include a control group which was not involved in some level of service from the program. The study involved an examination of two groups of clients involved in the program for differential effects of treatment.

The difference in the amount of treatment received by the treatment versus no-treatment group may not have been large enough to produce differences in the mean values on the dependent variable which were statistically significant. The groups may have been too similar on the treatment dimension in that both groups received some treatment. Clients in the treatment group were involved in four or more sessions while clients in the no-treatment group received three or fewer treatment sessions. Group means or median for the number of treatment sessions attended by clients were not available for further comparisons.

Data from the insurance company's records indicate that 40 of the 85 clients in the treatment group whose

program records indicate attendance at four or more outpatient treatment sessions did not submit claims to the insurance company for reimbursement for outpatient treatment. Reasons why clients did not submit insurance claims could have included the following: program records may not have had correct information related to treatment; clients may not have taken time to submit claims; clients may not have believed that the information received by the insurance company would have been kept confidential; or an agency may not have qualified for receiving payment from the insurance company but adjusted their fee for treatment.

Other client experiences in the program were quite similar. Each group had made a decision to contact program staff for an appointment, they were both involved in an intake assessment interview, and the clients in each group received a recommendation for treatment. Finally, it is not known to what extent clients in the no-treatment group were involved in Alcoholics Anonymous meetings.

A second issue is that both groups of clients could have made substantial reductions on the dependent measures without test comparisons of the groups resulting in statistically significant findings. General reductions of the dependent variables for the groups involved may have been minimized by the fact that each group included clients who measured zero or had low values on the dependent measures before referral to the program. Mean values were reduced by including these clients in the calculation of these

means. Forty-one percent of the treatment group and 46% of the no-treatment group had mean values of absenteeism below the mean rate of eight days or 2.45 hours per bi-weekly period for all classified state employees. Also, over 50% of the clients did not submit a claim to the insurance company for reimbursement for any health services. It is not expected that the effect of treatment or the type of referral could have reduced the rate of absenteeism below the mean for the classified employee population.

In pursuing this issue further, means were calculated for clients in the treatment and no-treatment groups who had rates of absenteeism greater than 2.45 mean hours per bi-weekly period. Direct statistical comparisons can not be made between these two groups, because clients were not randomly selected or assigned to groups, therefore allowing the possibility the groups may be different in important ways. The two groups were different at least by their prereferral scores of 7.09 and 5.11 mean hours per bi-weekly period for the treatment and no-treatment groups, respectively (refer to Table 5.1).

The treatment group reduced their absenteeism rate from 7.09 to 4.42 mean hours per bi-weekly period or a mean difference of 2.68 hours. The no-treatment group reduced their absenteeism rate from 5.11 to 5.01 mean hours per bi-weekly period, or a mean difference of .10 hours per week. It is possible that regression effect accounted for at least part of the pre-to-post referral changes in the mean rate

Table 5.1

Unadjusted Means, Standard Deviations and Mean Differences for Clients Who had Absenteeism Rates Greater than 2.45 Hours per Bi-Weekly Period

	Mean Pre	S.D.	Mean Post	S.D.	Mean Difference
Treatment	7.09	5.09	4.42	3.29	2.68
No-Treatment	5.11	2.88	5.01	3.52	.10

of absenteeism for the treatment group. It is expected, however, that the regression effect would have a greater effect on the scores of the treatment group than on the no-treatment group, because the former prereferral scores of 7.09 mean hours were more extreme than the latter group's prereferral scores of 5.11 mean hours. The argument for a regression effect may be reduced, because if a regression effect is present, it would be expected to affect the scores of each group, even if unequally. This is because the no-treatment group's prereferral scores are also extreme and nearly double the mean for all classified employees. The no-treatment group virtually made no change in the mean rate of absenteeism. It is possible, then, a regression effect may have been minimal for the treatment group. Also, the postreferral score for the treatment was 4.42 mean hours, which was below the mean of 5.01 hours for the no-treatment group's postreferral score. It is not known,

however, if the difference between the two sets of post-referral scores is statistically significant.

These tentative observations suggest that it may be useful in future research to explore statistical methods for focusing on those employees whose behavior is defined as a problem by values on the dependent measures. Using a dependent measure for all subjects in a sample, even if a subject did not exhibit problematic behavior in the area associated with the dependent measure, may tend to dilute the findings of the study. Further, if an employee did not initially exhibit a problem in the rate of absenteeism, the dependent measure absenteeism may not be sensitive to changes that the employee might make as a result of involvement in a program.

A third issue involves a limitation related to the use of regression techniques to compensate for an inability to randomly select and assign subjects to study conditions. The use of regression analysis to equalize groups which are unequal on the dependent measures before referral to the program may not make the groups equal in their response to treatment or lack of treatment after referral as reflected in the dependent measures. A regression analysis is not sensitive to the clients' varying response to the treatment conditions; instead, postreferral scores are adjusted as a function of the prereferral scores.

Fourth, it is likely positive changes, which were not measured, occurred for the employees and the organizations

as the result of an employee and/or supervisor receiving services through the program. The following are some of the ways program services may have affected the client or other persons in the organization.

A client who reports a personalized statement such as, "We are still having problems, but somehow, we seem to be doing better," has perhaps gained something from involvement in the program. Another appropriate client change could include being able to re-enter the treatment system in the community more easily and timely at critical times in his/her life with limited assistance of program staff. It is possible that a client could change in a way not measured by the dependent variables, yet no longer require a disproportionate amount of the supervisor's time and energy to resolve job related problems. Frequently, after program staff has consulted with a supervisor regarding an employee with chronic or performance problems, the supervisor will express intense appreciation and state that the consultation has been helpful in initiating a process to correct the situation. Being helpful to a supervisor can be independent of whether or not an employee has entered treatment or responded to treatment, if a process was initiated that resulted in the employee either improving the job performance or being terminated from employment.

Finally, employees may become more health conscious after receiving program services, therefore increasing or not increasing the amount of money spent on health services.

Byers and Francek (1975) found that employees were more health conscious after receiving alcoholism rehabilitation services. This can be a positive outcome for both the employee and the employer.

Implications for Future Research

Future researchers should attempt to explore the question, "How much has happened compared to doing nothing" (Edwards, 1975). Efforts, then, need to be made to establish a no-treatment control group which has not been exposed to some level of program processes or services. The overall program effects versus the effect of doing nothing are not measured if the control group has been involved in an assessment interview, received a recommendation for treatment, received limited treatment, or had a counselor make follow-up or supportive contacts.

It may be worth considering what Campbell and Stanley (1963) referred to as the Institutional Cycle Design: a "patched-up" design, which provides the opportunity for no-treatment control groups while avoiding the ethical issue of withholding services from clients. The effect of treatment is demonstrated in several different manners in order to arrange group comparisons so they become complementary in their control of various sources of internal invalidity. This design combines a longitudinal and cross-sectional approach in a field setting. The design is appropriate for institutional settings where a given aspect of treatment is

repeated for new clients on a cyclical basis and data such as absenteeism and health care cost are stored in historical records. The length of time required to complete a study using this design could be a drawback. Generally, a high volume of client intake into a program would shorten the duration of the study, because less time would be required to make up the various subgroups.

It may not be possible to establish adequate research controls without having a specially funded experimental research project or a pilot project which is intended to answer the question of program effect. It may be that ethical questions related to withholding services from clients can be handled more easily in a pilot or specially funded research project than in an existing program that offers services to a general employee population.

If it is not possible to establish an adequate no-treatment control group for a causal study, then consideration should be given to relationship studies using correlational techniques. These studies could include variables, which with different levels, are likely to have a varying influence on the dependent measures. Examples of these variables are:

1. Number of treatment sessions attended by the client.
2. Number of staff contacts on behalf of the client (involving: client, family, union representative, treatment professional, or supervisors).

3. Coefficient indicating level of stress experienced by client, or number of stress-producing events in client's life during the past year.

When positive significant relationships are found between these variables and the dependent measures, these variables could then be used in limited studies as independent variables in more definitive causal studies. Also, the findings of relationship studies would be useful in improving processes in an occupational program.

Future researchers should explore statistical methods for focusing on those employees whose behavior is defined as a problem by values on the dependent measures.

Measures need to be developed that will reflect the program's impact on the supervisor's role. Finally, similar efforts should focus on client centered outcomes, thus reflecting the humanitarian, as well as the cost benefit reasons, for establishing an occupational program.

APPENDICES

APPENDIX A

FUNCTIONS OF OCCUPATIONAL PROGRAMS

APPENDIX A

FUNCTIONS OF OCCUPATIONAL PROGRAMS

An occupational program would typically include the following functions:

1. Identification of employees needing mental health services. Employee identification can result from a supervisor referral based on chronic job performance problems or a self-referral based on the employee's own perceptions of problems being experienced.
2. Consultation with supervisors and managers. Consultation is usually related to initiating a process of rehabilitation which is intended to restore the employee's job performance to a satisfactory level or result in the termination of the employment.
3. Public information activities. These are intended to inform and remind employees and supervisors of the availability of services offered through the occupational program.
4. Training. Training focuses primarily on the supervisor referral where there are chronic job performance problems. Training involves an attempt to help

the supervisor and manager focus on job performance problems (as opposed to personal problems). It relates the use of corrective action to the motivation of employees to accept responsibility for resolving their own personal/job performance problems.

5. Assessment of employee problem. Assessment is a determination of the nature of the employee's problems, and an identification of an approach to deal with the problem.
6. Establishing motivation. The staff person providing the assessment of the employee's problems also attempts to instill motivation within the employee to take responsibility for resolving his/her personal/job performance problems and for accepting a referral to treatment when appropriate.
7. Referral. The employee is referred to a treatment agency or treatment specialist that can best provide services which meets the employee's needs and preferences. The successful completion of this function implies that the referring person is knowledgeable of community treatment resources and has established an effective relationship with them.
8. Treatment. Treatment includes medical and psychological services.
9. Follow up. The employee is followed up both during the treatment process and on the job. Follow up

during treatment maximizes the likelihood that the employee will follow through with treatment as well as bringing job problems that are reality based into the treatment process. For the supervisor referral, observable changes in job performance factors are indicators of progress in treatment. Follow up on the job includes providing the supervisor with necessary consultation or support, as well as monitoring the employee's progress on the job.

10. Program maintenance. Program maintenance involves problem-solving activities that are encountered in the process of operating the occupational program.
11. Data gathering system. This is a system for gathering and reporting client activity data. These data are used for program monitoring and evaluation.
12. Program evaluation. Program evaluation can be viewed as a continuum starting with evaluation of the process developed to achieve stated outcomes, and moving to the evaluation of the extent to which these outcomes have been achieved. Information obtained from the process evaluation is used to change or refine the system created to achieve the stated outcomes.

APPENDIX B

REASONS FOR INCOMPLETE DATA ON THE DEPENDENT VARIABLES WHICH REQUIRED THAT CLIENTS BE DROPPED FROM THE MULTIVARIATE ANALYSIS

APPENDIX B

REASONS FOR INCOMPLETE DATA ON THE DEPENDENT VARIABLES WHICH REQUIRED THAT CLIENTS BE DROPPED FROM THE MULTIVARIATE ANALYSIS

	Treatment	No Treatment
Partial Data Available		
Medical leave of absence	5	6
Resignation	5	4
Termination	4	3
Data could not be located	4	3
Retirement	2	
Waived rights leave of absence		1
Other		2
Total	20	19

APPENDIX C

PERCENTAGE AND NUMBER COMPARISONS OF CHARACTERISTICS FOR CLIENTS NOT INCLUDED IN THE STUDY WHERE DATA WERE INCOMPLETE, AND TREATMENT WAS NOT RECOMMENDED

APPENDIX C

PERCENTAGE AND NUMBER COMPARISONS OF CHARACTERISTICS FOR CLIENTS NOT INCLUDED IN THE STUDY WHERE DATA WERE INCOMPLETE, AND TREATMENT WAS NOT RECOMMENDED

Client Characteristics	Data Incomplete		Treatment Not Recommended	
	%	N	%	N
Classification Level				
01-05	59.4	19	71.4	10
06-11	34.3	11	21.4	3
12-14	6.2	2	7.2	1
15-21	-	-	-	-
Total	100.0	32	100.0	14
Occupational Category				
Managers & Officials	-	-	-	-
Professionals	8.6	3	7.1	1
Technicians	5.7	2	14.3	2
Office & Clerical	60.0	21	42.9	6
Skilled Craft	2.8	1	-	-
Service Maintenance	8.6	3	14.3	2
Paraprofessionals	14.3	5	14.3	2
Protective Services	-	-	7.1	1
Total	100.0	35	100.0	14

APPENDIX C (continued)

Client Characteristics	Data Incomplete		Treatment Not Recommended	
	%	N	%	N
Problem Type				
Alcohol	7.9	3	7.2	1
Emotional	57.6	22	35.7	5
Family Relations	7.9	3	21.4	3
Drug	2.7	1	-	-
Physical	-	-	-	-
Undetermined	23.8	9	35.7	5
Total	100.0	38	100.0	14
Race				
White	73.0	27	57.1	8
Black	24.32	9	35.8	5
Indian	2.70	1	-	-
Hispanic	-	-	7.1	1
Asian	-	-	-	-
Total	100.0	37	100.0	14
Sex				
Male	26.0	10	42.9	6
Female	74.0	29	57.1	8
Total	100.0	39	100.0	14

APPENDIX D

MEANS, STANDARD DEVIATIONS, AND NUMBER COMPARISONS OF CHARACTERISTICS FOR CLIENTS NOT INCLUDED IN THE STUDY WHERE DATA WERE INCOMPLETE, AND TREATMENT WAS NOT RECOMMENDED

APPENDIX D

MEANS, STANDARD DEVIATIONS, AND NUMBER COMPARISONS OF CHARACTERISTICS FOR CLIENTS NOT INCLUDED IN THE STUDY WHERE DATA WERE INCOMPLETE, AND TREATMENT WAS NOT RECOMMENDED

Client Characteristics	Data Incomplete			Treatment Not Recommended		
	N	Mean	S.D.	N	Mean	S.D.
Age	31	36	10.94	14	37.43	13.71
Hourly Wage	36	6.18	1.63	14	6.61	1.72

APPENDIX E

UNADJUSTED MEANS AND STANDARD DEVIATIONS FOR THE DEPENDENT VARIABLES FOR CLIENTS NOT INCLUDED IN THE STUDY BECAUSE TREATMENT WAS NOT RECOMMENDED

APPENDIX E

UNADJUSTED MEANS AND STANDARD DEVIATIONS FOR THE DEPENDENT VARIABLES FOR CLIENTS NOT INCLUDED IN THE STUDY BECAUSE TREATMENT WAS NOT RECOMMENDED

Dependent Variable	Mean	S.D.
PV1	4.66	3.33
PV2	1.67	6.87
PV3	.16	.65
PV4	.26	.67
V1	5.05	4.20
V2	13.56	31.80
V3	2.04	3.83
V4	5.88	18.71

APPENDIX F

UNADJUSTED MEANS AND STANDARD DEVIATIONS FOR THE DEPENDENT VARIABLES FOR CLIENTS NOT INCLUDED IN THE STUDY BECAUSE DATA WERE NOT COMPLETE

APPENDIX F

UNADJUSTED MEANS AND STANDARD DEVIATIONS FOR THE DEPENDENT VARIABLES FOR CLIENTS NOT INCLUDED IN THE STUDY BECAUSE DATA WERE NOT COMPLETE

Dependent Variables	Treatment			No Treatment		
	Mean	S.D.	N	Mean	S.D.	N
PV1	6.71	7.72	20	11.07	11.59	10
PV2	2.69	9.25	18	0.00	0.00	7
PV3	.80	2.53	18	1.62	2.56	7
PV4	3.17	4.51	18	5.44	4.96	7
V1	5.98	7.49	9	5.00	7.12	6
V2	28.14	79.11	16	0.24	1.00	8
V3	2.64	7.25	16	5.25	11.33	8
V4	1.73	3.63	16	3.84	12.01	8

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