PERCEPTION OF TIME RECORDING WITH A TIME CLOCK AS A DISSATISFIER FOR HOSPITAL EMPLOYEES

A THESIS

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PREFACE

This study involves an investigation of the motivational impact on hospital employees of a method of time recording of time worked utilizing a time clock. The impetus for this study, the assumptions held by the managers of the study hospital, the preliminary attempts to verify these assumptions, and the reasons the study of present reference was developed are discussed. The preface concludes with an indication for the use of the findings of this study.

The impetus for this study arose when the writer, a member of the administrative staff of a suburban hospital, was requested by the controller to serve on an administrative task force. The function assigned to the task force was to formulate a new method of recording employee work time. This new method was to allow the discontinuance of the use of a time clock by hourly employees to stamp "in" or "out" when reporting to, or leaving work. The new method was to be compatible with the data processing data entry specifications of the payroll system and to comply with applicable labor laws. The task force assignment was made by the executive director of the corporation which operates the hospital. The executive

director maintained that the time clock method in use was dehumanizing and could contribute to morale problems. The executive director felt that the recording of arrival and departure time of an employee was handled more appropriately by the employee's supervisor. The hospital supervisors had been involved in a management development program, and one of the objectives was to develop communications skills. The executive director felt that meeting an employee at the time of shift change would afford an opportunity to apply these communication skills.

The writer and several other members of the administrative staff previously had discussed the executive director's premise. The administrative staff felt that employees did not view the clock as a dissatisfier (cf. Herzberg, Mausner, and Snyderman 1959:71-73), but that it possibly was not a motivator in the sense of Herzberg's two-factor theory of motivation (Herzberg et al. 1959:113-119; Donnelly, Gibson, and Ivancevich 1978:188-190). Errors made in punching, for example, on the wrong card, were easily corrected by the hospital supervisors, and employees were not harassed about an error. The administrative staff saw many data-handling and documentation problems associated with a change to hand

recording of employee time by supervisors. Such manual recording could decrease dramatically the supervisor's time needed for patient related and/or employee related activities.

Subsequent to the assignment of formulating a change, the writer suggested to the executive director a postponement in development in order to allow time to perform a literature search. This search would help to ascertain if there were evidence to support his premise that time clocks are dehumanizing. If this premise could not be borne out by the search, then a study method should be chosen to measure hospital employee perception on this subject. The executive director agreed to such an approach.

An extensive review of the literature on the subject of time recorders was conducted by the writer. References were located that address accounting advantages and pose questions as to employee relations problems resulting from clock use. These will now be discussed. Taylor (1960:86-87), Cooling and Gittler (1966:144-153), and Time Recorders (1979:164) have published articles on the advantages of the use of the clock for accounting purposes and cost allocations. DeWindt (1975:23-26), Bensahel (1977:48-50), Lorey (1976:70), and Scobel (1975:135) have

published articles which raise the issue of trust between the employee and employer. An article produced by the Cincinnati Time Recorder Company (1979:88-89) claimed an issue of favoritism may be avoided through the use of an impartial clock. The articles reviewed were normative and very subjective. None of the authors appear to have pursued empirical verification of the claims made or questions posed by their work. Empirical studies could not be located that attempted to evaluate employee perception of time clock recording of time worked.

Concurrent with the literature review, the administrative staff requested that a survey question concerning time clocks be added to an employee relations questionnaire that was being formulated. This survey was being conducted by an employee relations consultant firm on behalf of the hospital. Only one time clock question could be included due to the length of the questionnaire. It was, "I am satisfied with the present system of using a time clock to record my time." The employee could respond on a six-point scale with one being "strongly agree"; two, "moderately agree"; three, "slightly agree"; four, "slightly disagree"; five, "moderately disagree", and six, "strongly disagree". The overall mean score on this question for all

employees who took the survey (n = 684) was two. The executive director was not satisfied that this single question had explored sufficiently the impact of time clocks.

Due to a lack of evidence in the literature regarding how employees perceive timekeeping with a time clock and the inconclusive employee survey, it was agreed that empirical verification of employee perception was appropriate. A change in the method of recording time worked would have far-reaching impact on hospital employees and supervisors. Alteration in time recording would require extensive orientation of all employees (N = 1,232) of the hospital. Special sessions would be necessary for supervisors (N = 126) who report payroll data. The study described herein is intended to question if a change in the method of time recording is indicated, and if indicated, which components of the time recording system should be altered.

The study hospital, Houston Northwest Medical Center, offers general, acute-care services, including pediatrics and obstetrics. The institution is seven and one-half years old, having expanded from 237 to 363 beds during 1980. The institution is located in metropolitan

Houston, Texas in an unincorporated portion of northwest Harris County. The hospital is privately owned, and operates for profit.

This research will provide the administrative staff of Houston Northwest Medical Center Hospital with information about employee perception concerning the method of timekeeping of hours worked. The results of this study will be considered in association with other management factors in making a decision regarding changes in the method of recording hours worked.

CHAPTER I

INTRODUCTION

The manager of the 1980s is charged with many obligations. George (1972:187) has summarized the obligations of the contemporary manager as follows:

> Today's manager recognizes his multiple obligations because of his peculiar place of stewardship over vast resources. The employees' and the community's well-being take equal or greater precedence over owners and customers in many matters.

These obligations are particulary significant to managers of health care institutions. The health care administrator holds a special position of public trust in the management of the delivery of health care. This trust, for example, obligates him to contain cost, provide a satisfying work environment for highly specialized employees, justify plans to the health system agencies, maintain fiscal responsibility, and assure quality of care (Hitt and Harristhal 1980:71-74). Confusion can arise in the manager's mind when it appears his obligations conflict. Controlling employee costs (Fahle 1980:49-51) may appear to conflict with providing a satisfying work environment (Cunningham 1979:87-88), one in which the employee is motivated to provide good patient care.

The significance of the health care manager's problem in the management of cost may be seen through a review of the recent past. Nine percent of the gross national product was attributable to health care in 1979 (American Hospital Association 1980:1). During 1970-1975 50 to 60 percent of hospital operating costs were due to payroll expense (HEW 1977:832; Enright and Jonas 1977:183). One insight which gives explanation to this expense is that health care, specifically hospital care, is labor intensive (Hanft 1977:67). In 1950, non-federal, short-term hospitals employed 1.78 full-time-equivalent employees per patient day (Enright and Jonas 1977:183). By 1975 this figure had risen to 3.39 full-time-equivalent employees per patient day (HEW 1977:382). Recent technological advances in medicine have required the addition of numerous technical hospital personnel to operate complex machinery and provide paramedical support (Enright and Jonas 1977:183). Given these circumstances, the challenge is to utilize health manpower efficiently in order to run a cost-effective hospital (Hanft 1977:67; Fahle 1980:48), acceptable to owners and patients.

There exists, in addition to the manager's concern with cost, the concerns of government. The United States

Congress in 1977 began consideration of several bills which called for mandatory controls on hospital charges to patients. This resulted from pressure from consumer groups, the rising inflation rate, rising government costs associated with federal medical care programs, and the President's perceptions of medical care cost being a leading cause of the rise in the consumer price index. The controversy has raged to the present and has passed through many stages. The debate has ranged from the Hospital Cost Containment Act of 1977 to the administration's Hospital Cost Containment Act of 1979 and continued into the 1980s (Olsen 1978:17; 1979:55; Lawlor 1980:58-60; Hitt and Harristhal 1980:71-72).

The response to this intensive political and public pressure was the formation of the National Steering Committee on Voluntary Cost Containment by the American Hospital Association, the American Medical Association, and the Federation of American Hospitals (Olsen 1978:17-18; Appelbaum 1978:17-18). This group began a serious effort to slow, voluntarily, the rate of increase in hospital costs. The program has made progress in containing hospital costs. The rate of increase has been smaller than the consumer price index (Lawlor 1980:58; Cohen and Bachoffer 1980:51) since the voluntary effort began. The rate of salary

increase declined in 1979, and there is indication the number of full time equivalent employees has decreased.

Cunningham (1979:87-88) has asserted that a positive work environment, both physical and psychological, is cost-effective. Such an environment leads to increased productivity. Patient care is improved by workers who feel good about their work. Cunningham has emphasized the duty hospital administrators have to their employees to provide a work environment which contributes to the individual worker's motivation and satisfaction.

A 1972 Department of Health, Education, and Welfare (HEW) task force examined the impact of work on workers' health, education, and welfare. The task force warned that many American workers are dissatisfied with the quality of their work life (Cunningham 1979:87-88; Jung 1978:168). It is imperative that care be delivered in a humanizing environment (Howard and Derzon 1979:76) in an age when emphasis is placed on humanistic health care delivery. It may be difficult to treat patients humanistically, however, if providers of care are dissatisfied.

Ivancevich, Matteson, and McMahon (1980:54) have pointed out that hospitals cannot maintain continuity of care unless employees are satisfied enough with their jobs to remain within the system. These authors have emphasized,

also, that hospital employee attitudes are linked to behavior and performance. How can patients receive proper care unless employees of hospitals are motivated to serve them? It is the role of the hospital manager to acquire professional and service employees. The provision, additionally, of an environment in which employees are motivated and integrated into an effective team is a worthy objective of hospital managers.

The literature cited in this introduction supports the conclusion that constant evaluation of the work environment for satisfying and dissatisfying factors is an appropriate managerial function in order to maintain an effective and efficient work force. This literature also indicates a concern for the control of employee-associated costs is deserving of managerial attention. One method of controlling cost is time clock recording of time worked to assure accurate time records. The hospital in this study has, since its inception, utilized a time clock method of recording time worked. The clock is used as part of an overall system to manage time worked by employees. The clock had been installed to expedite calculation of time worked and provide accurate payroll records. This facilitates compliance with federal and state laws requiring such records. A question has arisen as to the perceptions

employees have of the time clock and their attitudes toward timekeeping in general. Concern has been expressed by members of the administrative staff that the clocks might have produced job dissatisfaction and be a dehumanizing force in the work environment. It would appear that perception of a time clock should be investigated with a view toward determining the behavioral science implications the time clock might have for management.

CHAPTER II

STUDY DESIGN

Introduction

This design section explores the specific questions addressed by this study. The approach used to answer these questions will be stipulated. Included is a discussion of the development of the study instrument, hypotheses, and decision rules, as well as a description of the population and sample. Measures used to assure anonymity, definition of terms, assumptions, limitations, and delimitations conclude this description of the study design.

Statement of the Problem

The problem addressed by this thesis concerns the identification of a motivational structure. Such a structure may affect a managerial decision to continue to utilize a time clock to record time worked. The problem is explored in terms of Herzberg's two-factor theory of motivation (Herzberg et al. 1959:113-119). The questions addressed are the following:

1. Are the hourly employees of the study hospital operating on two independent continua for the dependent variables, job satisfaction and dissatisfaction, as these

relate to the present method of timekeeping with a time clock? Herzberg et al. (1959) would hypothesize that these employees are operating on two independent continua.

2. What is the extent of overall dissatisfaction among hospital employees with the present management system related to time clock recording of time worked?

3. Are there variables affecting overall dissatisfaction of employees with the present management system related to time clock recording of time worked?

Purposes

The purpose of this study is to consider empirical evidence incidental to a management decision. The categories of such information are the overall distribution of dissatisfaction among hospital employees regarding the management system related to time clock recording of time worked and the factors affecting such dissatisfaction. The unit of analysis is the hourly employee of the study hospital. Data were gathered by means of a questionnaire (cf. appendix A) given to a sample (n = 96) of the hourly employee population (N = 1,232) who utilize a time clock.

Question number one of the problem statement is answered by analysis of the responses to items four and nine of the questionnaire (cf. appendix A--items 4 and 9). A

correlated t-test is utilized in the analysis of the responses to these two items (Downie and Starry 1977:136). If the calculated value of t exceeds the critical value of t, the subjects may be assumed to be responding to two different variables ($p \leq 0.05$), one for satisfaction and one for dissatisfaction.

The overall dissatisfaction is measured by the analysis of data generated from the questionnaire (cf. appendix 1--Item 17) given to hourly employees at the study hospital. These data supply an answer to question number two of the problem statement. Data on overall dissatisfaction produce a frequency distribution of the number of employees by degree of dissatisfaction. This distribution is evaluated by utilization of chi-square statistical test. This utilization of chi-square measures ($p \leq 0.05$) the distribution of overall dissatisfaction among respondents to determine if this distribution is other than by chance (Siegel 1956:42-47).

The third question from the problem statement is addressed in the following manner. The variables or factors underlying potential dissatisfaction with the present management system related to recording time worked are identified from among Herzberg's dissatisfiers or

maintenance factors, utilizing the previously mentioned questionnaire. The underlying variables evaluated for possible contribution to employee dissatisfaction with the timekeeping system are as follows: (1) hospital policy and administration; (2) technical supervision; (3) interpersonal relations with supervisor; (4) interpersonal relations with peers; (5) salary; (6) job security; (7) personal life; (8) work conditions; (9) status (Herzberg et al. 1959:73). The Herzberg maintenance factor that will not be investigated is interpersonal relations with subordinates. This variable was eliminated because only hourly employees are included in the study. Few hourly employees have supervisory responsibility over subordinates.

The nine identified factors serve as the independent variables in the study. The dependent variable is overall dissatisfaction. These ten variables are continuous rather than discrete. The questions from the questionnaire which attempt to make operational Herzberg's dissatisfiers (independent variables) listed above are principal-components analyzed to determine the dimentionality of the questions and to identify common factors (Kerlinger 1973:659-689). The acceptable factor scores (independent variables) are regressed against the

overall score representing overall dissatisfaction utilizing multiple regression analysis (Kleinbaum and Kupper 1978:35, 131-136, 376-392). Regression procedures measure ($p \leq 0.05$) the relationship, if any, that exists between the acceptable factors and overall dissatisfaction. The objective is to determine which of the several independent variables, if any, are important and which are not important in describing or predicting the dependent variable, overall dissatisfaction (p. 35).

Instrument

This section discusses the measurement instrument developed to provide data for the study of present reference. Included in this discussion are the basis for the choice of a questionnaire, the scaling method chosen, the descriptive characteristics gathered on the subjects, construction of the questions, and the reasons for including those questions. The measures taken to assess validity conclude this discussion of the instrument, including a description of the use of a pilot study.

The investigator chose a questionnaire as the measurement instrument for this study. This choice was based on several considerations made apparent through a literature review. Wong (1979:13-22) critically reviewed

seventeen studies based on the two-factor theory (Herzberg et al. 1959) and summarized the research in table form. This summary (p. 45-49) included design relationship to Herzberg, sample (number and type), data analysis technique, findings, and relationship to Herzberg et al. (1959). The present investigator located many of the studies reviewed by Wong, and reviewed them (cf. Review of the Literature). Additionally, The Motivation to Work (Herzberg et al. 1959) was reviewed for insight into the original research methods. The semistructured interview and several types of questionnaires were utilized in these studies. These alternatives considered, selection of the test instrument for the present study was made, and a discussion of the selection follows.

The basis for the elimination of the semistructured interview is now considered. Interviewers and persons evaluating data in the studies reviewed appear to have had professional experience with these techniques. The content analysis from the studies utilizing interviews was usually cross-checked by several investigators to assure agreement on the classification of findings. This investigator is inexperienced in interviewing and content analysis. She had no access to significant amounts of assistance, or funds to

acquire this assistance. Interview techniques would consume too much time and be difficult to handle alone. It is for these reasons that this researcher turned to a questionnaire as an investigative tool. The employees of the study hospital are accustomed to employee survey through use of a questionnaire. The questionnaire offered many of the advantages discussed in this paper (see Review of the Literature). The investigator, having chosen the test instrument, turned to selection of a scaling technique.

The scaling method chosen for the items on the questionnaire that evaluate the continuous variables was a "Likert-type" scale (Selltiz, Jahoda, Deutsch, and Cook 1959:366). This method is particularly well suited to allowing a range of responses for the subjects. These scales are comparatively simple to construct and allow subjects to place themselves on a continuum. These scales are considered by many investigators to deliver interval-level data, suitable for evaluation with parametric statistical techniques (Drew 1976:152-153; Allport 1967:11). Such scales provide data suitable for statistical analysis with a computer. The development of the questionnaire content is now discussed.

The test instrument developed for this study is a seventy-two-item questionnaire. Any single respondent answers only forty-one items on this instrument. The instrument was developed by the investigator to gather data on employee perception of time recording with a time clock as a dissatisfier for hospital employees of the study hospital (cf. appendix A). Items 1, 2, 3, 5, 6, 7, and 8 are descriptive. Items 1 and 2 are included to verify that the subjects chosen for the sample are hourly employees and utilize a time clock for recording time worked. Items 3 (sex) and 5 (employment status) are included to gather characteristics on the sample. These two characteristics are utilized to verify that the subjects are representative of the population. Items 6 (age), 7 (race), and 8 (National Labor Relations Board bargaining unit) (Werther and Lockhart 1976:78-79) are included because they were requested by the administrative staff of the study hospital. Items 6, 7, and 8 serve to describe more clearly the sample. Typical job titles included in each National Labor Relations Board bargaining unit are included in appendix F. Once the descriptive characteristics are requested of the subjects, the evaluative phase of the questionnaire begins.

The phase of the questionnaire which institutes the data collection on employee perception begins with items 4 and 9. Items 4 and 9 concern data which are used to determine if the respondents are operating on two independent continua for satisfaction and dissatisfaction (Herzberg et al. 1959). Item 10 is a question constructed to separate those employees, if any, who are "maintenance seekers" (cf. Definition of Terms) from those operating as the "two-factor" theory would predict. Because "maintenance seekers" are motivated by hygiene factors (dissatisfiers), they are directed to a series of thirty-one questions (items 19-24) if they respond to item 10a. Item 10b identifies the subjects of primary interest to this investigator. These are the employees who appear to be operating as the "two-factor" theory would predict. Items 11-18g and 19-26g are intended to make operational the high-order concepts Herzberg et al. have referred to as maintenance factors or dissatisfiers. Items 11-15, 16a, and 16b are included to make operational the maintenance factor, hospital policy and administration. Items 16c-16g are included to make operational technical supervision. Items 16h-16l are included to make operational the factor, working conditions. Items 16m-16o are to make operational salary. Item 16p and

18a are included to make operational job security. Items 16q and 16r are included to make operational status. Item 18b is included to make operational interpersonal relations with supervisors. Item 18c and 18d are included to make operational interpersonal relations with peers. Items 18e-18g are included to make operational personal life. Item 17 is included as a measure of the employee's overall dissatisfaction with timekeeping using a time clock.

Items 19-26g are the counterpart of items 11-18g, but ask for responses on a satisfaction continuum. These items, as previously mentioned, are there to allow a capacity in the questionnaire for the responses of "maintenance seekers". It is the investigator's opinion that if they were not included as a choice, the respondents could be forced into a series of responses that were not really their own. Responses given by "maintenance seekers" answering items 19-26g are not utilized in the factor analytic and regression analysis procedures.

The questions included in the instrument were formulated by the investigator. Background data were gathered through a series of interviews with department directors and administrative staff of the study hospital over a period of three months. The investigator made notes

of the most frequently mentioned points of these managers. These concerns about timekeeping were formulated into the items on the questionnaire.

The instrument designed for the purpose of this study was validated by several means. This investigator, having formulated a draft of the questionnaire previously discussed, had the draft reviewed. This review was requested of several members of the administrative staff, members of the investigator's thesis committee, several department directors of the study hospital, members of the investigator's thesis class, and the management consultant firm for the study hospital. All of these individuals professed some knowledge of the concepts of the "two-factor" theory as postulated by Herzberg et al. (1959). The thesis committee members and management consultants, in the writer's opinion, are considered to have in-depth knowledge of the "two-factor" theory. The thesis committee and the management consultants have had experience with questionnaire design, scaling, and attitude survey techniques. Changes were made in the wording of items, scaling, and instructions. Additional questions were added. Revisions were resubmitted to the administrative staff, management consultants, and committee chairman. Four drafts

of the questionnaire were required. A pilot study of five employees of the study hospital was conducted to identify problems in understanding. Additionally, the investigator had her twelve-year-old daughter read the questionnaire and respond, to see if instructions and vocabulary were of an acceptable level for persons with minimal reading skills. The five subjects in the pilot study completed the questionnaire within from thirty to forty-five minutes.

The investigator factor analyzed the responses to items of the questionnaire that make operational the nine Herzberg et al. (1959) dissatisfiers previously discussed (cf. Purposes) to assess the face validity of the questionnaire items (Stamps, Piedmont, Slavitt, and Haas 1978:346-347; Kirchner and Lucas 1970:492-494). This technique was included to enhance the validity of the study results by determining if questionnaire items make operational the high-order concepts they were intended to make operational. Factor analysis assisted, in this manner, in determining the dimensionality of the questions and identifying common factors (Kerlinger 1973:659-689). Only items that loaded 0.40000 or higher on any factor in the varimax rotated factor matrix were considered to have made operational that factor (p. 662). The reliability of the instrument was not tested.

This description of the instrument utilized in the present study has included a discussion of the development of the questionnaire. Included in this discussion has been the justification of the choice of a questionnaire as the measurement instrument and the "Likert-type" scaling method. Also included in the discussion of the questionnaire is a description of the individual items, their reason for inclusion, and a description of how items were formulated. Review of the study instrument has been accomplished by groups of individuals with insight into the problems addressed by the study. A pilot study was conducted on the instrument and the factor analysis performed to facilitate validation. Factor analysis will be described in the findings of the study.

Hypotheses and Decision Rules

The hypotheses of this study were structured as null and research hypotheses. The null hypotheses are denoted by H_o. The research hypotheses are denoted by H_r. The number following the hypothesis sign corresponds to the number of the question posed in the statement of the problem. DR will signify the decision rule.

The hypotheses studied are as follows:

H_o1: There is no statistically significant difference in the mean responses of the study subjects to questions four and nine of the study questionnaire (cf. appendix A). These two items are intended to ascertain if the study subjects were operating on separate continua for job satisfaction and dissatisfaction as Herzberg et al. (1959) propose.

H_r1: There is a statistically significant difference in the mean responses of the study subjects to questions four and nine of the study questionnaire (cf. appendix A).

DR1: Rejection of H_o1 and acceptance of H_r1 will mean the study subjects are operating on separate continua as Herzberg et al. (1959) postulate.

DR2: Pursue immediate plans to change the present system of timekeeping with a time clock if chi-square analysis of data on overall dissatisfaction (cf. appendix A, item 17) indicates the distribution is other than by chance and mean dissatisfaction exceeds a value of two.

H_o3: There is no statistically significant relationship between overall dissatisfaction with the present management system related to time clock recording of

time worked and dissatisfaction with the following independent variables:

a. hospital policy and administration
b. technical supervision
c. interpersonal relations with my supervisor
d. interpersonal relations with my peers
e. salary
f. job security
g. personal life
h. work conditions
i. status

H_r3: There is a statistically significant relationship between overall dissatisfaction with the present management system related to time clock recording of time worked and dissatisfaction with the following independent variables:

a. hospital policy and administration
b. technical supervision
c. interpersonal relations with my supervisor
d. interpersonal relations with my peers
e. salary
f. job security
g. personal life

h. work conditions

i. status

DR3: Those dissatisfiers or hygiene factors (independent variables) that have a statistically significant relationship with overall dissatisfaction will be reviewed by the administrative staff with a view toward possible revision or elimination from the timekeeping system.

Design Type

This study may be classified as to method utilized, time orientation, and purpose of results. The method is both descriptive and correlational. It is descriptive in that it has attempted to identify the overall distribution of dissatisfaction among hourly employees with the present method of maintaining time records with a time clock. It is correlational in that it has attempted to assess the underlying independent variables. The research is concurrent in time orientation as it attempts to assess the present status of employee perception. Finally, the study is an action research as to purpose. It is designed to provide answers to certain immediate management questions so that decisions may be made (cf. Russell 1980). The study scheme, also, has implications for applied research. It provides

further information as to the identification of hygiene factors operative in timekeeping that have potential for dissatisfaction.

Population

The population (N = 1,232) is composed of all the hourly employees of Houston Northwest Medical Center required to punch a time clock for the payroll listing as of December 8, 1980. The population is made up of 66.6 percent full-time, permanent employees, 31.2 percent part-time permanent employees, 0.6 percent full-time,temporary employees, 1.5 percent part-time, temporary employees. The hourly population is 12.5 percent male and 87.5 percent female. Employees from every hospital department utilizing time clocks are included in the population frame. This excluded only one department, that being administration. The frame excluded exempt, salaried employees in any department as they are not required to utilize the clock (Houston Northwest Medical Center 1980a and 1980b). The population frame was composed of the level three detail of the payroll report list of employees less exempt employees.

Sample

A random sample of subjects was chosen from the hourly employee population of the study hospital.

Randomization was chosen to eliminate personal bias in the selection of subjects and permit the valid estimate of sampling error (cf. Dorn 1955:649). Stratified random sampling of departments within the hospital appeared to offer no significant advantages as the employees of the departments (strata) are not significantly homogenous on any characteristics of interest to the investigator (Selltiz et al. 1959:526-528). The only population frame available to the writer was stratified by department.

The sample size chosen was $n = 96$ (see Methods Section). The investigator found the sample of subjects to be less than ideally representative of the population in that full-time, permanent personnel (status) were overrepresented. The sex characteristic was representative. These points may be seen by comparing data on the population and sample. The sample was 11.5 percent male and 88.5 percent female, while the population was 12.5 percent and 87.5 percent respectively. The sample contained 77.1 percent full-time, permanent employees; 19.8 percent part-time, permanent employees; 3.1 percent part-time temporary employees; and zero percent full-time, temporary employees. The population of the study hospital was 66.6 percent full-time, permanent; 31.2 percent part-time,

permanent; 1.5 percent part-time, temporary; and 0.6 percent full-time, temporary.

Subject Anonymity

Subject anonymity, in this study, addresses two objective concerns. One concern is that of an employee's being requested to critique the operations of his employer. The second concern is that of a study subject's being requested to give frank responses which he may not necessarily want associated with his name. Oppenheim (1966:36-37) and Tripp (1971:231) have emphasized that subject anonymity avoids possible subject embarassment and assures frank and revealing responses. Tripp (p. 231) also has emphasized that employee survey responses not be solicited by anyone in the employee's direct chain of command to prevent subject intimidation. Such intimidation could cause employees to be less candid in their responses. A discussion of the specific measures taken in the present study to assure subject anonymity follows.

The concern for anonymity of the subjects as employees was preserved by not having subject names associated with questionnaires. The investigator (an assistant administrator of the study hospital) developed the

list of names of subjects (see Methods), and notified the subjects of requests to participate. The subjects, however, returned the questionnaires utilized in the study to an instructor from the education department. Name identification of the questionnaire, in the form of the consent statement attached, was to be removed by the subject and returned to the witness assisting the study instructor. The original copy of the two-part consent form was deposited in a locked box in the presence of the employee and the employee was given a copy. The original consent forms were kept in the locked box until filed with the Texas Woman's University Human Research Review Committee. This locked box has been used in the past to assure employees of anonymity on attitude surveys. The consent forms were removed from the box and transmitted to the committee by an instructor from the education department, not the investigator. The key to the locked box is maintained in the personnel department and the investigator does not have access to it. This process was designed to assure the employee that the investigator cannot associate writing style or markings on questionnaires with names on consent forms. The completed questionnaires were kept in a locked file cabinet by the instructors until all subjects were tested. The questionnaires from all testing sessions were mixed prior to

being given to the investigator. The questionnaires were given to the investigator along with a list of the names of subjects that responded to the questionnaire.

The general need for subject anonymity described by Oppenheim (1966) was met in the following manner. The investigator maintained the list of subject names and questionnaires in a locked file when not actually being used in data analysis. The original questionnaires and list of subject names were placed in the custody of the personnel department once the study was complete. The personnel department maintains a locked, confidential file of materials and results of employee attitude surveys such as those produced in the present study. Documents of the attitude-survey type are shredded or burned by personnel department employees, if no longer needed, after a two-year period. The study results were reported to the subjects and administrative staff as grouped data. Information provided by individuals is privileged for the purposes of this research. No such information will be restated as being related to a named individual, nor will the list of names of subjects be published or included in the thesis. The Texas Woman's University Human Research Committee, which has the subject names, will not have knowledge of which data set is

associated with which subject. Data will be reported and used only as grouped data in this thesis.

Definitions of Terms

The following definitions apply for the purposes of this paper:

1. Hawthorne Effect: A change in sensitivity or performance or both by subjects merely because they are research subjects. This phenomenon may occur when the study situation makes the subjects feel "special". This effect is a threat to internal validity (Drew 1976:214)

2. Maintenance Factor: This term is used interchangeably with the term dissatisfier or the term hygiene factor. It refers to a condition of a job that operates primarily to dissatisfy an employee when it is not present. The presence of the condition does not build strong motivation. This term was used by Herzberg et al. (1959) to propose their "two-factor" or "motivation-hygiene" theory. Maintenance factors are related to the external environment of work (Donnelly et al. 1978:188-191)

3. Motivational Factor: This term is used interchangeably with the term motivator and the term satisfier or job satisfier. This term refers to a condition

in which high levels of motivation and job satisfaction are present. If a motivational factor is not present, it does not prove highly dissatisfying. Herzberg et al. (1959) postulated a group of motivational factors in their "two-factor" theory of motivation. Motivational factors are job centered (intrinsic) and relate to the work itself (Donnelly et al. 1978:188-191)

4. Maintenance Seeker: For the purposes of this paper this term is utilized to refer to a person who does not operate as Herzberg et al. (1959) would predict, but is motivated or seeks primarily maintenance or hygiene factors (Myers 1964:76). Herzberg (1966:80) refers to these individuals as "hygiene seekers"

5. Military Time: This term is used to mean the notation of time by numbering the hours in a day from one to twenty-four. The hours are further divided into one hundred parts rather than sixty parts as with minutes. An example of this notation would be to write 1:15 P.M. as 13:25. The writer realizes that this definition is not as is practiced in the military services, but most employees of the study hospital have been exposed to this reference during time card orientation meetings

Assumptions

The assumptions of this study are:

1. The employees participating in the study are normally distributed and representative of the population of the hourly employees presently utilizing the time clock to record time (Downie and Starry 1977:134)

2. The subjects participating in the study were able to read and understand the questions

3. The study subjects answered truthfully and did not feel threatened if they expressed dissatisfaction with a hospital procedure

4. The data generated on the "Likert-type" scale from the study questionnaire are interval-level data (Allport 1967:11; Selltiz et al. 1959:193)

5. The test instrument developed for the study is valid for the purpose of measuring job dissatisfaction

6. An employee's prior experience with time recording with another employer has not affected his perception of the study hospital's system

7. The study subjects understand the written and verbal instructions utilized in the administration of the test instrument

8. The person administering the instrument did not bias the employees in the sample

9. The population and sample subjects operate within the theory of motivation postulated by Herzberg et al. (1959). They operate on two continua--one for job satisfaction and a separate continuum for job dissatisfaction

10. Individuals requested to review the study questionnaire to assist in validation have a working knowledge of the "two-factor" theory

11. The subjects will understand sufficiently the explanation of the study given by the instructor to give informed consents

Limitations

The limitations of this study are:

1. The time clock may malfunction for an extended time during the period when data are being gathered

2. Errors in employee paychecks not related to time cards or the time clock may be perceived by the employee as being due to the timekeeping system

3. The employees may react atypically because they know they are included in a study. This is the "Hawthorne effect" (see Definitions of Terms)

4. The questions developed for the study questionnaire do not make operational the maintenance factors postulated by Herzberg et al. (1959). A maintenance factor may have potential to affect dissatisfaction but not be made operational by the study questions. If not made operational, the impact of a maintenance factor cannot be evaluated

Delimitations

The boundaries of this study are as follows:

1. This study will not investigate the extent of time-recorder effect on the utilization of supervisory time. This is, however, a significant consideration for management of the study institution

2. The scope of the study does not include an investigation of possible affect of time recording method on employee morale

3. The study investigates only the system of timekeeping with a time clock in use at the study hospital

4. The study does not explore in a fiscal sense the aspects of the present time management system

5. The study does not address the motivational impact of the present timekeeping system on exempt, salaried personnel

Summary

This study design section explains that the primary questions addressed by this research are (1) are the employees of the study hospital operating on independent continua for job satisfaction and dissatisfaction, (2) what is the extent of overall dissatisfaction with the present method of timekeeping with a clock among hourly employees utilizing time clocks, and (3) are there variables affecting this overall dissatisfaction of employees with the timekeeping system? The purpose of conducting the study is to provide the administrative team of the study hospital with empirical information concerning employee dissatisfaction with the present system of timekeeping with a time clock. This information will be considered in association with other factors in making a management decision concerning a possible change in the present system of timekeeping. This study, additionally, has implications for applied research in that it provides information on identification of dissatisfiers that have potential for contribution to employee dissatisfaction with timekeeping systems. Null and research hypotheses, as well as decision rules, are included in this chapter to answer the questions posed in the problem statement.

A study questionnaire developed for this study, gathered data on characteristics of the sample regarding sex, age, employment status (full-time or part-time), race, and National Labor Relations Board bargaining unit. Such characteristics are utilized to describe the sample and compare the sample to the population. The study questionnaire utilizes a "Likert-type" scale to gather interval level data on the degree of overall dissatisfaction with the present system of timekeeping. Items utilizing this scaling technique were also included to make operational and allow evaluation of the impact of the dissatisfiers identified by Herzberg et al. (1959). Data were gathered by the instrument and utilized to test the assumption that subjects are operating on two continua, one for satisfaction and one for dissatisfaction. The administration of the questionnaire provides for subject anonymity by not allowing the names of specific subjects to be associated with their questionnaires. Such provision avoids subject embarrassment and provides an opportunity for candid response. The questionnaire was validated in review by an expert panel and was pretested. Validation of items utilized to make operational the Herzberg et al. (1959) dissatisfiers is furthered by factor analysis of these items to identify the significant factors (independent variables).

The data collected by the administration of the questionnaire are analyzed in the following manner. A correlated *t*-test is utilized to answer the first primary question of this study concerning two independent continua for the variables job satisfaction and dissatisfaction. Data gathered to answer the second primary question on overall dissatisfaction (dependent variable) produces a frequency distribution which is evaluated by calculation of the chi-square statistic to determine if the distribution is other than by chance. The third question concerning identification of variables affecting overall dissatisfaction is answered by utilization of stepwise multiple regression. The significant factors or dissatisfiers (independent variables) produced from the factor analysis are regressed against the dependent variable, overall dissatisfaction. This regression determines which of the dissatisfiers are significant in describing overall dissatisfaction.

The study population (N = 1,232) is composed of all hourly employees required to punch a time clock at Houston Northwest Medical Center. The random sample of subjects (n = 96) is not ideally representative of the population on the characteristic of status in that full-time, permanent

employees were slightly overrepresented. The sample is representative on the characteric of sex.

This chapter concludes with definition of terms and assumptions made by the investigator. Limitations and delimitations of the study complete this section.

CHAPTER III

REVIEW OF THE LITERATURE

Introduction

This review of the literature will provide the reader with a brief history of the evolution of the use of automated time recorders, including the purposes these recorders were designed to serve. A chronological review of the literature on motivation will follow, and the relationship between certain aspects of timekeeping and motivation will be developed. This review will include a discussion of the research and conclusions ("two-factor" theory) of Herzberg et al. (1959) as proposed in The Motivation to Work. Special emphasis will be given to a description of the dissatisfiers or maintenance factors with potential for contributing to employee dissatisfaction. A synthesis of empirical research conducted on the "two-factor" theory will be described as to findings and research techniques utilized. This chapter will conclude with a summary which makes explicit the theoretical foundation of this study and relates the key concepts (dissatisfiers) to the theoretical foundation. A summary of criticism of the "two-factor" theory is included. A

rationale and justification for this research design will be drawn explicitly from the empirical research of the two-factor theory.

History of the Development and Uses of Automated Time Recorders

This section will trace the technical development of mechanical time recorders. This technical development will be related to the environment in which it took place. Such environment was the industrial revolution and during the period of the introduction of management as a discipline. The section will conclude with a discussion of the needs for mechanical time recording devices which evolved from the increase in organizational structure in the work setting.

The first workable time recorder was invented in 1888 by Edward G. Watkins, a mechanical engineer. Watkins was employed by Heywood Brothers Company, a Massachusetts furniture manufacturer. The recorder was designed to avoid time-consuming handwritten records, and was used in the recording of arrivals and departures of employees of Heywood. Watkins' first recorder was made of bronze casting with a Seth Thomas marine clock movement and forty buttons. Pushing a button on the face activated a lever that perforated a disk on which information was recorded.

Modifications were made by Watkins from 1888 to 1894. Heywood Brothers began the manufacture of these clocks due to the large number of requests in the 1890s, and advertised that "Ignorant persons can record with slight instruction ('How Time Recorders Were Developed' 1971:41-42)."

In 1901, competition led Heywood to narrow their product line to furniture only. Consequently, the patents were sold to Watkins, who founded the Simplex Time Recorder Company. From 1902 to 1931 Simplex enhanced the time recorders and manufactured three time card recorders for payroll and cost allocation systems. A 1905 innovation was the replacement of rolled paper charts with time cards. In 1923 the Telechron motor allowed cabinet size to be reduced and in 1931 standard wooden cases were replaced with metal ones ("How Time Recorders Were Developed" 1971:42).

American business awareness had created a growing demand for time recording by the turn of the century. In 1905 Alfred Stromberg, a developer of the carburetor and radio parts, introduced an electric time recorder. This innovation reduced the force of impact on the clock mechanism by triggering a stamp device. Stromberg also marketed a master clock that supplied synchronized time

information to several imprinting stations, located in different areas ("How Time Recorders Were Developed" 1971:42). Stromberg and others manufactured a device known as a "time stamp", which paralleled the development of recorders. It was used to record arrival and departure of documents, and many of its features have been incorporated into modern time records (p. 43).

In the 1880s Henry Abbott developed the calculagraph elapsed-time recorder which registered elapsed-time consumed ("How Time Recorders Were Developed" 1971:43). This device was used in a service that was sold, or labor bought, by the hour. The largest and longest use of the calculagraph was by American Telephone and Telegraph Company (ATT). One of the officials of ATT observed the use of a calculagraph in a famous billiard parlor in New York where it was used to charge for playing time. The ATT official incorporated the calculagraph into toll switchboards in 1895 so that long distance telephone calls could be timed.

Technical improvements in the mechanical feature of time clocks have proliferated to the present. The time recorder or time clock of the future is in use today with the advent of the computer-oriented badge recorder system

used in time and attendance programs. An employee inserts a coded badge bearing a magnetic number in a reading device to activate such a system. Time worked is recorded automatically in a computerized payroll file. Information from time cards does not have to pass a "keypunch" function, as information does with a traditional computerized payroll system (Ratner 1975:454-455).

Time recorders were accepted in America during the Industrial Revolution. Their acceptance was facilitated by the adoption of scientific management principles and a shift from piecework to hourly pay. These principles were introduced by Fredrick Winslow Taylor in 1896 ("How Time Recorders Were Developed" 1971:41; Donnelly et al. 1978:44). Taylor sought to identify the elements or tasks involved in a production job and the "one best way" of performing the task. The scientific management philosophy encompassed the need to know when something happened and how long it took. Emphasis on time consumed in production created a need in industry for a method of accurate maintenance of time records. Automated recorders filled this need.

In 1900 industrial competition had become intense, resulting in the institution of job-costing systems to allocate accurately labor costs to individual production

procedures. Selling price could be related to cost through the use of costing systems and the cost could be established empirically. Time recorders became a tool of the manager in the utilization of such a scientific management technique. The concepts of equating usage adjustments to efficiency became a reality and this end is pursued to this day ("Time Recorders" 1979:164).

Two additional uses of automated time recorders are of benefit to management. A timekeeping system can provide supervisory personnel with information on labor consumption per job. These operating personnel may, then, use this information to adjust staffing. Such adjustments prevent unbudgeted cost of production of goods or services. Last, federal and state laws require accurate maintenance of employee payroll records, including records of hours worked each day, total hours worked per week, and overtime hours worked. The use of an automated time clock assists greatly in increasing the accuracy and legibility of these records. Such records must be used for payroll preparation, standard costs, and job cost comparisons (Taylor 1960:86-87; Cooling and Gittler 1966:75).

In summary, time recorders play an important role in contemporary business. Time recording technology has become

sophisticated. Recorders provide time information which may be used to improve profit margin, the quality of attendance records, job costing information, and data used in payroll applications ("Time Recorders" 1979:164).

The literature initially reviewed on time recording by this investigator revealed no empirical studies published which evaluate the impact of time recording methods on employee behavior or satisfaction. That literature was discussed in the background section of this paper. It would appear from that literature, however, that certain assumptions have been made concerning employee perceptions of time recorders and their impact on employee dissatisfaction. An investigation of how employees perceive a timekeeping system which utilizes a clock is the purpose of the present research. The writer will now explore in greater depth literature that indicates time recorders, such as time clocks, do have potential for impact on employee dissatisfaction.

The Behavioral Science Implications of the Method of Time Recording

Several articles reviewed by this investigator indicated that the authors felt that the use of a time clock was a serious sign by management of mistrust of employees

(DeWindt 1975:23-26; Scobel 1975:132-142; Lorey 1976:70-74, 92; Bensahel 1977:48-50). Several other types of employee regulations, such as dress codes and initial employment probationary periods, were considered, also, to generate similar dissatisfaction among workers. Bensahel (1977:48-50) has stressed that, although stringent enforcement of rules of tardiness and absenteeism do not contribute to high productivity, a lax attitude toward habitual tardiness in timekeeping on the part of a few can lead to disruption and demoralization of the work unit. Bensahel (1977) indicates some sort of middle ground and the giving of attendance proper perspective in performance evaluation, along with quality and quantity of work and compatibility in the work force. Lorey (1976:70-74, 92), although he emphasizes the trust question and its impact on employees, suggests that time clocks still have a role in flexible work time.

With the growing popularity of flexible work hours, time clocks have met a need in time management by assisting management in keeping accurate records of those employees who choose their own work schedule, selecting special starting and stopping times ("Time Recorders" 1979:164). This type of situation often exists in a hospital, due to

the nature of patient care services being offered and the necessity to have coverage with specialized employees, even though the work load is low.

Punching a clock has been a universal image of the hourly or blue collar worker. Managers may have complaints about this method of recording, as employees claim that it makes them a "second-class citizen"; but other managers and workers feel that time clocks reflect the accurate time and provide a clear, indisputable record. This is due to there being no possibility of the clock being partial (Cincinnati Time Recorder Company 1979).

It would appear that authors of management literature are unable to evaluate the impact time clocks may have on employee perception and behavior. This is a problem shared by the managers of the study hospital. The writer will now investigate the management literature with a view toward identifying a theoretical foundation for the present investigation of time clocks in the behavioral science literature.

Evolution of the Behavioral Science Literature

The philosophy and writings of the management literature are classified in a number of ways. A prevalent

method which finds significant usage is to divide management thought into three schools: The Classical School, the Behavioral School, and the Management Science School (Donnelly et al. 1978:8). Each school contributes to, and is supportive of the total body of knowledge which makes up modern management. This section will discuss the evaluation of these three schools of management. The development of the Behavioral School will be emphasized. The evolution of the "human relations" branch and the "behavioral science" branch of the Behavorial School will be explored. The section will conclude with an indication that the theoretical foundation for this thesis will be in the motivation literature (p. 161-162).

The Classical School of management was described primarily in the literature of pre-World War II. Writers were from the disciplines of science and engineering, and were working in business and government. They sought increased efficiency in order to increase productivity. The term "scientific management" was coined to indicate the application of scientific methods of inquiry to the problems of work and work management (Donnelly et al. 1978:8). Classical writers recognized that the management of an organization was quite different from the management of

work. Thus, the classical writers came to define management as the process of coordinating group effort toward goals (p. 9). The classical writers identified the functions necessary for coordination, namely, planning, organizing, and controlling. Principles were largely untested. Studies lacked the objective, scientific method of inquiry. For such methods one must look to the Behavioral School.

The Behavioral School utilizes concepts from the fields of psychology, sociology, and anthropology, and other behavioral sciences. The Behavioral School literature has as its focal point human behavior, managerial as well as nonmanagerial, in the context of work organizations. The method of inquiry is primarily the scientific method. Discovery of a causal relationship is emphasized. Motivation has been explored extensively in this literature, beginning with the Hawthorne studies of the 1920s and continuing to the present (Donnelly et al. 1978:9).

The Management Science School developed simultaneously with the Behavioral School and is considered the modern version of scientific management (Donnelly et al. 1978:9). The literature of this school focuses on the technical rather than behavioral problems of management. Mathematics and statistics are utilized to assist with

production and operational problems found in planning and controlling. The development of the computer has made possible the use of complex quantitative techniques.

The management literature suggests two thrusts in practice of management following the classical period. Behavioral and technical problems have both been emphasized. The modern manager is faced with the inherent dilemma of management due to this dual emphasis. This dilemma is between the forces of efficiency and quality of working life. It is the manager's role to balance the needs of the organization against those of the individual (Donnelly et al. 1978:10-11). Indeed, this is the dilemma of the managers of the study hospital described herein.

The Behavioral School has a "human relations" branch which became popular in the nineteen forties and early nineteen fifties. A second branch, the "behavioral science" approach, first received emphasis in the management literature of the early nineteen fifties, and continues to be a popular topic to the present. Human relations writers emphasized the role of individuals in determining success or failure of an organization. The human relations concepts concentrated on the social environment surrounding the job. This is in contrast to the emphasis placed on the physical

aspects of work by the classical management authors (Donnelly et al. 1978:161-162).

The Hawthorne studies conducted at a Chicago-based plant of Western Electric between 1927 and 1932 (Donnelly et al. 1978:163-165) fall within the human relations branch of the Behavioral School. The studies were conducted by a group of Harvard sociologists. The research was designed originally to study the relationship between productivity and physical working conditions. Experiments were run on the effects on productivity of changes in illumination, work hours, rest periods, refreshments, work-place temperatures, and other job conditions. When changes in job conditions did not produce the anticipated changes in productivity, the Hawthorne researchers began to explore the human element in the work environment. Plant-wide interviews of worker attitudes were conducted as well as analysis of the social organization in the work place. The researchers concluded that the work group as a whole determines the productive output of the group and its members. The Hawthorne researchers also concluded that the work group sets what is considered as a fair rate of production. No direct relationship between productivity and intelligence, dexterity, or other skills was found. The researchers

deduced that illumination and various other environmental conditions had little effect on productivity (Donnelly et al. 1978:164-165). These experiments generated interest and criticism.

The Hawthorne studies' primary contribution was the interest they created in the human problems of the work place. These studies taught managers to think about the worker as a social being with a set of needs. These studies resulted in the coining of the phrase "Hawthorne effect" and this term is discussed under definition of terms. These studies have been criticized widely because of a lack of scientific objectivity in arriving at conclusions and in how the study subjects were chosen. Regardless of the validity of the criticism, the Hawthorne studies had a significant impact on management. Assumptions of the past were questioned. There was a shift from the depersonalized view of the classical management school to a more personalized view. The worker became the focus of study, rather than the job or standards of production. The human relations branch of management literature was the impetus for the present-day behavioral science emphasis in the literature and practice of management (Donnelly et al. 1978:164-165).

The Foundation for Research on Human Behavior, established in the early nineteen fifties, promoted and supported behavioral science research in business and other types of organizations. Donnelly et al. (1978:168) have defined the behavioral science approach to the study of management as

> . . . the study of observable and verifiable human behavior in organizations using scientific procedures. It is largely inductive and problem centered, focusing on the issue of human behavior, and drawing from any relevant literature, especially in psychology, sociology, and anthropology.

The behavioral science approach has shifted managerial interest to the nature of work itself and the degree to which work can fulfill man's needs. Psychology has verified empirically that people have social, psychological, and economic needs which they attempt to satisfy at work (Donnelly et al. 1978:169). Sociology has contributed to the behavioral science approach to management by stimulating interest in small groups, formal organizations, leadership roles, power structures, and authority. Anthropology has made significant contributions concerning the impact of culture on organizations. Anthropology has examined the learned behaviors of man and given insight into how individuals prioritize needs and the

means they chose to satisfy those needs (Donnelly et al. 1978:168-169).

The basic assumption of the behavioral science approach to management is that managers must know how to deal with people. The Behavioral School of management has not produced an integrated body of knowledge. This school, however, does provide managers with information on motivation, leadership, groups, organizational design, and organizational change (Donnelly et al. 1978:173). It is to the motivational literature within this school that the writer now turns for the theoretical basis of this paper.

Review of the Motivation Literature

Human behavior, it is generally agreed by psychologists, is goal-directed, and such goals are directed to the attainment of unsatisfied needs. An unsatisfied need causes tension within an individual. The satisfaction of the need reduces internal tension. The pursuit of a need is the essence of motivation (Donnelly et al. 1978:177-178). The foundation literature for this study is found in motivation; therefore, the writer will review the major contributors to the motivation literature. This discussion is not meant to be exhaustive but representative of major theories of motivation in the work environment. This

section of the literature review concludes with an in-depth description of the "two-factor" theory of motivation.

McGregor in 1960 underscored the relationship between motivation and behavior. He proposed managers believed they should motivate employees by what he referred to as "Theory X" methods. "Theory X" suggests that managers motivate employees by coercion, control, and threat. This is necessary, according to "Theory X", because the manager assumes employees dislike work, dislike responsibility for decisions, have little ambition, and seek job security above all. "Theory X" managers are authoritarian and directive. McGregor proposed that an alternative to "Theory X" was "Theory Y". A "Theory Y" manager would provide an environment under which needs could be fulfilled. According to McGregor, "Theory Y" managers assume employees want a challenging job, are interested in assuming responsibility, and display ingenuity and creativity in the work setting (Donnelly et al. 1978:178-179).

Abraham H. Maslow, about 1954, published his theory of motivation based on a pursuit of a "hierarchy of needs." Maslow stressed two fundamental premises. First, that man, being a wanting animal, pursues and is only motivated by a need as yet unsatisfied. Second, man's needs are arranged

in a hierarchy of importance. Maslow postulated that there were five levels of needs. These needs were physical, safety, social, esteem, and self-actualization. Maslow believed that once a need was satisfied, another need emerged. Maslow further postulated that these needs were satisfied in the scale order listed above (Maslow 1954:35-72; Donnelly et al. 1978:180-182). Maslow's need hierarchy is widely accepted by business managers of today.

In 1959, Herzberg, Mausner, and Snyderman published The Motivation to Work. Their research (this publication reports) was launched in the interest of understanding individual needs in the work environment and the impact of needs on motivation (Wong 1979:5). The study was an empirical investigation of attitudes related to job satisfaction and motivation. The study was conducted on two hundred engineers and accountants, and postulated the so-called "two-factor" theory of motivation. Data were gathered by use of a semistructured interview. Subjects were asked to think of times (sequences) when they felt especially satisfied and times when they felt dissatisfied about their jobs (critical incident method). Second, subjects were asked to relate the conditions that lead to those feelings of satisfaction or dissatisfaction.

Herzberg's group identified two sets of factors from content analysis of interview sequences. These were called maintenance factors or dissatisfiers and motivation factors or satisfiers (Donnelly et al. 1978:188-189).

Herzberg et al. (1959) evaluated and tallied satisfying and dissatisfying incidents reported in the interviews as to types of incident(s) (objective happening). These objective happenings were called first-level factors. Herzberg et al. evaluated the employees' reasons for feeling as they did about the incident, and called these second-level factors. The time frame in which the incidents took place and the length of time the feelings lasted were also analyzed. The percentage frequency of incidents was calculated. The result of this analysis follows.

Herzberg et al. (1959) concluded several things. They reported that maintenance factors operate to dissatisfy employees when not present, but the presence of these conditions does not build strong motivation. These maintenance factors are, rather, potent dissatisfiers when absent. The motivation factors or satisfiers, however, build high levels of motivation and job satisfaction. Satisfiers, when not present, however, do not prove highly dissatisfying. Herzberg et al. further noted that

motivational factors were job centered. Motivational factors related to the job itself, the individual's performance of the job, job responsibility, growth, and recognition. Maintenance factors were related to the external environment of work. Additionally, it was found that highly motivated employees had a high tolerance for dissatisfiers (Donnelly et al. 1978:189). Last, the "two-factor" theory asserts that job satisfaction (motivation) and dissatisfaction are not a single, continuous variable. The opposite of job satisfaction is no job satisfaction. The opposite of dissatisfaction is no dissatisfaction (Sanford 1977:112-113).

Herzberg (1966:76-77) maintains that the maintenance factors are related to one of man's basic animal needs, the avoidance of pain from the environment. Herzberg further stipulates that for man the psychological environment is the main source of pain. The motivators, it is argued, are related to man's need as a human to grow psychologically and approach self-fulfillment through accomplishment of tasks. Job satisfaction and dissatisfaction are different variables, and are affected by different sets of factors.

Herzberg et al. (1959:71-73) identified the following ten maintenance factors from the dissatisfying

incidents reported by their study subjects: company policy and administration, technical supervision, interpersonal relations with supervisors, interpersonal relations with peers, interpersonal relations with subordinates, salary, job security, personal life, work conditions, and status. These researchers also identified six factors or conditions from analysis of satisfying incidents reported that they labeled as motivational factors. These motivational factors are as follows: achievement, recognition, advancement, the work itself, the possibility of personal growth, and responsibility.

The basis of the "two-factor" theory is the axiom that job satisfaction is dependent on two sets of factors, the maintenance factors and the motivators. Two theorems may be derived by reasoning from this axiom. The first is that maintenance factors result in dissatisfaction when not present, but their presence does not motivate an employee. The second theorem is that the presence of motivators results in job satisfaction or motivation, but their absence does not result in job dissatisfaction (cf. Blalock 1969:10-15).

Herzberg (1966:80-81) reported that, although job satisfaction is almost always related to the motivators,

there are individuals who report job satisfaction solely from hygiene factors. Herzberg (1966) suggests that these "hygiene seekers" react positively to the environment of the job because they have not reached a stage of personal development at which self-actualizing needs are active. "Hygiene seekers" are fixed at a less mature level of personal adjustment (p. 80-81). This type employee is motivated in the direction of satisfying avoidance needs. The result is avoidance behavior and chronic unhappiness. The relief of job dissatisfaction for such workers by hygiene factors is only temporary. Herzberg (1966) maintains these individuals have a neurotic personality that has been learned from certain value systems present in society. Herzberg (1966) reports that "hygiene seekers" have heightened and chronic dissatisfaction with aspects of the job related to the maintenance factors. These employees overreact to improvement or deterioration in maintenance factors. Such an employee is cynical, shows low interest in work, does not profit from experience, is given to extremes in political views, but may be successful because of talent. Herzberg (1966) further asserts that if only hygiene factors are available, many employees will dwell on dissatisfiers. Myers (1964:76) has also identified individuals he refers to

as "maintenance seekers" that correspond to "hygiene seekers" (cf. Definitions of Terms). Accordingly, this investigator has taken measures in the design of this research to detect "maintenance seekers" and to accommodate their needs in the study instrument.

The present study finds a theoretical foundation in the "two-factor" theory of motivation. This researcher reasons that since timekeeping is extrinsic to the job itself, it only has potential for dissatisfaction or no dissatisfaction. The investigator's intent was to identify those dissatisfying factors, if any, that are operational in the present system of timekeeping with a time clock. An in-depth discussion of the dissatisfiers follows in order to explore many of the key concepts that are investigated in this study.

Maintenance Factors

The maintenance or hygiene factors previously listed in the discussion of the "two-factor" theory will be discussed in terms of Herzberg et al. (1959) as to concepts represented. The significance of these factors to production and their relationship to the present study will also be explored.

Company policy and administration is the single most important factor in determining bad feelings about a job. It appears in one third of all low sequences (dissatisfying incidents) reported by Herzberg et al. (1959:71). This factor has two aspects. One aspect revolves around adequacy of company organization. Company ineffectiveness produced by inefficiency, waste, duplicated effort, or power struggles is also included in this aspect. The second aspect involves the deleterious effects of company policies. These include personnel and other policies that are viewed as unfair. Administration of policy and fringe benefits are included. Unfair salary policies are paramount here and frequently coupled with salary in reports of dissatisfaction.

Technical supervision was second in order of frequency of factors causing dissatisfaction, and appeared in approximately 20 percent of the low sequences of Herzberg et al. (1959:72-73). The competency of the supervision an employee receives is highlighted. Incidents that describe inefficient supervisors who cannot schedule, lack teaching ability, fail to inspire, or lack competence to function in their role would initiate job dissatisfaction in this area.

Interpersonal relations with the supervisor is frequently mentioned in association with this factor. The interpersonal-relationship-to-supervisor factor, however, relates to the supervisors friendliness, support for the employee on an issue, honesty, willingness to listen to suggestions, and the giving of credit for work (p. 144). The interpersonal-relations-with-the-supervisor factor was mentioned in 15 percent of low incidents by the subjects of Herzberg et al. (1959).

Recognition or lack of recognition is mentioned frequently in dissatisfying situations, although recognition is mentioned more frequently as a motivator than a negative. Lack of recognition was frequently mentioned in association with company policy and administration when it was mentioned as a dissatisfier (Herzberg et al. 1959:74).

Working conditions were mentioned in 10 percent of the Herzberg et al. (1959:74) incidents involving job dissatisfaction. Working conditions refers to the actual physical environment and includes temperature, light, ventilation, and space (Herzberg et al. 1959:49). Items such as inconvenience of location of plant, inadequacy of facilities to do the job and the amount of work required describe this dissatisfier.

Interpersonal relations with peers and subordinates refers to the personality and personal habit compatibility of workers (Sanford 1977:115). Incidents involving a lack of cooperation, lack of cohesiveness within a group, and isolation within a group are indicators of job dissatisfaction within these descriptors (Herzberg et al. 1959:144-145).

Personal life refers to factors in the work environment that affect personal life such as company-demanded moves. Family needs for salary or the time of an employee also describe this factor (Herzberg et al. 1959:48-49, 146). Personal life as well as interpersonal relations with peers and subordinates each caused 8 percent or less of the dissatisfying incidents reported in the 1959 study (p. 72).

Status relates to factors that reflect a privilege allowed by the company such as a company car, use of executive eating facility, or having a secretary, not actual advancement in the company (Herzberg et al. 1959:49). This factor was reported in only 4 percent of Herzberg's dissatisfying incidents (p. 72). Job security was, likewise, mentioned in a small percentage of dissatisfying

incidents; that being 1 percent (p. 72). Job security refers to consistency, reassurance, friendliness, tenure, grievance procedure, and objective signs of company instability (p. 49).

Associated, as a second-level factor, with the dissatisfying factors were feelings of unfairness (Herzberg et al. 1959:76) or lack of company integrity. Lack of growth in a job was also mentioned as a second-level factor in association with the dissatisfiers. Herzberg et al. concluded that there are a greater variety of factors involved in job dissatisfaction than job satisfaction.

Herzberg et al. (1959:82) found that salary has both potential for satisfaction and dissatisfaction with about equal frequency; that being 15 to 17 percent of incidents reported. Herzberg's group found, however, that the dissatisfying factors relating to salary were long range in effect. It appears that salary is more potent as a dissatisfier. When dissatisfying incidents about salary were described, they are associated with company policy and administration. Unfairness rather than absolute level of pay was the area of concern. The system of salary administration is the key to dissatisfaction. When salary

is associated with satisfiers, it is associated with advancement, the work itself, and recognition (p. 83).

The "two-factor" theory implies that maintenance factors and motivating factors affect motivation and performance in different ways. Hygiene factors have little potential for producing satisfaction or performance at anything other than acceptable levels. These maintenance factors can, however, cause an employee to restrict performance at low levels, or resign if the employee is significantly dissatisfied. Dissatisfaction can lead to unacceptable levels of turnover with resultant drain on human resources. When maintenance factors cause significant dissatisfaction, the motivators are not as effective in increasing performance (Sanford 1977:116-117). Additionally, Herzberg et al. (1959:90-92) emphasized the significant negative effect on mental health from job dissatisfaction. This mental health effect takes the form of depression and tension. Such poor mental health can lead to physical illness such as excessive drinking, smoking, digestive disorders, and high blood pressure.

The administrative staff in the study of present reference is concerned that there are components of the

present system of time clock recording of time worked that operate as dissatisfiers. It is the purpose of this research to evaluate the hygiene factors or dissatisfiers and identify which, if any, are operational in the study population. The researcher will now review the empirical literature of the "two-factor" theory with a view toward identifying criticism of the 1959 research, as well as developing the design, methods, and techniques of statistical analysis which are indicated for this study.

Empirical Research and Criticism of the Two-Factor Theory

Wong (1979:13-22) critically reviewed seventeen studies based on the "two-factor theory" (Herzberg et al. 1959) and summarized the research in table form. This summary (p. 45-49) included design relationship to Herzberg, sample (number and type), data analysis technique, findings, and relationship to Herzberg. This summary was reviewed by the writer, as were many of the individual pieces of research included in that summary, as follows: Friedlander and Walton (1964); Dunnette, Campbell, and Haskel (1967); Malinovsky and Barry (1965); Wernimont (1966); Centers and Bugental (1966); Burke (1966); Graen (1966); Ewen, Smith, Hulin, and Locke (1966); Lindsay, Marks and Gorlow (1967);

Hinton (1968); and Wernimont, Toren, and Kapell (1970). A description of these empirical studies as well as Wong's and other authors' critical reviews of the literature will be further discussed. Instrumentation, scaling, sampling, and interpretation or relationship to the "two-factor" theory will be covered. Particular emphasis will be given to job dissatisfaction.

Friedlander and Walton (1964:194-207) conducted a job motivation study through the use of personal interviews with a sample of eighty-two scientists and engineers from a population of 1,200 such employees working in military research and development laboratories. Two hypotheses were proposed in this research, those being (p. 197):

> Hypothesis I. The reasons one remains with an organization differ from (and are not merely opposite to) the reasons for which one might leave the organization.
>
> Hypothesis II. The reason an employee remains with a current organization (positive motivations) are concerned primarily with the work process factors; the reasons an employee leaves an organization (negative motivations) deal primarily with factors peripheral to the work process itself or the factors related to the community environment.

The chi-square test of significant difference was used in the statistical analysis. It was concluded that reasons for remaining in an organization were different from and not simply opposite to the reasons for leaving. This study

supports two components of the "two-factor" theory. First, it supports the position that job dissatisfaction and satisfaction are different variables. Secondly, it supports the position that dissatisfiers are extrinsic to job and motivating factors are intrinsic.

Dunnette et al. (1967:143-174) conducted a study of factors contributing to job satisfaction and dissatisfaction on six occupational groups. The study was conducted as an attempt to confirm the validity of the factors Herzberg et al. (1959) identified as satisfiers as well as certain other aspects of the "two-factor" theory. These researchers were attempting to rid their research of the subjective elements of the storytelling technique and interviewer bias which they felt was intrinsic in the 1959 research. The design was complicated, and involved many steps. Herzberg's (et al. 1959) definitions were utilized to write statements about job satisfaction and dissatisfaction and these statements were content evaluated by a twenty-five-member, expert panel. The statements were then pretested on 112, night-school students. The pretest involved responding on a nine-point scale of how well the statements (positive or negative) described their situation. The responses of the pretest were utilized in a principal components factor

analysis with varimax rotation. The results of this analysis were used to validate the statements as to their effectiveness in making operational the Herzberg et al. (1959) factors. Dunnette et al. (1967) were successful in developing two sets of thirty-six statements with high factor loadings on appropriate factors. An issue of social desirability on the part of the subjects was partially dealt with in the design. The major part of the study involved the utilization of Q-sort decks with the statements written on them, a seven-point scale similar to the pretest, a questionnaire, counter balancing satisfying and dissatisfying situations across subjects, and the subject describing a situation in narrative form. The subject, once he described a situation, used the appropriate Q-sort set (positive or negative) and set priorities among the thirty-six statements. Each statement was scored on the seven-point scale. Statistical analysis involved calculation of a mean score for statement on one dimension and across persons by occupational group. Also, two person-person correlation matrices (one satisfying and one dissatisfying) were developed for each occupational group. Each matrix was factor analyzed and varimax rotated. Q-type factor analysis was also used to study differences within

groups. Dunnette et al. (1967) found that for some employees, satisfaction is related to job content, while for others it is related to job context and for still others, both. Dunnette et al. (1967) were successful in making operational the factors of Herzberg et al. (1959). This research concluded that four job dimensions (factors) were related to both satisfaction and dissatisfaction. Those dimensions were achievement, responsibility, recognition, and supervisor human relations. Additionally, it was proposed that people possess stable differences in what they seek in a job and it is related to their choice of occupation (a value system indicator). This research also concluded that salary, working conditions, company policy and practices, and security were relatively unimportant to job satisfaction.

Malinovsky and Barry (1965:446-451) conducted research on 117 blue collar workers who responded to a questionnaire distributed to 270, white, male workers employed in maintenance and as watchmen. The forty-item questionnaire requested response on a "Likert-type", five-point rating scale. The instrument was pretested and evaluated by expert judges to improve validity. Items were eliminated from the instrument if they tested poorly. The

final instrument contained twenty motivator and twenty hygiene items. The purpose of the study concerned the analysis of the elements within the work environment which contribute to job satisfaction and dissatisfaction. The primary concern was to test a different employee population than that of Herzberg et al. (1959). The population of subjects from the 1959 study, it was pointed out, were already highly motivated as evidenced by their educational level. The statistical analysis involved computation of Pearson product-moment correlation coefficients among the items, and resulted in a forty by forty matrix which was examined for significance. The intercorrelation matrix was principal components analyzed and varimax rotated. Standardized scores were calculated from the varimax matrix and a second-order factor analysis performed. The findings provided partial support for Herzberg's theory that motivation and hygiene items represent separate, independent dimensions. These investigators also found that motivation and hygiene variables were related in a similar way both to satisfaction and dissatisfaction. Additionally, it was proposed that the main determinants of job satisfaction are not distributed along separate continua, but interact in a

variety of ways. Of twelve factors extracted from the first factor analysis, six were composed of both motivator and hygiene items. Malinovsky and Barry (1965) hypothesized that blue-collar workers tend to respond to both hygiene and motivator variables, while higher-level occupational groups tend to respond primarily to motivators. This may account for less than complete independence found here between motivators and hygiene factors as sources of satisfaction. These researchers contend that blue-collar workers are possibly more preoccupied with fulfilling basic needs than higher occupational levels. Until basic needs are satisfied, employees will not demonstrate interest in personal growth.

Wernimont (1966:41-50) conducted a study on fifty accountants and eighty engineers, and utilized a booklet of items that requested responses of the subjects on a nine-point rating scale. The items were pretested on thirty subjects before the primary study began on employees from several different companies. The results of the pretest were utilized to adjust the intervals on the rating scale. A forced-choice and free-choice self-description technique was utilized to provide information on satisfying and dissatisfying job factors. The purpose of the study was to

test the Herzberg findings as to the major factors related to the doing of the job and the major factors related to job environment. Wernimont concluded that both intrinsic and extrinsic factors can be sources of both satisfaction and dissatisfaction, but intrinsic factors are stronger in both cases. Wernimont further observes that it appears that employee expectations of the work contract are important to job satisfaction and dissatisfaction. A second observation was that workers in this study placed more importance on extrinsic factors for dissatisfaction when given an opportunity. Particularly with salary and working condition variables the high level workers received little satisfaction, but felt it was the company's part of the bargain. If levels of salary and working conditions fall, dissatisfaction occurs and feelings of unfairness are reported.

Centers and Bugental (1966:193-197) conducted interviews with a cross section of 692 of the working population concerning their job motivation. Results of the interviews were recorded on questionnaires after the subjects had performed a ranking procedure. The extent to which extrinsic or intrinsic job components were valued was related to occupational level. Intrinsic job components

(satisfiers) are valued by white collar workers over hygiene factors. Lower occupational levels seek satisfaction in extrinsic components of the job such as pay and security.

A study conducted by Burke (1966:317-321) was designed to test the assumption that Herzberg's motivator and hygiene factors each represent a separate, unidimensional construct. The sample consisted of 187 female and male college students. The subjects were asked to rank ten job characteristics in order of importance for themselves. The ten characteristics were taken from Herzberg et al. (1959) and included five motivator and five hygiene factors. The data analysis technique utilized was an unfolding technique in one dimension developed by Coombs applied to preference orders. The study results indicated that motivators and hygiene factors may not be independent, i.e., they indicate the absence of unidimensionality. Also included in the Burke research is a summary of other empirical investigations and their finding of support or nonsupport for Herzberg et al. (1959). Burke (1966:317-321) gave specific attention to the findings of researchers such as Dunnette, Friedlander, Myers, and Rosen that job or occupational level affect job satisfaction or dissatisfaction factors. Burke also pointed out that sex

and a time dimension variable may affect factors. In some research it had been found that a given factor could cause satisfaction and dissatisfaction.

Graen (1966:551-555) performed a two-way analysis of variance from the data generated by Ewen et al. (1966). The study findings did not support the theory of Herzberg et al. that job dissatisfaction and job satisfaction operate on separate continua. Additionally, all variables are equally potent contributors to satisfaction and dissatisfaction. It was concluded that the contribution of the satisfiers was greater than that of the dissatisfiers to both satisfaction and dissatisfaction. Graen asserts that the distinction between satisfiers and dissatisfiers is unclear. Further, a better classification for factors as regards potency of contribution to job satisfaction would be based on intrinsic and extrinsic factors.

Ewen et al. (1966:544-550) conducted an empirical test of hypotheses based on the "two-factor" theory to determine if job satisfaction operates on one or two continua. Stratified sampling was used to obtain 793 subjects for the study groups. These subjects represented different size companies with different policies, age groups, educational backgrounds, and experience

characteristics. Two instruments were used, the Job Descriptive Index (JDI) and the General Motors Faces Scale. The JDI is a well respected measure of job satisfaction which measures five areas of the job: the work itself, supervision, people, pay, and promotion. The second instrument utilized a scale of six faces that ranged from a smile to a frown, and was used to measure overall job satisfaction. Only the responses from the JDI, which assessed the work itself, promotions, and pay, were utilized. The work itself and promotion variables represented satisfiers. Pay represented the dissatisfiers. Linear-regression analysis was utilized to determine the neutral point on the instrument scales, and a t-test of significant difference was utilized. The study concluded that intrinsic factors are more strongly related to both overall satisfaction and dissatisfaction than the extrinsic factor of pay. The researchers also concluded that the extrinsic variable may depend on the level of satisfaction with the intrinsic variables. While the authors of this research claim nonsupport for Herzberg et al. (1959) on the issue of two continua for satisfaction and dissatisfaction, this writer finds some support in the Ewen et al. work for the 1959 study. Ewen et al. concluded that pay was far less

potent a variable than the work itself and promotion. Herzberg et al. (1959:82-83) have also described pay and the potential effects it has on satisfaction in this manner. Herzberg described situations in which pay is a satisfier when identified as an objective sign of recognition.

Lindsay et al. (1967:330-339) conducted a study on a sample of 270 subjects (83.2 percent of those requested to participate), half being nonprofessional; half, professional employees. All subjects were male. Fifteen subjects were assigned to each of eighteen treatment groups. The research was not a test of the hypothesis based on the "two-factor" theory as proposed in 1959, but a modified proposal. A 3 x 3 x 2 factorial design was used with three levels of a motivator and a hygiene and two employee classifications. The levels (scaling) of the motivators was designated high, medium, and low. A series of nine questionnaires were utilized to investigate the motivators as represented by achievement and hygiene factors as represented by company policy and administration. These were chosen because of their strength of effect demonstrated in other studies. A single question concerning overall satisfaction (dependent variable) was included as well as many items about dissatisfaction and satisfaction with motivator and hygiene

factors. A five-point, "Likert-type" scaling technique was utilized. The data analysis technique was analysis of variance. The conclusions of this research do not support the independence of motivators and hygiene factors, but found that the job satisfaction continuum was bipolar. Lindsay et al. criticized the critical incident interview of Herzberg et al. (1959) as subjective. Other conclusions of the study were that workers with strong feelings of achievement will remain satisfied even if conditions surrounding the job are perceived as inadequate. Additionally, if an employee feels he is not accomplishing much on the job he will be dissatisfied even though conditions surrounding the job are good. Lindsay et al. claim this is nonsupport of Herzberg et al. in that Herzberg's group contended there was no interaction between motivators and hygiene factors. This writer does not agree with Lindsay et al. on this last point as an accurate interpretation of the 1959 findings. This writer is of the opinion that Herzberg agrees there is interaction on some factors.

An empirical test of the hypotheses based on the Herzberg et al. (1959) "two-factor" theory and methods was conducted by Hinton (1968:286-309). The study was designed

to evaluate the validity and reliability of the data, as well as the finding of Herzberg et al. (1959) and other studies of the "two-factor" theory. The methods of several studies were evaluated. Alternate methods were applied to the same set of subjects. Recall of critical incidents was utilized as well as rank ordering of factors according to importance. Responses to the study were written. The sample consisted of 143 students, 122 males and twenty-one females with a mean age of twenty-three years. Content analysis was utilized, and coding of responses was weighted to reflect importance. Spearman rank order correlations and significance tests were performed on the data generated. The results of this study fail to support Herzberg's procedures as a reliable measure of job satisfaction or the "two-factor" theory as valid. Greater differences were found between motivator-motivator and hygiene-hygiene sequence comparison than between motivator-hygiene comparison. Agreement is found regarding the classification of motivator and hygiene factors, but not about rank order, polarity, or unidimensionality of factors.

Wernimont et al. (1970:95-102) conducted a study of 775 scientists and technicians through the utilization of a questionnaire. Subjects were requested to rank job factors

as they affect job effort and job satisfaction. Data analysis was that of ranking median scores. The respondents ranked the factors that affect job effort and motivation as knowing what is expected, having a capable supervisor, having challenging work and responsibility, being kept informed, and participation in decisions. Subjects responded that job satisfaction was a result of personal accomplishment, praise for good work, getting along with coworkers, company location, and receiving credit for ideas. The study results indicate it is incorrect to use the terms "motivator" and "satisfier" interchangeably. The research does not support the "two-factor" theory in this last regard.

Myer (1964:73-88) conducted research on employees of Texas Instruments, Incorporated over a six year period. The study technique and analysis was that of the semistructured interview and content analysis. Several groups of subjects were studied, those being: 282 male scientists, engineers, manufacturing supervisors, and technicians, and fifty-two female hourly assemblers. The study resulted in significant support for Herzberg et al. (1959). Job characteristics grouped into motivator-hygiene dichotomies. One Herzberg motivator acted like a hygiene factor, and other Herzberg

motivators acted like both motivators and hygiene factors. Different job levels had different configurations of job characteristics. The female employees studied varied enough from the male subjects to suggest a sex factor. It was shown that Herzberg's motivators and dissatisfiers varied as to the importance to the worker and the lasting effect of the factor depending on the job classification. Of particular interest to this writer was Myer's description of the effect of personality differences as related by a description of "maintenance seekers." This description is very similar to Herzberg's (1966) description of "hygiene seekers". These workers realize little satisfaction from motivators, are cynical about the virtues of work, and their values fluctuate. Myer contends that in the absence of motivators, even highly motivated employees will behave like "maintenance seekers." Of all the five groups Myers studied, only female assemblers were not definitely directed toward motivating factors.

The present writer also utilized summaries of empirical research on the "two-factor" theory as secondary sources of information. These summaries were Wong (1979), as previously mentioned, and House and Wigdor (1967). Both authors developed tables to give an overview of empirical

research available. Through the use of these reviews, insight into several other empirical investigations is obtained.

Wong (1979:45-49) as well as House and Wigdor (1967:378-383) reviewed research by Friedlander published in 1964. This research was a study that utilized a test of significant difference between job characteristics, calculation of the degree of relationship between the job item as a satisfier and a dissatisfier by use of Pearson product-moment correlation, and analysis of means on the responses to two questionnaires. Eighty students composed the study sample. The results of the Friedlander study indicated intrinsic job characteristics were found to be important to both satisfaction and dissatisfaction, while extrinsics were relatively unimportant. Satisfiers and dissatisfiers were found not to be opposite ends of a common set of dimensions.

Ewen (1964) reported, according to Wong (1979:45), on a study of 1,021 insurance salesmen which utilized a fifty-eight item attitude scale. The study featured factor analysis to determine the nature of the varibles, satisfiers and dissatisfiers. Ewen was unable to verify the existence of such varibles or their nature. Ewen hypothesized that

these varibles may be different for different types of employees.

Friedlander (1966) reported a study, according to Wong (1979:46) and House and Wigdor (1967:378), which concluded that different employee value systems act upon performance and satisfaction depending on the employee's status. Four hundred twenty-one, blue-collar and 1,047 white-collar workers were asked to respond to a questionnaire as to the importance of various job characteristics. The responses were factor analyzed and then subjected to analysis of variance.

Ott (1965) reported on a study, according to House and Wigdor (1967:382), of 350 telephone operators. The subjects responded to a 115-item, job attitude survey, and the responses were factor analyzed. Five main factors were extracted. Two factors contributed primarily to satisfaction and related to competent supervisors; two factors contributed to dissatisfaction, one of which relate to supervision and one to customers; one factor contributed to both satisfaction and dissatisfaction. Cultural background was reported to affect the way subjects responded.

This review of the empirical investigation of the "two-factor" theory has dealt with the criticisms of the theory. Also reviewed have been the instruments, scaling, and methods utilized by various investigators of this theory. Finally, the statistical procedures utilized to analyze data produced from these studies have been outlined. A summary follows which draws on this empirical literature to make explicit the justification of the study design of this thesis.

Summary and Conclusions

This synthesis of the literature has reviewed the history and many uses of time clocks in business practice to aid in accurate record keeping. Articles by DeWindt (1975), Scobel (1975), Lorey (1976), and Bensahel (1977) have indicated there are behavioral science implications in work environments where time clocks are used. The evolution of the behavioral science literature has been traced and related to the responsibility of managers to interact humanistically with employees. Maintaining a humanistic work environment is a concern of the administrative staff of the study hospital and the impetus for the study of present reference.

The motivation branch of the behavioral science literature and "two-factor" theory of Herzberg et al. (1959) have been proposed as the theoretical foundation for this study. Accordingly, this writer hypothesizes that timekeeping with a time clock is extrinsic to the work itself and, as such, provides only potential for dissatisfaction. Further, the writer hypothesizes that employees are operating on two continua for job satisfaction and dissatisfaction as Herzberg et al. (1959) would suggest.

The maintenance factors (dissatisfiers) have been exhaustively reviewed to provide insight into the original Herzberg et al. (1959) concept each factor represents. Such concepts were utilized in questionnaire development by this investigator to make operational the independent variables (dissatisfiers) under study. Information on Herzberg's (1966) description of "hygiene seekers" has been utilized in the design of this research instrument to identify and separate the responses of subjects who do not operate as the "two-factor" theory would predict from subjects that do operate according to the theory.

The review of the empirical literature covered in this paper has identified a number of criticisms of the

"two-factor" theory of motivation. Graen (1966), Hinton (1968), and Burke (1966) maintained that satisfiers and dissatisfiers are not independent varibles that operate on two continua. Malinovsky and Barry (1965); Wernimont (1966); Ewen et al. (1966); and Friedlander (1964), as reported by Wong (1979:45-49), have claimed there is some interdependence between satisfaction and dissatisfaction. Lindsay et al. (1967) claim job satisfaction is bipolar. The present study, therefore, tests one of the assumptions of the study itself, that assumption being that the study population is operating on two continua, one for job satisfaction and one for job dissatisfaction. In keeping with Ewen et al. (1966), a t-test is performed to investigate the assumption of two continua and answer the first question of the problem statement.

House and Wigdor (1967:369-389) reviewed several studies that were attempts to verify the Herzberg et al. (1959) findings and concluded that present research did not confirm that job satisfaction is the same for all persons. Malinovsky and Barry (1965) have pointed out that the Herzberg et al. (1959) subjects were engineers and accountants who were motivated initially as witnessed by their professional education. Dunnette et al. (1967) and

Friedlander (1966), as reported by Wong (1979), proposed that job satisfaction is related to the value system and occupational choice of the employee. Centers and Bugental (1966) concluded that job satisfaction is related to occupational level. Myer (1964) deduced that job level is not only related to differences in the motivator and dissatisfier factors, but also is related to the magnitude and strength of these two groups of factors. Burke (1966) and Myer (1964) have also proposed a difference in job satisfiers and dissatisfiers, based on sex. Ott 1965, as reported by House and Wigdor (1967), has claimed that satisfiers and dissatisfiers are different, depending on cultural background. The present study has not addressed these differences, but has collected data on the degree of overall dissatisfaction by National Labor Relations Board bargaining unit and exhibits these data (appendix L). An examination of typical job titles in each bargaining unit (see appendix F) reveals that occupational level and choice, as well as educational attainment differences, are represented to some degree by these classifications of employment.

The empirical studies reviewed by this writer reveal that two types of data-gathering methods were utilized,

these being interviews and questionnaires. The choice of the questionnaire for the present investigation is supported by the work of Dunnette et al. (1967); Malinovsky and Barry (1965); Ewen et al. (1966); Lindsay et al. (1967); and Wong's (1979) report on Friedlander (1966). Lindsay et al. (1967) and Dunnette et al. (1967) have criticized the critical incident method and storytelling techniques utilized by Herzberg et al. (1959) as being too subjective. These investigators claim there is great potential for interviewer and evaluator bias. The present study has not utilized these techniques. A questionnaire has been utilized and potential interviewer bias has, therefore, been eliminated.

A Likert scale was chosen for the present investigation and incorporated in the questionnaire. The choice of this rating scale is supported by the work of Lindsay et al. (1967); Dunnette et al. (1967); Malinovsky and Barry (1965); Wernimont (1966); Ewen (1964), as evaluated by Wong (1979); and Ewen et al. (1966). These empirical studies utilized ranking or rating scales of the Likert-type for the measurement of the degree of importance which factors hold for subjects. These scales, additionally, determine the amount of satisfaction or

dissatisfaction an individual factor holds for subjects. The present study utilizes Likert-type scaling in the same manner.

The present utilization of an expert panel to content evaluate questionnaire items for validity is in keeping with the work of Dunnette et al. (1967). A pretest, as was utilized in this study, is not supported by the work of Dunnette et al. (1967), Malinovsky and Barry (1965), and Wernimont (1966). These investigators utilized a pretest to validate questionnaire items or adjust the scaling of the instrument. The present study utilized pretesting to identify problems in the wording of items (vocabulary), evaluate the time required to administer the instrument, and evaluate the adequacy of the written instructions.

The data analysis performed in the present study is supported to a large extent by the empirical literature and demonstrated as follows. Principal-components analysis with varimax rotation was utilized in this study to evaluate the validity of the items from the study questionnaire. Such use of factor analysis to identify significant factors from data delivered from a Likert-type scale is in keeping with the use of factor analysis by Dunnette et al. (1967); Ewen (1964), as reported by Wong (1979); Friedlander (1966),

as reported by Wong (1979); and Ott (1965), as reported by House and Wigdor (1967). Malinovsky and Barry's (1965) use of factor analysis differs from that of the present study in that they used factor analysis to determine if motivators and hygiene factors were separate dimensions and distributed on separate continua. Regression analysis is utilized in the present research to establish those dissatisfiers (independent variables) which have a significant relationship to overall dissatisfaction with the timekeeping system (dependent variable). Such utilization of regression analysis is in keeping with the utilization of analysis of variance (a form of regression analysis) by Graen (1966); Lindsay et al. (1967); and Friedlander (1966), as reported by Wong (1979), to analyze data on job satisfaction.

The present study utilized chi square to test the frequency distribution of overall dissatisfaction to determine if the distribution is by chance (normal distribution) (Siegel 1956:42-74). The utilization of chi-square by Friedlander and Walton (1964), however, was different from the utilization of chi-square in the present study. Friedlander and Walton were testing for significant difference for two variables.

This review of literature reflects support for the theoretical foundation of the study of present reference. The present study is based in the two-factor theory of motivation postulated by Herzberg et al. (1959). This explanation of the two-factor theory, a summary of the criticism of the theory, and the summary of some empirical studies that investigate hypotheses based on theory form the basis for the foundation of this paper.

CHAPTER IV

METHODS

Introduction

This methods section will describe the procedures utilized to determine the sample size and to select the sample from the population frame. The setting of the study will be described, as well as the methods utilized to request subject participation, the method of obtaining informed consent, and the questionnaire instructions.

Sampling

A random sample of the study subjects from the population frame (cf. Design) of all hourly employees of Houston Northwest Medical Center required to punch a time clock was chosen. A random numbers table (Freund and Williams 1964:446-449) was utilized in this selection. The sample size chosen for this study was $n = 120$. Two major considerations were identified that have impact on the decision of sample size. These are the formula for a simple random sample and the requirements for data needed in the factor analytic procedure planned for the study instrument. A review of these considerations follows.

The formula given by Snedecor and Cochran (1967:516-518) for a simple random sample is

$$\underline{n} = \frac{4\ \underline{p}\underline{q}}{L^2},$$

where $\underline{n}$ equals sample size; $\underline{p}$ equals the estimated proportion in the population of the dependent variable, overall dissatisfaction; $\underline{q}$ equals 1 - $\underline{p}$; and $\underline{L}$ equals the allowable error in the sample mean in terms of confidence limits. Decimal fractions will be used for $\underline{p}$, $\underline{q}$, and L for the purposes of this calculation. The $\underline{p}$ was estimated by the investigator, based on a prior study performed at the hospital by a management consultant firm. The writer estimates $\underline{p}$ to be no larger than 0.2 (20 percent) for this study population. The $\underline{L}$ was set by the writer at 0.1 (10 percent), which represents a 90 percent confidence limit. The calculation of sample size is

$$\underline{n} = \frac{4(0.2)\ (1 - 0.2)}{(0.1)^2} = 64.$$

A calculation of sample size with higher confidence limits, such as 95 percent, resulted in a sample size of 256 (21.93

percent of population). If the finite population correction were applied, the sample size would have been reduced to 209 subjects at a 95 percent confidence limit. The investigator felt that she could not conduct such a large study alone and, therefore, reduced the confidence limit.

The factor analytic procedure planned for the study demands consideration in the decision of sample size. The reason for this is that the correlation coefficient, which makes up a basic statistic of the analysis, has to be a stable measure (Kirchner and Lucas 1970:494). The calculation of minimum sample size (n_f) of items to be factor analyzed is

$$n_f = 2(i) + 1,$$

where i equals the number of items in the questionnaire to be factor analyzed (Rummel 1970, Kirchner and Lucas 1970:492-494). The thirty-one items to be factor analyzed in this study are items 11 through 18g (cf. appendix A); consequently, $i = 31$. The calculation of sample size from this formula is

$$n_f = 2(31) + 1 = 63.$$

Responses given by subjects that choose item 10b and are not maintenance seekers were factor analyzed. Herzberg (1966:80) and Myer (1964:76) indicate that in any given

population a number of maintenance seekers are present. The prevalence of this type of employee in the population of present study was unknown. An attempt to allow for some maintenance seekers in the sample was made. The constraint placed on this study of $n_f = 63$ as the minimum number of respondents to items 11 through 18g was kept in mind in the final decision of n.

The investigator made the following decision on sample size for this study. She set $n = 120$. This was an attempt to allow for any maintenance seekers who might affect the minimum number of responses ($n_f = 63$) required by factor analysis. Additionally, this figure was chosen to allow for subjects selected for the sample who did not respond to the requests for participation. The investigator, having chosen $n = 120$, drew 120 names from the payroll roster (Houston Northwest Medical Center 1980a), and began requests for employee participation on December 19, 1980. Appointment times were set for each subject. The roster contained names of employees that were no longer employed and a significant number on leaves of absence. Additionally, it was discovered that medical technologists were being treated as exempt employees and were not punching a clock. Finally, a significant number of nursing personnel

serving on a float pool were difficult to reach. These part-time employees were not being scheduled during the initial testing period. The initial testing started during the Christmas and New Year holiday time frame. The sample, n_f, fell below sixty-three following the first series of questionnaire administrations, and it was necessary to draw twenty additional names. A total of $n = 96$ took the questionnaire by the conclusion of the data collection phase of the study and, of these ninety-six subjects, $n_f = 72$. This final sample was obtained by offering make-up periods to administer the questionnaire and telephoning the work unit thirty minutes prior to the appointment to remind the subjects and their supervisors.

Instrumentation

The setting for the administration of the measurement instrument was within the study hospital. A staff meeting room was utilized. It was well lighted, provided comfortable chairs and tables, and was perceived by the investigator to provide a relaxed atmosphere. Questionnaire administration was conducted in the early morning, evening, and at night to accommodate all employee shifts.

The subjects were given instructions at several points in the study. The subjects chosen for the study were notified by their supervisors. A memorandum (see appendix E) was sent to the supervisors of the subjects, requesting that the supervisors send the subjects (employees) to one of six, regularly-scheduled sessions to participate in the study. Appointments were made for these sessions. Employees with special scheduling problems were given an appointment for a make-up session. A total of twenty-seven sessions were required to cover all shifts. Appointments were kept by employees who could be reached during the holiday period when the first sessions were offered. When a second series of testing periods was necessary, the first of January 1981, a number of subjects did not attend. This was due to a rise in the hospital patient census and, therefore, an increase in work load on nursing units.

Once the subjects arrived for their sessions, they were welcomed by one of six persons from either the education or the personnel department. This person administered the questionnaire and performed related functions. The administrator was assisted by another person from either the education or personnel department. They

obtained the subjects' signatures on a printed statement, documenting informed consent (see appendix C). These signatures were requested, after reading a statement (see appendix B) prepared by this investigator, to describe adequately the risks of this study to the subjects. The administrator, having collected the consent documents, then read the instructions (see appendix D) for the questionnaire to the subjects.

The subjects were instructed that they could leave the room upon completion of the instrument. They were given copies of their consent documents as they exited. The original consent form was examined for completeness by the instructor or witness and dropped into a locked box in the presence of the subject. These original forms were forwarded to the Human Subjects Committee of Texas Woman's University by one of the administrators. The questionnaires were given to the investigator after all subjects had taken the instrument, and the instruments were mixed prior to being transmitted to the investigator. One of the instructors determined that sixty-three responses had been obtained for the planned factor analysis, and prepared an alphabetic list of the names of the subjects that responded.

The investigator, once she received the instruments, sorted them as to responses to items 10a and 10b. Subject numbers were then assigned to each questionnaire, such numbers being sequential. The investigator placed the questionnaire, findings of the study, and the alphabetical list of subject names on file in the personnel department following completion of the data analysis. This last measure was taken to comply with the anonymity requirements of the study design.

Summary

This methods section has included a description of the procedures utilized in the determination and calculation of the desired sample size (n = 120), the acquisition of the study subjects (n = 96), and the random method of selecting that sample from the population. The instrument was administered twenty-seven times. Instructions to the study subjects included requests to participate in the study, relating information on informed consent, oral directions for completion of the questionnaire, and written instructions on the study instrument. Subjects were given copies of their consent documents, and he original copies were transmitted to the Human Subjects Committee of Texas

Woman's University by one of the administrators of the questionnaire. The questionnaires, when transmitted to the investigator, had no subject names associated with them. The investigator sorted the questionnaires as to responses to items 10a and 10b and assigned a subject number to each. The questionnaires were placed in the custody of the personnel department once data analysis was complete.

CHAPTER V

FINDINGS

Introduction

This section describes the procedures used in the analysis of the data produced from the administration of the study instrument. The calculation of the study statistics was executed on a Decsystem-20 computer at Texas Woman's Univerity, utilizing the Interactive Statistical Package (ISP) (Texas Woman's University 1981) and the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, and Bent 1975), both computer software packages. The statistics produced are reported, and will be utilized to answer the three questions addressed by this study, these being:

1. Are the hourly employees of the study hospital operating on two independent continua for the dependent variables, job satisfaction and dissatisfaction, as this relates to the present method of timekeeping with a time clock?

2. What is the extent of overall dissatisfaction among hospital employees with the present management system related to time clock recording of time worked?

3. Are there variables affecting overall dissatisfaction of employees with the present management system related to time clock recording of time worked?

A description of the processing of the data, calculation of the study statistics, the question addressed by each statistic, and tables of results will follow. Interpretation of these statistics to answer the study questions concludes this section.

Data Analysis

Data Accumulation

Responses to the study questionnaires were assigned numerical values and the data transferred to work sheets (data processing forms). The questionnaire data were accumulated in table form in preparation for analysis (see appendix G). A copy of the data file generated is included in appendix H. Items that utilized a Likert-type scale were assigned values, based on response, as follows: no dissatisfaction, a one; slight dissatisfaction, a two; moderate dissatisfaction, a three; strong dissatisfaction, a four; and extreme dissatisfaction, a five.

Frequency of Personal Characteristics of the Subjects

Personal characteristics were tabulated on the study subjects, utilizing subprogram FREQUENCIES from the SPSS package (Nie et al. 1975:194-202). These characteristics are presented in a frequency distribution format in table 1. A total of ninety-six subjects (n) responded to requests for participation in the study. Seventy-two (n_f) of these subjects responded to item 10b of the questionnaire and are considered to be operating as Herzberg et al. (1959) would predict.

Correlated t-Test

A correlated t-test was computed on the responses to items 4 (satisfaction scale) and 9 (dissatisfaction scale) of the study questionnaire. This statistic is utilized to answer question number one of the study, that being, are the hourly employees of the study hospital operating on two independent continua for the dependent variables, job satisfaction and dissatisfaction, as these relate to the present method of timekeeping with a time clock?

The formula for the t-test use in the present study may be found in Downie and Starry (1977:136). The

TABLE 1

FREQUENCY DISTRIBUTION OF FIVE CHARACTERISTICS ON SUBJECTS FROM A STUDY ON TIMKEEPING WITH A TIME CLOCK

Characteristics of Study Subjects	Category Label	Score	Absolute Frequency	Relative Frequency (percent)	Adjusted Frequency (percent)	Cumulative Adj. Freq. (percent)
1. Theoretical* Type	Maint. Seeker	1	24	25.0	25.0	25.0
	Herzberg Type	2	72	75.0	75.0	100.0
		Total	96	100.0	100.0	
2. Sex	Male	1	11	11.5	11.5	11.5
	Female	2	85	88.5	88.5	100.0
		Total	96	100.0	100.0	
3. Employment Status	Perm. Full-Time	1	74	77.1	77.1	77.1
	Permanent	2	19	19.8	19.8	96.9
	Temp. Part-Time	4	3	3.1	3.1	100.0
		Total	96	100.0	100.0	
4. Age to Nearest Whole Year	20 or Less	1	5	5.2	5.2	5.2
	21 to 29	2	30	31.3	31.3	36.5
	30 to 39	3	33	34.4	34.4	70.8
	40 to 49	4	22	22.9	22.9	93.8
	50 or Over	5	6	6.3	6.3	100.0
		Total	96	100.0	100.0	
5. NLRB Bargaining Unit	Supervisor	1	11	11.5	11.6	11.6
	Registered Nurse	2	21	21.9	22.1	33.7
	Professional-Other	3	8	8.3	8.4	42.1
	Licensed or Technical	4	26	27.1	27.4	69.5
	Bus. Off. Clk.	5	13	13.5	13.7	83.2
	Serv.-Maint.-Clk.	6	16	16.7	16.8	100.0
	No Response		1	1.0	Missing	100.0
		Total	96	100.0	100.0	

* Subject Operating as Herzberg Predicted vs. Maintenance Seekers ($n = 96$; $n_f = 72$).

calculation utilized subprogram T-TEST from the SPSS package (Nie et al. 1975:267-275). The calculated value of t (5.48) exceeded the critical value of 1.98 (Downie and Starry 1977:319) ($p \leq 0.05$); therefore, a statistically significant difference in the mean responses of subjects to items 4 and 9 was found. The null hypothesis (H_o1), there is no statistically significant difference in the mean responses of the study subjects to questions four and nine of the study questionnaire, is rejected. The research hypothesis (H_r1), there is a statistically significant difference in the mean responses of the study subjects to questions four and nine of the study questionnaire, may be accepted. The researcher concludes that the study subjects are operating on two continua (DR1), one for satisfaction and one for dissatisfaction (see table 2), as Herzberg et al. (1959) predicted.

Chi-Square Calculation

The criterion for an answer to question two of the problem statement was obtained by calculation of a chi-square statistic on the responses of the seventy-two subjects (n_f) who responded to item 10b (subject operating as Herzberg et al. 1959 predicted). The chi-square formula

TABLE 2

t-TEST ON A SINGLE SAMPLE OF EMPLOYEES
ON QUESTIONS 4 AND 9

Item Number (Questionnaire)	Number of Cases	Mean	Standard Deviation	Standard Error	(Difference) Mean	t Value	Degrees of Freedom	H_o1	H_r2
4	96	3.0313	0.900	0.092	0.8646	5.48	95	R	A
9		2.1667	0.970	0.099					

NOTE: Critical value of t must be 1.98 ($p \leq 0.05$) to be significant (Downie and Starry 1977:319).

used in the present study may be found in Downie and Starry (1977:74).

The chi-square was calculated utilizing FREQUENCIES from the SPSS package (Nie et al. 1975:194-202) and ISP (Texas Woman's University 1981) program, CONTAB. The subprogram FREQUENCIES produced a frequency distribution of (n_f = 72) (table 3). The cell frequencies (absolute frequencies) are utilized in CONTAB to calculate chi-square. Chi-square was calculated to have a value of 31.465 ($p \leq .0001$) with 4 degrees of freedom. The calculated value of chi-square exceeded the critical value of 9.48 ($p \leq 0.05$) (cf. Downie and Starry 1977:306) and indicates the distribution of overall dissatisfaction is other than by chance. The mean score on item 17, (overall dissatisfaction) ($\bar{X}_{17}$ = 2.239) exceeded the test criterion of two (see figure 1). A decision rule (DR2) was set such that if the chi-square statistic indicates a distribution other than by chance and $\bar{X}_{17}$ exceeds 2, the present system of timekeeping with a time clock will be changed. A histogram (figure 1) was also produced by FREQUENCIES. A variety of statistics are produced with the histogram on the

TABLE 3

FREQUENCY DISTRIBUTION OF OVERALL DISSATISFACTION
WITH THE PRESENT METHOD OF TIMEKEEPING
WITH A TIME CLOCK

Response Scale to Item 17* of Study Questionnaire	Score	Absolute Frequency (No. of Responses)	Relative Frequency (percent)	Adjusted Frequency (percent)	.Cumulative Adj. Freq. (percent)
No Dissatisfaction	1	18	25.0	25.4	25.4
Slight Dissatisfaction	2	29	40.3	40.8	66.2
Moderate Dissatisfaction	3	16	22.2	22.5	88.7
Strong Dissatisfaction	4	5	6.9	7.0	95.8
Extreme Dissatisfaction	5	3	4.2	4.2	100.0
Out of Range (No Response)		1	1.4	Missing	100.0
Total		72 (n_f)	100.0	100.0	100.0
Chi-Square = 31.465 ($p \leq 0.0001$) with 4 df.					

*Item 17 of study questionnaire concerns the degree of overall dissatisfaction for n_f, subset of n.

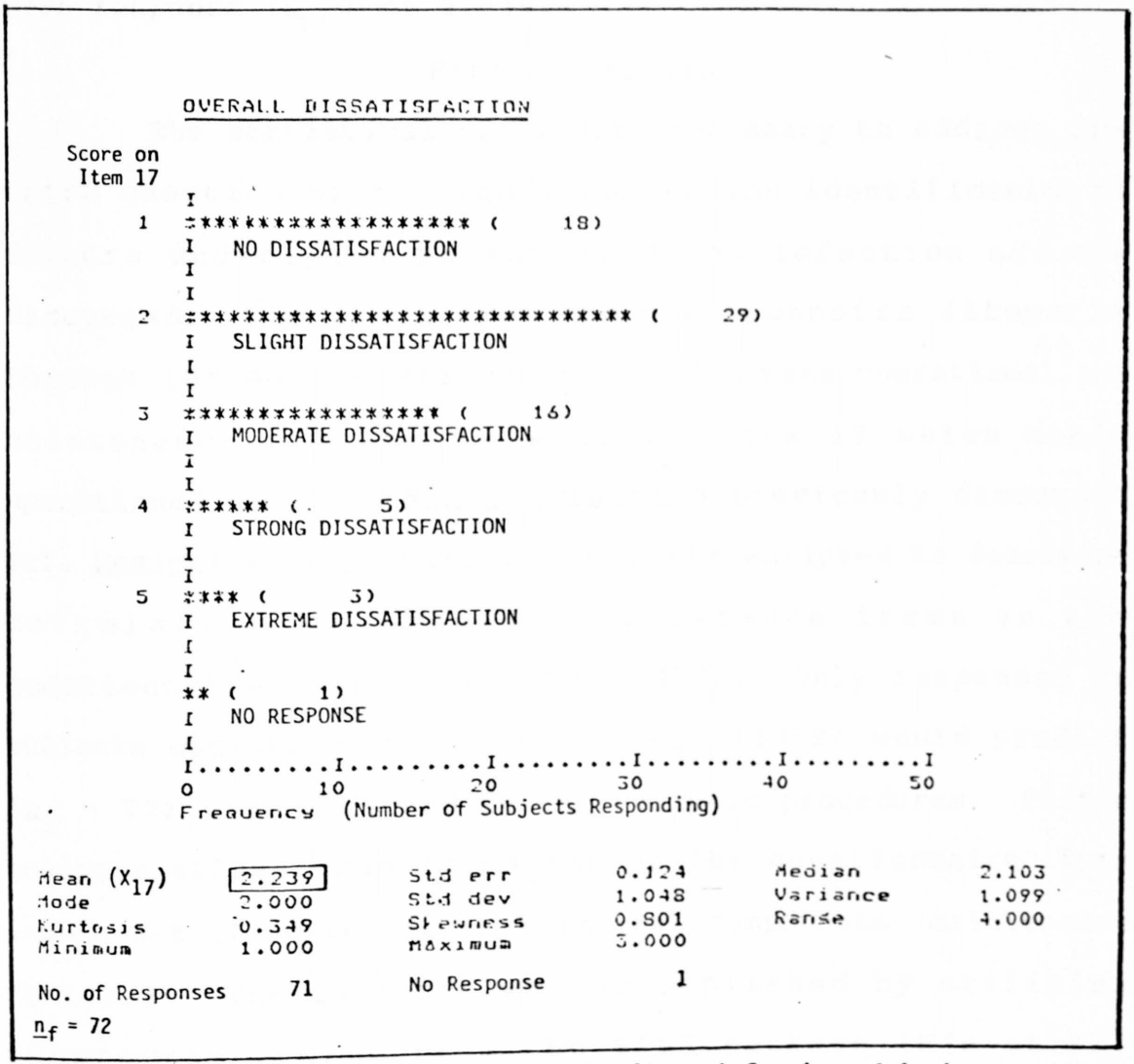


Figure 1. Histogram of overall dissatisfaction with the present method of timekeeping with a time clock.

responses to item 17 (overall dissatisfaction) including the mean response ($\bar{X}_{17}$) of 2.239.

Factor Analysis

The statistical procedures necessary to address the third question of the study concerning identification of factors underlying potential dissatisfaction are now discussed. The items from the questionnaire (items 11 through 16r and 18a through 18g) which make operational the maintenance factors as well as item 17 which makes operational overall dissatisfaction previously discussed (cf. Design) were principal-components analyzed to determine correlation or association between items on the questionnaire (Nie et al. 1975:470). Only responses of subjects operating as Herzberg et al. (1959) would predict ($n_f = 72$) were included in the analytic procedures. Factor analysis allows transformation of the questionnaire items into a set of composite or principal components (maintenance factors). The analysis was accomplished by utilizing subprogram FACTOR from the SPSS package (Nie et al. 1975:468-507) and formulas may be found in Harman (1967:137-146). The data utilized in the analysis may be found in appendix H. The factor analysis produces means

TABLE 4

EIGENVALUE, PERCENT VARIANCE, AND CUMMULATIVE PERCENT VARIANCE, CALCULATED ON RESPONSES TO ITEMS FROM "EMPLOYEE QUESTIONNAIRE: TIMEKEEPING WITH A TIME CLOCK"

Questionnaire Item No. *	Factor	Eigenvalue	% of var	Cum %
11	1	10.18180	32.8	32.8
12	2	3.85385	12.4	45.3
13	3	2.11791	6.8	52.1
14	4	2.02172	6.5	58.6
15	5	1.48871	4.8	63.4
16a	6	1.30197	4.2	67.6
16b	7	1.08568	3.5	71.1
16c	8	1.04572	3.4	74.5
16d	9	0.95109	3.1	77.6
16e	10	0.82639	2.7	80.2
16f	11	0.76772	2.5	82.7
16g	12	0.68961	2.2	84.9
16h	13	0.54255	1.8	86.7
16i	14	0.52420	1.7	88.4
16j	15	0.43582	1.4	89.8
16k	16	0.41914	1.4	91.1
16l	17	0.41001	1.3	92.5
16m	18	0.37417	1.2	93.7
16n	19	0.33049	1.1	94.7
16o	20	0.28871	0.9	95.7
16p	21	0.26318	0.8	96.5
16q	22	0.18968	0.6	97.1
16r	23	0.16063	0.5	97.6
17	24	0.14157	0.5	98.1
18a	25	0.13219	0.4	98.5
18b	26	0.11549	0.4	98.9
18c	27	0.09447	0.3	99.2
18d	28	0.07644	0.2	99.5
18e	29	0.06587	0.2	99.7
18f	30	0.05940	0.2	99.9
18g	31	0.04382	0.1	100.0

*See Appendix A for question corresponding to the item number.

$n_f = 72$

and standard deviations for each of items 11 through 18g (appendix I); the correlation matrix; eigenvalues, percent of variance, and cumulative percent (table 4); a factor matrix utilizing principal factors without iteration; and a varimax rotated factor matrix. Varimax rotation is utilized to simplify the columns of the factor matrix (Nie et al. 1975:485).

Principal-components analysis was run on the data extracting eight factors, seven factors, six factors, five factors, and finally four factors for a varimax rotation following the procedural logic to be discussed later. An orthogonal solution, such as the one chosen here, extracts the initial factors in such a way that one factor is independent from another (Nie et al. 1975:469-470). Five varimax factor matrices were produced. The first factor in each matrix is the best linear combination of variables that accounts for more of the variance in the data as a whole than any other linear combination. The second factor is the second best combination that is orthogonal to the first, and so on.

The factor scores from the five varimax factor matrices were examined. Each questionnaire item registers a loading score on each factor. An item was considered to

have correlated (loaded) significantly with any one factor when a coefficient of .40 or higher was obtained (sign disregarded) under that factor in the varimax factor matrix (Kerlinger 1973:662). Lists of items from the questionnaire which loaded on each factor were developed and reviewed by the investigator. The purpose of such a review is to infer from the manner in which items grouped which hygiene factor, if any, was represented by the principal component under consideration. The investigator utilized her review of the two-factor theory (Herzberg et al. 1959), the Herzberg studies performed in 1966, and empirical studies of the two-factor theory (cf. Review of the Literature) to analyze the relationship of items for each principal component. Accordingly, a concept was identified and named which described the general relationship among all the questionnaire items a single factor represented (Kibler, Cegala, Miles, and Baker 1974:90-97, 190-193; Nie et al. 1975:470).

Some varimax factors resulting from an extraction of only four and five factors for rotation were determined to be not meaningful. Rummel (1970:365) has discussed the distortion associated with extraction of too few or too many factors for rotation, and advises the use of rules of thumb

he outlines (p. 365). These rules assist in determining the number of factors for rotation in order to eliminate trivial or random error factors. The investigator utilized two of Rummel's rules to determine which set of varimax rotated factors should be utilized in the regression analysis (Rummel 1970:361-364). These were (1) the scree test and (2) the criterion of limiting factors for rotation to those with eigenvalues greater than one. Table 4 was utilized for both the scree test and to determine the number of factors with eigenvalues greater than one.

Eight factors have an eigenvalue greater than one (see table 4). Two of these factors have narrowly exceeded one. Utilizing the criterion of only rotating factors with eigenvalues of unity or greater, it would appear that no more than eight and possibly six factors should be rotated. The scree test was executed, utilizing eigenvalues and proportion (percent) of variance to plot a scree line (figure 2). The scree test is based on the observation that factor variance levels off when factors are largely measuring random error (Rummel 1970:361-362). The curve fitted to a plot of factors against percent variance has a decreasing negative slope until trivial factors are reached. When the curve levels off, random error is being measured.

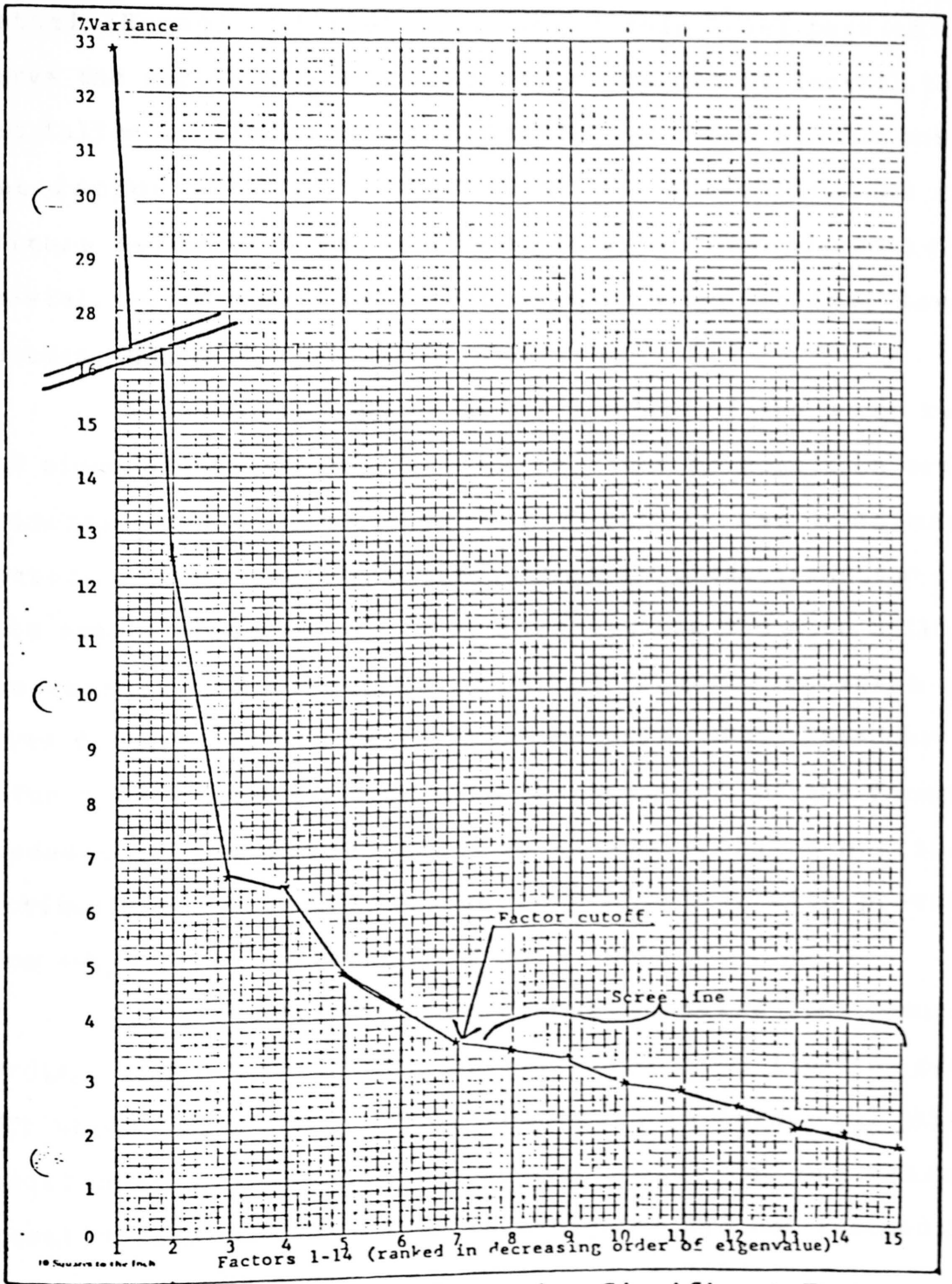


Figure 2. Scree Test to Determine Significant Factors.

Cattel (Rummel 1970:362) has named this level part of the curve the scree line since it resembles debris (scree) that has fallen or eroded off a mountain and lies at the base. The factor cutoff is reached at the scree line and all factors below that point are most often considered to be trivial. From the scree test it would appear that seven factors should be rotated (p. 362).

It appeared, based on the results of the scree test and eigenvalues greater than unity, that no more than seven principal components (hygiene factors) had been made operational or had any relationship to dissatisfaction for this sample of subjects. The investigator chose to utilize the varimax factor matrix produced from the rotation of seven factors for the regression analysis. The researcher's inferences reached concerning the structure of the factors produced in the five different varimax-rotated matrices previously mentioned, although inconclusive, also provide some subjective indication for this decision.

See appendix J for the questionnaire item number, wording, and factor loading of all valid items (loading over .40) which loaded on each of the seven factors. All other questionnaire items did not prove useful for evaluating dissatisfaction because the investigator did not succeed in

making operational concepts the items were to represent. A description of the maintenance factors and their identifying characteristics is covered in chapter III (cf. Maintenance Factors). Items loading on Factor 1 were determined from inspection and inference (Kibler et al. 1974:90-97, 190-193) to make operational company policy and administration, specifically with regard to effectiveness. The items loaded on Factor 1 relate to company inefficiency, waste of time, duplicative effort, and coordination of the efforts of company supervisors (Herzberg et al. 1959:71). Items 16k, 16j, 16i, 16l, 16b, 16r, 17, 16a, 16c, 16g, 16h, and 15 loaded on Factor 1 (above .40). Item 17, overall dissatisfaction, was included in the factor analysis, but loaded only with this factor indicating a strong relationship between overall dissatisfaction and company policy and administration. Items loading on Factor 2 were determined to make operational interpersonal relations as associated with peers, and personal life. Items 18f, 18e, 18g, 18d, and 18c loaded significantly (above .40) on Factor 2. Factor 3 was determined to make operational salary administration specifically in association with company policy and administration (p. 82). Herzberg et al. (1959) has emphasized that when salary functions as a dissatisfier,

it is coupled with company policy and administration in the area of salary administration. Items 16o, 16n, 16m, 16c, and 16f loaded significantly (above .40) on Factor 3. Factor 4 was determined to make operational personnel policy. Items 12, 13, 16a, and 16h loaded significantly (above .40) on Factor 4. Factor 5 makes operational technical supervision. Items 16d, 16e, 16f, 16c, 11, 16g, and 16a loaded on Factor 5 (above .40). Factor 6 makes operational job security, either through direct reference to security or reminding the employee of direct or indirect threats to job security. Items 16h, 18a, and 18b loaded significantly (above .40) on Factor 6. Items 16q, 16p, and 15 loaded on Factor 7. This investigator is unable to determine a relationship between these three items which loaded on this factor.

The next procedure utilized in the analysis of data was to develop a set of seven standardized scores for each subject (n_f = 72) for significant factors identified. This was accomplished by omitting data produced by item 17 (overall dissatisfaction) from the factor analysis and rerunning the analysis with seven factors. Again, a varimax factor matrix was produced, this time without item 17, the dependent variable (overall dissatisfaction) being included.

The rationale for omitting item 17 is as follows. Item 17 represents the dependent variable, overall dissatisfaction, and, therefore, it cannot be included in the calculation of standardized scores which are to represent the independent variables in the regression procedures. The SPSS key word, FACSCORE (Nie et al. 1975:496) was utilized to develop the data file of standardized scores. Additionally, the raw score on overall dissatisfaction (item 17) for each subject was added to this new data file. The new data file was prepared for use in the regression analysis.

Stepwise Multiple Regression Analysis

The standardized scores representing the seven principal components (maintenance factors) identified and the raw scores on overall dissatisfaction were analyzed by stepwise multiple regression. Multiple regression analysis serves to establish the linear and additive relationship, if any, between the independent variables (seven factors) and the dependent variable, overall dissatisfaction. The calculations for the multiple regression were executed by use of the SPSS subprogram, REGRESSION (Nie et al 1975:320-365). The mathematical formulas involved in such calculation may be found in Nie et al. (1975:323-339). Stepwise multiple regression was completed on the data file

of standardized scores developed from the principal-components analysis. Multiple R, R square, adjusted R square, standard error, and an analysis of variance table containing degrees of freedom, sums of squares, mean square, and F ratio (test of significance) were recalculated at each step (cf. Nie et al. 1975:327) (see appendix M). The independent variables were added to the regression equation by the computer program, one at a time. Multiple regression analysis concluded with a summary table (see table 5), which reports the principal factors (independent variables) and lists, by variable (factor), the multiple R, R square, RSQ change, simple R, B, and Beta. Multiple R (multiple correlation coefficient) indicates the overall relationship between the dependent variable and independent variable (p. 358). R square represents the proportion of variation in the dependent variable explained by the added effect of the other independent variables (p. 410). RSQ change represents the amount of change in the proportion of variance caused by the addition of another variable. B is the unstandardized regression coefficient and Beta is the standardized regression coefficient (p. 327). The multiple regression analysis table (table 5) has been utilized to report the results of this study. A

TABLE 5

MULTIPLE REGRESSION SUMMARY TABLE:
TIMEKEEPING WITH A TIME CLOCK

DEPENDENT VARIABLE: DISSATISFACTION.

SUMMARY TABLE

VARIABLE (INDEPENDENT)	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
FACTOR 1 (Company Policy and Administration - effectiveness)	0.52870	0.27952	0.27952	0.52870	0.5677454D+00	0.52870
FACTOR 5 (Technical Supervision)	0.64155	0.41158	0.13206	0.36341	0.3902459D+00	0.36341
FACTOR 3 (Salary Administration - Associated with Company Policy and Administration)	0.73677	0.54282	0.13124	0.36227	0.3890268D+00	0.36227
FACTOR 4 (Personnel Policy)	0.79928	0.63884	0.09602	0.30986	0.3327500D+00	0.30986
FACTOR 7 (Unable to Interpret)	0.81399	0.66258	0.02374	0.15407	0.1654467D+00	0.15407
FACTOR 2 (Interpersonal relations)	0.81738	0.66810	0.00553	-0.07435	-0.7983709D-01	-0.07435
FACTOR 6 (Job Security)	0.81892	0.67062	0.00252	0.05018	0.5388921D-01	0.05018
(Constant)					0.2208333D+01	

significant relationship exists ($p \leq 0.001$) between the dependent variable (overall dissatisfaction) and the independent variables (maintenance factors) at every step in the regression. The partial F ratio is, however, largest (most significant) with Factors 1, 5, 3, and 4 ($F = 29.62843$ with df/n = 4/67) (cf. Kleinbaum and Kupper 1978:502,178) in the regression equation (see Appendix M for additional information).

The proportion of variance in the dependent variable explained by the additive effects of the independent variables (R square) increases until Factors 1, 5, 3, and 4 are in the regression equation (see table 5). Factor 1 explains that 27.95 percent of the variance in overall dissatisfaction. Factors 5 and 3 increase the percent of variance by 13 percent each. Finally, Factor 4 adds an additional 9.6 percent to the percent of variance in the dependent variable, overall dissatisfaction, explained by the four independent variables. There is no significant amount of insight concerning overall dissatisfaction gained by utilizing the other factors. The logic of this conclusion may be seen in figure 3, which graphs the multiple correlation coefficient (Multiple R) against the principal components. The factors are graphed in the order

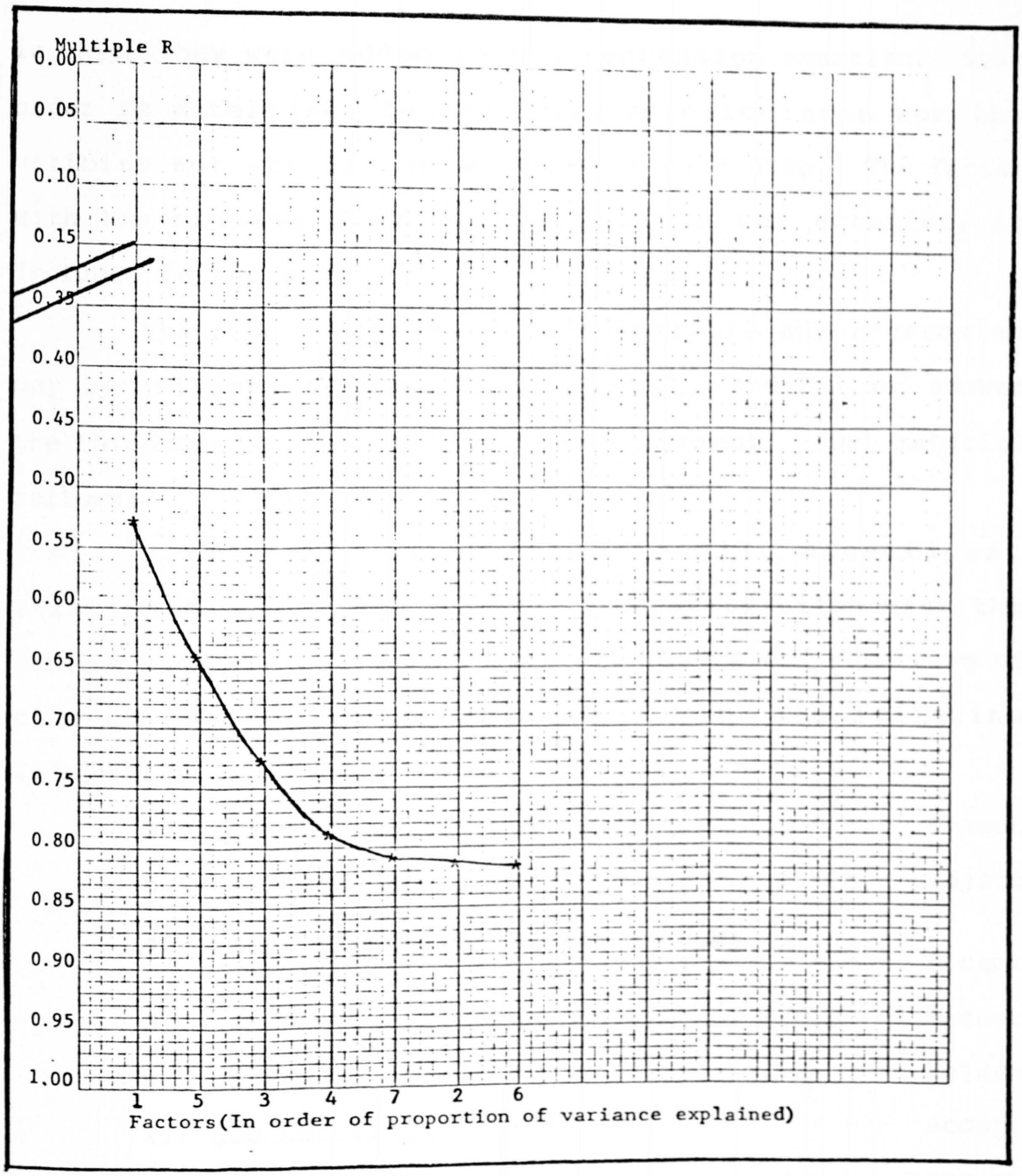


Figure 3. Change in multiple correlation coefficient caused by addition of dissatisfier factors.

in which they were added to the regression equation. This order is determined by the F values calculated for the varibles not yet in the equation at each step. The factor with the highest F value, not yet in the equation, is included in the next step.

The results of the factor analysis and regression may be utilized to accept or reject H_o3 and H_r3 and answer the third question of the problem statement. Such material follows:

H_o3: There is no statistically significant relationship between overall dissatisfaction with the present management system related to time clock recording of time worked and dissatisfaction with the following independent variables:

a. hospital policy and administration - - - Reject
b. technical supervision- - - - - - - - - - Reject
c. interpersonal relations with my supervisor - - - - - - - - - - - - - - - Accept
d. interpersonal relations with my peers- - Accept
e. salary - - - - - - - - - - - - - - - - - - Reject
f. job security - - - - - - - - - - - - - - - Accept
g. personal life- - - - - - - - - - - - - - - Accept
h. work conditions- - - - - - - - - - - - - - Accept
i. status - - - - - - - - - - - - - - - - - - Accept

$H_r 3$: There is a statistically significant relationship between overall dissatisfaction with the present management system related to time clock recording of time worked and dissatisfaction with the following independent variables:

a. hospital policy and administration - - - Accept
b. technical supervision- - - - - - - - - - Accept
c. interpersonal relations with my supervisor - - - - - - - - - - - - - - - - Reject
d. interpersonal relations with my peers- - Reject
e. salary - - - - - - - - - - - - - - - - - - Accept
f. job security - - - - - - - - - - - - - - - Reject
g. personal life- - - - - - - - - - - - - - - Reject
h. work conditions- - - - - - - - - - - - - - Reject
i. status - - - - - - - - - - - - - - - - - - Reject

DR3: Those dissatisfiers or hygiene factors (independent variables) that have a statistically significant relationship with overall dissatisfaction as verified by regression analysis will be reviewed by the administrative staff with a view toward possible revision or elimination of the timekeeping system.

Variables have been determined that account for 63.9 percent of the overall job dissatisfaction associated with timekeeping with a time clock. These variables are company

policy and administration associated with decreasing the effectiveness of the organization (Factor 1), technical supervisor (Factor 5), salary administration associated with company policy and administration (Factor 3), and personnel policies (Factor 4). The regression procedures that lead to the identification of these hygiene factors have answered question three of the problem statement, that question being are there variables affecting overall dissatisfaction of employees with the present management system related to time clock recording of time worked?

Additional Statistics on Personal Characteristics of Study Subjects

This researcher, in addition to answering the problems posed in the design of this study, also utilized the subprogram, CROSSTABS (Nie et al. 1975:218-248) to develop statistics on personal characteristics of the study's subjects ($n = 72$). Appendix K provides information on the degree of overall dissatisfaction with the timekeeping system by full-time, permanent; part-time, permanent; and temporary, part-time, employees. Appendix L provides information on the degree of overall dissatisfaction by National Labor Relations Board bargaining unit.

The writer has shown in table 1 that, of the ninety-six subjects (n) who took the questionnaire, twenty-four (25 percent) were "maintenance seekers." The investigator determined the number of "maintenance seekers" by National Labor Relations Board group from an inspection of appendix H. The following information was obtained: five (45.5 percent) hourly supervisors; zero registered nurses; three (37.5 percent) of other professionals; seven (26.9 percent) of licensed or technical professionals; two (15.3 percent) of business office clerical; and seven (43.8 percent) of service, maintenance, or clerical personnel are "maintenance seekers".

Summary

This chapter has presented the data gathered in the course of this study and analysis of that data. An explanation of the statistical procedures has been given and the study statistics have been reported. The major statistics utilized to answer these questions have been a correlated t-test, chi-square, principal-components analysis, and stepwise multiple regression analysis. These statistics were utilized to accept or reject the hypotheses of the study. The three questions addressed by this study have been answered. In summary, it has been found that the

hourly employees of the study hospital are operating on two separate continua for job satisfaction and dissatisfaction. The mean overall extent of dissatisfaction with the present system of timekeeping with a time clock is 2.239. Four hygiene factors have been identified that contribute to overall job dissatisfaction associated with timekeeping, those being company policy and administration associated with decreasing the effectiveness of the organization, technical supervision, salary administration and personnel policies.

CHAPTER VI

DISCUSSION AND RECOMMENDATIONS

This chapter will discuss the implications of the findings of this research for the study hospital. The utility of the design for the investigation of job characterics will also be covered. Additionally, the implications of this study for applied research will be discussed, as well as the significance of the maintenance seekers identified. The distribution of overall dissatisfaction by National Labor Relations Board bargaining units will be explored. Indications and recommendations for further study will conclude this chapter.

The answers to the problems addressed by this study have been presented in the findings of this thesis. The implications of these findings for the administrative staff of the study hospital are clear. The overall level of job dissatisfaction caused by timekeeping with a time clock has been found to be unacceptable to the hospital management. There is an indication that some changes in the timekeeping system must be made, or the whole system changed. The managers of the hospital, through the findings of this study, know that company policy and administration as it

relates to organizational effectiveness, salary administration, and personnel policies as well as technical supervision of the timekeeping system, are causing job dissatisfaction. These managers, this study indicates, will address themselves to these components of the present system of timekeeping to avoid or reduce employee dissatisfaction. Further, if a new system of timekeeping is implemented, then the managers of the hospital will exercise caution to avoid dissatisfaction in decisions involving company policy and administration, technical supervision, salary administration and personnel policies.

This study design also has implications for the investigation of other job characteristics. The design could be utilized for the investigation of many types of employee relations problems, both motivational factors and hygiene factors. One could gain insight as to employee preception of working conditions, salary programs, supervisory effectiveness, and many other items. The factor analytic procedures hold great promise for the utilization of specialized questionnaires, since computer programs are now widely available for validating such instruments.

This research has implications for applied research in that it has verified that, for timekeeping, employees operated on separate continua for satisfaction and dissatisfaction. This is in keeping with the "two-factor" theory of Herzberg et al. (1959).

The study has extended knowledge in that it has indicated that timekeeping (with a time clock) operates as a hygiene factor in the work environment. The timekeeping system of the study hospital has caused job dissatisfaction in the work environment under study. This investigation of timekeeping has identified two dissatisfiers of Herzberg et al. (1959) as having potential to cause dissatisfaction with a timekeeping system. Those factors are company policy and administration and technical supervision. There may be other hygiene factors with potential to cause job dissatisfaction associated with a timekeeping system, but the present study has not identified them. The study instrument may have failed to make operational some of these dissatisfiers or there may not have been dissatisfaction among the sample of subjects related to the other maintenance factors. The Herzberg et al. (1959) subjects, it is interesting to recall, most frequently mentioned

company policy and administration as a dissatisfier factor. Technical supervision, additionally, was the second most frequently mentioned factor in the structured interviews of the Herzberg et al. (1959) study. It appears the subjects of the present study have reacted in a manner similar to those of the Herzberg et al. (1959) study.

A point of concern to this investigator, as a member of the administrative staff of the study hospital, is the prevalence of "maintenance seekers" in the sample (25 percent). One must wonder if interview and employment practices have worked within this institution to select a large number of employees with low interest in self-actualization. Another equally disturbing possibility is that the institution may have ignored Herzberg's (1966:80-81) admonition. That admonition being not to provide a work environment where emphasis is placed primarily on extrinsic or hygiene factors to the detriment of intrinsic or motivational factors. Of special concern is the high percentage (45.5 percent) of "maintenance seekers" among hourly supervisors and other professionals (37.5 percent). The other professionals category includes pharmacists, physical therapists, and dieticians. These supervisors and professionals, however, represent a small

number of individuals (five and three respectively) and may not be representative of the these classes of employees.

It is of particular interest to this investigator that 33.3 percent (seven of twenty-one) of the registered nurses and 36.8 percent (seven of nineteen) of the licensed or technical personnel from the subset (n_f = 72) experienced dissatisfaction with the timekeeping system that ranged from moderate to extreme (3 to 5 points) (cf. appendix L). The licensed or technical group contains licensed vocational nurses, electrocardiograph technicians, respiratory therapists, radiologic technologists, and others (cf. appendix F). These two National Labor Relations Board categories have significance for the hospital as they provide the majority of the employees in the total employee population.

This thesis has produced several topics which indicate a need for further study. The exempt supervisory staff that utilize the information from the time clock recording system should be consulted as to the advantages and disadvantages of the present system. These supervisors, this investigator has been told, have a difficulty with the clarity of the information produced. The system utilized to

allocate time to vacation, holiday, sick, regular, and shift differential hours is complicated. This system may be causing even more job dissatisfaction for this group than the staff employees but for different reasons. Some of these exempt managers and supervisors, however, fear that a change to manual recording would negatively affect their relationship with their subordinates. This fear is founded in the feeling that the employee would feel oversupervised by daily inspection of records. A subsequent feeling on the part of the employee of loss of responsibility for his own time record could be experienced.

Information from a study of timekeeping with a time clock performed on another type of employee population is worthy of further study. A replication of this study in another hospital would also be insightful. Replication could also assist in testing the reliability of some items from the questionnaire. Such investigations would further explore the possibility that other hygiene factors may have potential to cause dissatisfaction in the area of timekeeping of hours worked. Additionally, information on hospital personnel from other institutions would be helpful to the hospital of present reference for comparison purposes.

Operationally, this investigator encountered difficulty administering the questionnaire during a holiday season. This proved problematic in that extensive numbers of make-up sessions were necessary to obtain sufficient numbers of subjects. Many part-time personnel had been omitted from the staffing plans, especially in the nursing department, due to low patient census during the Christmas season. Additionally, the payroll roster had many inaccuracies and listed persons on leaves of absence. Finally, it was determined after the study began that, because medical technologists are exempt under wage and hour requirements, they had not been required to punch a clock by their department. The apparent overrepresentation of full-time, permanent class in the sample may be explained because of these reasons.

The major problem encountered with the study instrument related to items 10a and 10b. These two items may have caused confusion on the part of the subjects here in referred to as maintenance seekers (positive response to 10a). The validity of the structure of these items has not been tested, other than by the expert panel, who reviewed the questionnaire. Clear concepts were possibly not

conveyed by 10a and 10b. Few subjects answered more than four or five items from the section of items 19 through 26g once they chose this path. Additionally, the investigator feels, in retrospect, that she may not completely have made operational the hygiene seeker concepts. This concept is suitable material for further study.

This chapter has discussed the findings of this research in terms of meaning and implications for the administrative staff of the study hospital, Houston Northwest Medical Center. Additionally how the findings of the present study support the Herzberg et al. 1959 findings has been covered. The implications of this study for applied research have been related. Company policy and administration, technical supervision, salary administration, and personnel policies have been identified as having potential to operate as dissatisfiers in a timekeeping system. The utility of the study design has been discussed as well as the implications of maintenance seekers. This chapter concludes with conceptual and operational recommendations for further study.

APPENDIX A

EMPLOYEE QUESTIONNAIRE

TIME KEEPING WITH A TIME CLOCK

The answers you give to the questions on this questionnaire will be held in confidence. Only the collective responses of the group participating in this survey will be reported to you, the participants, and the other hospital employees. It is not necessary for you to write your name on your questionnaire.

Please answer the following questions by placing an "x" in the box of the appropriate choice.

1. Do you punch the time clock to keep your time?

YES	NO	(If no, please contact the instructor by raising your hand.)
☐	☐	

2. Are you paid on an hourly basis?

YES	NO	(If no, please contact the instructor by raising your hand.)
☐	☐	

3. Sex:

MALE	FEMALE
☐	☐

INSTRUCTIONS QUESTION 4:

The following question will concern your feelings about the present method used at Houston Northwest Medical Center to record time worked with the use of a time clock. There is no right or wrong answer.

4. Question:

Choose one response concerning satisfaction that most closely describes your feeling about the present method related to time clock recording of time worked.

Low Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

Please answer the following questions by placing an "x" in the box of the appropriate choice.

5. Status: (Check one)

Permanent Full-time	Permanent Part-time	Temporary Full-time	Temporary Part-time
☐	☐	☐	☐

6. What is your age category to the nearest whole year?

20 or less	21 to 29	30 to 39	40 to 49	50 or over
☐	☐	☐	☐	☐

7. What is your race?

Black	Hispanic	Asian	White	Other
☐	☐	☐	☐	☐

8. What is your position?

Supervisor	R.N.	Other Professional	Licensed or Technical	Business Office Clerical	Service/ Maintenance/ Clerical
☐	☐	☐	☐	☐	☐

INSTRUCTIONS QUESTION 9.

The following question will concern <u>your</u> feelings about the present method used at Houston Northwest Medical Center to record time worked with the use of a time clock. There is no right or wrong answer.

9. <u>Question</u>:

Choose <u>one</u> response concerning dissatisfaction that most <u>closely</u> describes your feeling about the present method of time clock recording of time worked.

Low Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

INSTRUCTIONS:

Place an "x" in the box to the left of the statement which most closely describes you. Choose one only from 10a and 10b.

☐ 10a. Because of the present method of time clock recording of time worked, I feel motivated and work hard to do a good job.

☐ 10b. I feel neither satisfied nor dissatisfied with the present method of time keeping with a time clock or I am dissatisfied with the present method of time clock recording of time worked.

If you placed an "x" next to item 10a go to page 11 and answer questions 19-24g . If you placed an "x" next to items 10b, proceed to question 11 after you have read the instructions. All persons choosing 10b will need to answer questions 11-18 to complete the questionnaire.

INSTRUCTIONS:

Indicate your degree of dissatisfaction or lack of dissatisfaction with each aspect of this hospital's use of the present system of time clock recording of time worked. Place an "x" in the box below the one (1) response which most closely describes your feeling.

11. Statement:

The hospital policy on attendance defines tardiness "as reporting one or more minutes after the start of the work shift. Excessive tardiness is defined as "being tardy four (4) or more times within two (2) consecutive pay periods." Excessive tardiness is grounds for your supervisor to institute a written conference (Step 1, Progressive Discipline Program). An employee could be terminated for tardiness alone if he/she was given twelve (12) conferences for tardiness during a 12-month period.

Question:

How much job dissatisfaction does this policy cause for you personally?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

12. Statement: 4

Your employee handbook discusses overtime. The handbook states that employees "should not clock in or report to their work areas more than 7 minutes before their assigned shift, and will be expected to leave their work areas and clock out within 7 minutes after completion of their shift . . . odd minutes before or at the end of the shift, during a pay period, will not be accumulated as overtime."

Question:

How much job dissatisfaction does this policy cause for you personally?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

13. Statement:

Your employee handbook states that "overtime must be authorized by the immediate supervisor and/or department head." Overtime is not automatically paid for extra time stamped on your card unless there also appears an authorization signature or initial.

Question:

How much job dissatisfaction does this policy cause for you personally?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

14. Statement:

Your employee handbook states that "any deliberate false information entered on the time card, or tampering with other employees' time cards is grounds for immediate dismissal."

Question:

How much job dissatisfaction does this policy cause you personally?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

5

15. Statement:

The hospital utilizes "military time" for stamping the time cards of all employees. Military time is used to make clear night and evening from day shifts and to assist in calculation.

Question:

How much job dissatisfaction does this utilization of military time cause for you personally?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

S T O P

INSTRUCTIONS CHANGE SLIGHTLY AT THIS POINT.
GO ON TO READ THEM CAREFULLY.

INSTRUCTIONS FOR QUESTIONS 16A - 16R AND 17:

Place an "x" in the box which most closely describes the amount of job dissatisfaction you associate with each of the following aspects of your job. Proceed to aspects 16a-16r.

16a. The way policies, rules, or regulations regarding timekeeping with a time clock are carried out or followed in this hospital.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16b. The extent policies, rules, and regulations regarding the present method of time clock recording of time worked are supported by supervisors.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16c. The extent policies, rules, and regulations concerning the time clock recording of time worked are communicated to employees.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16d. The guidance you receive from your supervisor in maintaining your time card.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16e. The degree of fair treatment you receive from your supervisor in maintaining your time card.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16f. The amount of communication you receive from your supervisor on your recording of your time worked.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16g. The amount of orientation you, as a new employee, received on the use of the time clock.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16h. The reliability of the time clock to function properly.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16i. The ready availability of your time card in the time card rack.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16j. The location of the clocks within the hospital.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16k. The amount of time you must wait in line at shift change in order to use the time clock.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16l. The availability of your supervisor so that he/she can approve overtime or clocking errors.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16m. The accuracy of your paycheck in reflecting time worked when prepared from the information recorded on your time card with a time clock.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16n. The degree to which you are accurately paid for overtime hours when time worked is recorded with a time clock.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16o. The degree to which you are accurately paid for shift differential when time worked is recorded with a time clock.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16p. The effect the present method of maintaining your time card has on whether you keep your job.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16q. My feeling of importance to the hospital when I clock in.

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

16r. The present system of recording time worked with a time clock allows certain employees, such as department heads, to write in time rather than punch. The practice of not requiring all employees to punch causes me to feel:

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

17. All in all, how dissatisfied are you with the present method of time clock recording of time worked?

Response:

No Dissatisfaction	Slight Dissatisfaction	Moderate Dissatisfaction	Strong Dissatisfaction	Extreme Dissatisfaction
☐	☐	☐	☐	☐

S T O P

INSTRUCTIONS CHANGE AT THIS POINT.

GO ON TO READ THEM CAREFULLY.

INSTRUCTIONS FOR QUESTIONS 18a - 18g:

Place an "x" in the box which most closely describes your feeling of agreement with each statement.

18a. The present system of recording time worked with a time clock affects my feeling of security about keeping my job.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18b. The way I get along with my boss affects how I feel about the time clock method of recording time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18c. The way I get along with my fellow workers affects the way I feel about the time clock method of recording time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18d. If I disagree with my fellow workers, I feel negative about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18e. The way my family feels about time clock use affects how I feel about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18f. If my family life is going poorly, I feel negative about use of a time clock to record time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

18g. The way my friends feel about time clock use affects how I feel about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Total Agreement
☐	☐	☐	☐	☐

S T O P

If you originally marked 10b (page 3) and answered questions 11-18, you are finished. Check out with the instructor. Thank you for your cooperation.

Those persons who chose item 10a as most closely describing them should answer the following questions (19-26g). Please read the instructions below and then begin.

INSTRUCTIONS QUESTIONS 19-26g:

Indicate your degree of satisfaction or lack of satisfaction with each aspect of this hospital's use of the present system of time clock recording of time worked. Place an "x" in the box below the one (1) response which most closely describes your feeling.

19. Statement:

The hospital policy on attendance defines tardiness "as reporting one or more minutes after the start of the work shift." Excessive tardiness is defined as "being tardy four (4) or more times within two (2) consecutive pay periods." Excessive tardiness is grounds for your supervisor to institute a written conference (Step 1, Progressive Discipline Program). An employee could be terminated for tardiness alone if he/she was given twelve (12) conferences for tardiness during a 12-month period.

Question:

How much job satisfaction does this policy provide for you personally?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

20. Statement:

Your employee handbook discusses overtime. The handbook states that the employees "should not clock in or report to their work areas more than 7 minutes before their assigned shift, and will be expected to leave their work areas and clock out within 7 minutes after completion of their shift. . . . odd minutes before or at the end of the shift, during a pay period, will not be accumulated as overtime."

Question:

How much job satisfaction does this policy cause for you personally?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

21. Statement:

Your employee handbook states that "overtime must be authorized by the immediate supervisor and/or Department Head." Overtime is not automatically paid for extra time stamped on your card unless there also appears an authorization signature or initial.

Question:

How much job satisfaction does this policy provide for you personally?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

22. Statement:

Your employee handbook states that "any deliberate false information entered on the time card, or tampering with other employees' time cards is grounds for immediate dismissal."

Question:

How much job satisfaction does this policy provide you with personally?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

23. Statement:

The hospital utilizes "military time" for stamping the time cards of all employees. "Military time" is used to make clear night and evening from day shifts and to assist in calculation.

Question:

How much job satisfaction does this utilization of military time provide for you personally?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

S T O P

INSTRUCTIONS CHANGE SLIGHTLY AT THIS POINT.

GO ON TO READY THEM CAREFULLY.

INSTRUCTIONS FOR QUESTIONS 24a-r AND 25:

Place an "x" in the box which most closely describes the amount of job satisfaction you associate with each of the following aspects of your job.

24a. The way policies, rules, or regulations regarding timekeeping with a time clock are carried out or followed in this hospital.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24b. The extent policies, rules, and regulations regarding the present method of time clock recording of time worked are supported by supervisors.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24c. The extent policies, rules, and regulations concerning the time clock recording of time worked are communicated to employees.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24d. The guidance you receive from your supervisor in maintaining your time card.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24e. The degree of fair treatment you receive from your supervisor in maintaining your time card.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24f. The amount of communication you receive from your supervisor on your recording of your time worked.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24g. The amount of orientation you, as a new employee, received on the use of the time clock.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24h. The reliability of the time clock to function properly.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24i. The ready availability of your time card in the time card rack.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24j. The location of the clocks within the hospital.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24k. The amount of time you must wait in line at shift change in order to use the time clock.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24l. The availability of your supervisor so that he/she can approve overtime or clocking errors.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24m. The accuracy of your paycheck in reflecting time worked when prepared from the information recorded on your time card with a time clock.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24n. The degree to which you are accurately paid for overtime hours when time worked is recorded with a time clock.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24o. The degree to which you are accurately paid for shift differential when time worked is recorded with a time clock.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24p. The effect the method of maintaining your time card has on whether you keep your job.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24q. My feeling of importance to the hospital when I clock in.

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

24r. The present system of recording time worked with a time clock allows certain employees, such as department heads, to write in time rather than punch. The practice of not requiring all employees to punch causes me to feel:

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

25. All in all, how satisfied are you with the present method of time clock recording of time worked?

Response:

No Satisfaction	Slight Satisfaction	Moderate Satisfaction	Strong Satisfaction	Extreme Satisfaction
☐	☐	☐	☐	☐

S T O P

INSTRUCTIONS CHANGE AT THIS POINT.

GO ON TO READ THEM CAREFULLY.

INSTRUCTIONS FOR QUESTIONS 26a - 26g.

Place an "x" in the box which most closely describes your feeling of agreement with each statement.

26a. The present system of recording time worked with a time clock affects my feeling of security about keeping my job.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26b. The way I get along with my boss affects how I feel about the time clock method of recording time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26c. The way I get along with my fellow workers affects the way I feel about the time clock method of recording time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26d. If my fellow workers are nice, I feel good about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26e. The way my family feels about time clock use affects how I feel about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26f. If my family life is going good or bad, it affects how I feel about use of a time clock to record time worked.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

26g. The way my friends feel about time clock use affects how I feel about the time clock.

Response:

No Agreement	Slight Agreement	Moderate Agreement	Strong Agreement	Extreme Agreement
☐	☐	☐	☐	☐

S T O P

If you originally marked 10a (page 3) and answered questions 19 - 26g, you are finished. Check out with the instructor. Thank you for your cooperation.

APPENDIX B

ORAL PORTION OF INFORMED CONSENT PRESENTATION
FOR THE STUDY, "PERCEPTION OF TIME RECORDING
WITH A TIME CLOCK AS A DISSATISFIER
FOR HOSPITAL EMPLOYEES"

I am Ms. _____, an instructor in the education department. Thank you for coming.

You have been asked to come here today to participate in a research project that is being conducted by a graduate student in the Health Care Administration Program of Texas Woman's University in association with the hospital. This student is conducting an employee survey concerning how you, the employee, feel about this hospital's method of timekeeping with a time clock. The results obtained from this survey will be reported to and utilized by administration. The information will be used to evaluate the present system used at Houston Northwest to record and maintain time records. The ideas you express today will assist the administrative staff to spot areas of concern you may have with present policies or procedures related to keeping time cards.

The research project requires only that you fill out certain portions of the questionnaire on the desk before you. It will take you a short period of time and in no way will you be harmed physically by participating in this study. Your supervisor was notified concerning your attendance at this session. You have been excused from your work area to participate in the study. You need only notify your supervisor when you return to duty. Participation in the study is <u>voluntary</u>, and you may elect to discontinue participation at any point during

the study. The hospital and the graduate student, however, would greatly appreciate your participation and the information you give. You will receive a summary of the results which you may find of interest when the study is complete. Your participation and input will assure that employees have an opportunity to express opinions on current practices.

During the course of this session, I will stop from time to time for questions. You may ask them before the group or hold up your hand for assistance individually while others are filling out their papers. Do not hesitate to ask for assistance. If you have forgotten your glasses or need help with a bad copy, one of us will be glad to help you.

The following sequence of events will be followed:

1. Fill out the two-part consent form (Form B) attached to your questionnaire by signing your name in the first signature blank, and please date the signature. When you have finished, please pass these consent forms to the instructor. We will complete the forms and give you a copy as you leave.
2. When all consent forms are complete, we will proceed to give brief instructions for the questionnaire. Do not be apprehensive about the apparent length of the questionnaire. You will fill out only one of two parts of the instrument, depending on certain initial choices you make. Remember, this is not a <u>test</u>! <u>There are no right or wrong answers</u>.

3. You need not put your name on the questionnaire. Neither the graduate student nor administration will be able to associate your name with your responses.

Are there any questions?

APPENDIX C

Consent Form

TEXAS WOMAN'S UNIVERSITY
HUMAN SUBJECTS REVIEW COMMITTEE

(Form B)

Title of Project: Perception Of Time Recording With A Time Clock As A Dissatisfier For Hospital Employees

Consent to Act as A Subject for Research and Investigation:

I have received an oral description of this study, including a fair explanation of the procedures and their purpose, any associated discomforts or risks, and a description of the possible benefits. An offer has been made to me to answer all questions about the study. I understand that my name will not be used in any release of the data and that I am free to withdraw at any time. I further understand that no medical service or compensation is provided to subjects by the university as a result of injury from participation in research.

_____ _____
Signature Date

_____ _____
Witness Date

Certification by Person Explaining the Study:

This is to certify that I have fully informed and explained to the above named person a description of the listed elements of informed consent.

_____ _____
Signature Nancy Norris Date

Instructor, Inservice Education Dept.
Position Houston Northwest Medical Center

_____ _____
Witness Date

One copy of this form, signed and witnessed, must be given to each subject. A second copy must be retained by the investigator for filing with the Chairman of the Human Subjects Review Committee. A third copy may be made for the investigator's files.

APPENDIX D

QUESTIONNAIRE INSTRUCTIONS

The questionnaire you are being asked to fill out today requires that you respond by marking your choice to the items by placing an "X" in one box per item number. There are no right or wrong answers. Your feelings about the system of timekeeping with a time clock are being solicited. Please begin now by reading the instructions on Page 1 and 2 and respond to Items 1 through 7 and then stop. An explanation of the type of job titles that fall into the position categories is on the blackboard. Are there any questions?

(Pause)

You may begin.

If you have completed Items 1 through 7, read the instructions for Items 8 through 10 and respond. You will choose only one response to Item 10, either 10a or 10b. As your questionnaire states on Page 3, if your choice is Item 10a, you will proceed to Page 11 and respond to only questions 19 through 24g. If your choice to Item 10 is 10b, you should proceed down Page 3 and respond to only Items 11 to 18g. Contained in the questions are references to your employee handbook. That is the blue book you should have received in orientation. There is also a reference to "military time." Military time is the notation of time by numbering the hours in a day from one to twenty-four. An example of military time would be to denote 1:00 p.m. as 13:00 hours. The hours are further divided into one hundred parts rather than 60 parts as with minutes; therefore, 1:15 p.m. would be written 13:25. Are there any questions?

Slight changes in directions occur along the way, so read carefully. Remember this is not a test and there are no right or wrong answers.

We wish to emphasize that your participation is voluntary and you may discontinue participation at any point if you wish.

You may begin.

APPENDIX E

Houston Northwest Medical Center, Inc.

December 19, 1931

M E M O R A N D U M

TO: Department Heads
Head Nurses
Supervisors

FROM: Jacqueline Caldcleugh
Assistant Administrator
Professional Services

SUBJECT: Employee Survey

Some of your employees have been randomly selected from the employee population to participate in an employee attitude survey. The survey is being conducted by collecting responses of a sample of employees to a questionnaire designed to evaluate employee reaction to the present methods utilized to maintain time cards. The employees under your supervision that we would like to give their responses are listed below. Following their name, a time is given when they are to report to Classroom #3 and fill out a survey. If they are not available to take the survey at the time listed, please have them call extension 2107 and arrange another time with Mrs. Elliott. It is important that each employee chosen for participation respond if at all possible. Thank you for your cooperation in this matter.

Department - (Supervisors Name) Please send:

1. Employee name . . . . . Date and time.
2. Employee name . . . . . Date and time.
3. Employee name . . . . . Date and time.

JC/ae

APPENDIX F

CLASSIFICATION OF TYPICAL JOB TITLES*

SUPERVISOR	R.N.	OTHER PROFESSIONALS	LICENSED OR TECHNICAL	CLERICAL BUSINESS OFFICE	CLERICAL SERVICE/MAINTENANCE
Regardless of department.	Registered nurse only.	Pharmacist	LVN	Business Office and Accounting	Maintenance
		Med Tech	EKG Tech	Cashiers	Phlebotomists
		PT	RT	Admitting	Nursing Assistants
		Regular Dietician	X-ray Tech	Switchboard	Maintenance Engineer
			Certified ORT		Environmental Services
			Surgery Tech		Purchasing Employees
					Clerical other than Business Office or Accounting
					Department Secretary
					Medical Records Clerical
					Unit Secretary
					Ward Clerk
					Personnel
					Dietary

* National Labor Relations Board bargaining unit represented by column headings

APPENDIX G

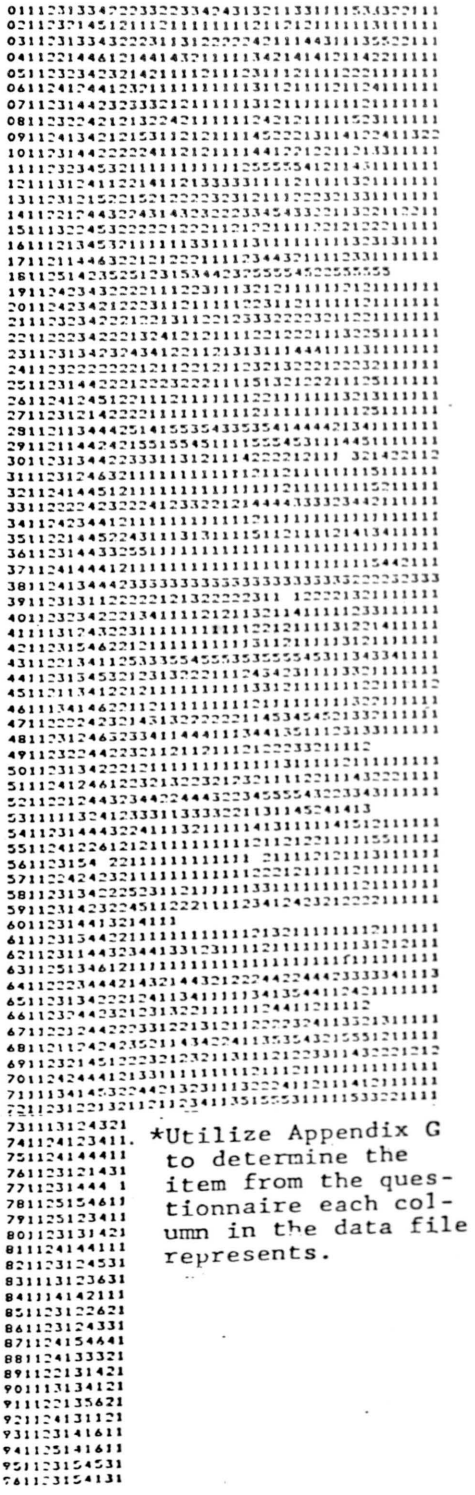
SAMPLE DATA ACCUMULATION WORK SHEET

Subject Number	Verify	Verify (Sex)	(Score #1)	Status	Age	Race	NLRB	(Score #2)	Mt. Sk A or B (1or2)	MAINTENANCE FACTORS						Over All Dis	MAINT. FACT. CONT.			
										Company Policy and Adm.	Technical Supervsn.	Working Conditions	Sal.	Job Sec.	Sta-tus		Job Sec	I.P. Sup.	I.P. Peer	Per. Life
	1	2	3	4	5	6	7	8	9	10	11 12 13 14 15 16 a b	16 c d e f g	16 h i j k l	16 m n o	16 p	16 q r	17	18 a	18 b	18 c d	18 e f g
If																					
n (all subjects)																					
Column No. on Computer Data File																					
1 2	3 12									13						36	 43				

NOTE: Appendix G reflects the computer column number utilized in the data file to record the responses to each question on the questionnaire. A copy of the entire data file which resulted is included in Appendix H. Questions were scored from left to right on all scales that ran from left to right. The first response received a score of 1, the second possible response a 2 and so on (see Appendix A). Item 10 was scored 1 for a positive response to 10a and 2 for a positive response to 10b.

APPENDIX H

DATA FILE OF RESPONSES TO "EMPLOYEE QUESTIONNAIRE TIMEKEEPING WITH A TIME CLOCK" *



*Utilize Appendix G to determine the item from the questionnaire each column in the data file represents.

APPENDIX I

MEAN SCORE AND STANDARD DEVIATION ON RESPONSES TO ITEMS FROM "EMPLOYEE QUESTIONNAIRE TIMEKEEPING WITH A TIME CLOCK"

ITEM NO. (VARIABLE)	MEAN DISSATISFACTION	STANDARD DEVIATION	NO. OF RESPONSES
11	1.9722	1.1983	72
12	2.4583	1.2664	72
13	2.2639	1.1627	72
14	1.2639	0.6050	72
15	1.6667	1.1006	72
16a	2.0556	1.1615	72
16b	1.7500	1.0175	72
16c	1.9583	1.1801	72
16d	1.4583	0.8871	72
16e	1.3194	0.7659	72
16f	1.4583	0.8038	72
16g	1.6111	1.0556	72
16h	2.4722	1.2100	72
16i	2.3333	1.4438	72
16j	2.0139	1.4679	72
16k	1.9722	1.2557	72
16l	2.1389	1.3972	72
16m	1.8750	1.2553	72
16n	1.8056	1.1214	72
16o	1.4861	0.9344	72
16p	1.3194	0.7473	72
16q	1.5972	1.0833	72
16r	2.2222	1.3658	72
17	2.2083	1.0739	72
18a	2.0972	1.4158	72
18b	1.5833	1.1956	72
18c	1.1944	0.7807	72
18d	1.0278	0.4102	72
18e	1.0139	0.4594	72
18f	0.9722	0.3742	72
18g	1.0417	0.4875	72

$n_f = 72$

APPENDIX J

QUESTIONS WITH SIGNIFICANT FACTOR LOADING SCORES BY FACTOR FROM A FACTOR ANALYSIS AND VARIMAX ROTATION OF SEVEN FACTORS

FACTOR 1: Company policy and Administration - effectiveness.

Question No.		Loading
16k.	The amount of time you must wait in line at shift change in order to use the time clock.	(0.83058)
16j.	The location of the clocks within the hospital.	(0.82735)
16i.	The ready availability of your time card in the time card rack.	(0.77414)
16l.	The availability of your supervisor so that he/she can approve overtime or clocking errors.	(0.64084)
16b.	The extent policies, rules, and regulations regarding the present method of time clock recording of time worked are supported by supervisors.	(0.61204)
16r.	The present system of recording time worked with a time clock allows certain employees, such as department heads, to write in time rather than punch. The practice of not requiring all employees to punch causes me to feel:	(0.58284)
17.	All in all, how dissatisfied are you with the present method of time clock recording of time worked?	(0.56101)
16a.	The way policies, rules, or regulations regarding timekeeping with a time clock are carried out or followed in this hospital.	(0.53857)
16c.	The extent policies, rules, and regulations concerning the time clock recording of time worked are communicated to employees.	(0.53084)

(Factor 1, Continued)

QUESTION NO.		LOADING
16g.	The amount of orientation you, as a new employee, received on the use of the time clock.	(0.46628)
16h.	The reliability of the time clock to function properly.	(0.45202)
15.	Statement: The hospital utilizes "military time" for stamping the time cards of all employees. Military time is used to make clear night and evening from day shifts and to assist in calculation. Question: How much job dissatisfaction does this utilization of military time cause for you personally?	(0.40437)

FACTOR 2: Interpersonal Relations.

QUESTION NO.		LOADING
18f.	If my family life is going poorly, I feel negative about use of a time clock to record time worked.	(0.91234)
18e.	The way my family feels about time clock use effects how I feel about the time clock.	(0.89482)
18g.	The way my friends feel about time clock use effects how I feel about the time clock.	(0.89272)
18d.	If I disagree with my fellow workers, I feel negative about the time clock.	(0.73707)
18c.	The way I get along with my fellow workers effects the way I feel about the time clock method of recording time worked.	(0.64144)

FACTOR 3: Company Policy and Administration - Salary Administration

QUESTION NO.		LOADING
16o.	The degree to which you are accurately paid for shift differential when time worked is recorded with a time clock.	(0.80315)
16n.	The degree to which you are accurately paid for overtime hours when time worked is recorded with a time clock.	(0.78676)
16m.	The accuracy of your paycheck in reflecting time worked when prepared from the information recorded on your time card with a time clock.	(0.72061)
16c.	The extent policies, rules, and regulations concerning the time clock recording of time worked are communicated to employees.	(0.48077)
16f.	The amount of communication you receive from your supervisor on your recording of time worked.	(0.47685)

FACTOR 4. Personnel Policy.

QUESTION NO.		LOADING
12.	Statement: Your employee handbook discusses overtime. The handbook states that employees "should not clock in or report to their work areas more than 7 minutes before their assigned shift, and will be expected to leave their work areas and clock out within 7 minutes after completion of their shift . . . odd minutes before or at the end of the shift, during a pay period will not be accumulated as overtime. Question: How much job dissatisfaction does this policy cause for you personally?	(0.66585)

(Factor 4, Continued)

QUESTION NO.		LOADING
13.	Statement: Your employee handbook states that "overtime must be authorized by the immediate supervisor and/or department head." Overtime is not automatically paid for extra time stamped on your card unless there also appears an authorization signature or initial. Question: How much job dissatisfaction does this policy cause for you personally?	(0.61419)
16a.	The way policies, rules, or regulations regarding timekeeping with a time clock are carried out or followed in this hospital.	(0.42982)
16h.	The reliability of the time clock to function properly.	(0.40645)

FACTOR 5: Technical Supervision.

QUESTION NO.		LOADING
16d.	The guidance you receive from your supervisor in maintaining your time card.	(0.73040)
16e.	The degree of fair treatment you receive from your supervisor in maintaining your time card.	(0.72657)
16f.	The amount of communication you receive from your supervisor on your recording of your time worked.	(0.66400)
16c.	The extent policies, rules, and regulations concerning the time clock recording of time worked are communicated to employees.	(0.65043)
11.	Statement: The hospital policy on attendance defines tardiness as "reporting one or more minutes after the start of the work shift." Excessive tardiness is defined as "being tardy four (4) or more times within two (2) consecutive pay periods." Excessive tardiness is grounds for your supervisor to institute a	

QUESTION NO.		LOADING
11.	(Continued) written conference (Step 1, Progressive Discipline Program). An employee could be terminated for tartiness alone if he/she was given twelve (12) conferences for tartiness during a 12-month period. Question: How much job dissatisfaction does this policy cause for you personally?	(0.64270)
16g.	The amount of orientation you, as a new employee, received on the use of the time clock.	(0.61317)
16a.	The way policies, rules, or regulations regarding timekeeping with a time clock are carried out or followed in this hospital.	(0.50846)

FACTOR 6: Job Security.

QUESTION NO.		LOADING
18a.	The present system of recording time worked with a time clock affects my feeling of security about keeping my job.	(0.74812)
18b.	The way I get along with my boss affects how I feel about the time clock method of recording time worked.	(0.72943)
16h.	The reliability of the time clock to function properly.	(0.50746)

FACTOR 7: Unable to Interpret.

QUESTION NO.		LOADING
16q.	My feeling of importance to the hospital when I clock in.	(0.67202)
16p.	The effect the present method of maintaining your time card has on whether you keep your job.	(0.53491)

Factor 7: (Continued)

QUESTION NO.		LOADING
15.	Statement: The hospital utilizes "military time" for stamping the time cards of all employees. Military time is used to make clear night and evening from day shifts and to assist in calculation. Question: How much job dissatisfaction does this utilization of military time cause for you personally?	(-0.43300)

APPENDIX K

FREQUENCY AND PERCENT OVERALL DISSATISFACTION BY EMPLOYMENT STATUS

EMPLOYMENT STATUS	Count / Row % / Col % / Tot %	DISSATISFACTION NODIS. 1	SLDIS. 2	MDIS. 3	STDIS. 4	EXD. 5	Row Total
	Score*						
PERMANENT FULL-TIME	1	13	19	10	4	3	49
		26.5	38.8	20.4	8.2	6.1	69.0
		72.2	65.5	62.5	80.0	100.0	
		18.3	26.8	14.1	5.6	4.2	
PERMANENT PART-TIME	2	3	9	6	1	0	19
		15.8	47.4	31.6	5.3	0.0	26.8
		16.7	31.0	37.5	20.0	0.0	
		4.2	12.7	8.5	1.4	0.0	
TEMPORARY PART-TIME	4	2	1	0	0	0	3
		66.7	33.3	0.0	0.0	0.0	4.2
		11.1	3.4	0.0	0.0	0.0	
		2.8	1.4	0.0	0.0	0.0	
Column Total		18	29	16	5	3	71
		25.4	40.8	22.5	7.0	4.2	100.0

Raw Chi square = 6.21782 with 8 degrees of freedom. Significance = 0.6228

Number of missing observations = 1

n_f = 72

*No. subjects responded to requests to participate from the temporary full time category (score of 3).

APPENDIX L

FREQUENCY AND PERCENT OVERALL DISSATISFACTION BY NATIONAL LABOR RELATIONS BARGAINING UNIT

DISSATISFACTION

NLRB GROUP	Count / Row % / Col % / Tot %	NO DISSAT. 1	SLIGHT DISSAT. 2	MODERATE DISSAT. 3	STRONG DISSAT. 4	EXTREME DISSAT. 5	Row Total
1 Supervisor		0	3	1	1	0	5
		0.0	60.0	20.0	20.0	0.0	7.1
		0.0	10.3	6.3	20.0	0.0	
		0.0	4.3	1.4	1.4	0.0	
2 Registered Nurse		3	11	4	1	2	21
		14.3	52.4	19.0	4.8	9.5	30.0
		17.6	37.9	25.0	20.0	66.7	
		4.3	15.7	5.7	1.4	2.9	
3 Professional Other		1	3	0	0	1	5
		20.0	60.0	0.0	0.0	20.0	7.1
		5.9	10.3	0.0	0.0	33.3	
		1.4	4.3	0.0	0.0	1.4	
4 Licensed Professional or Technical		5	7	5	2	0	19
		26.3	36.8	26.3	10.5	0.0	27.1
		29.4	24.1	31.3	40.0	0.0	
		7.1	10.0	7.1	2.9	0.0	
5 Business Office Clerical		5	3	3	0	0	11
		45.5	27.3	27.3	0.0	0.0	15.7
		29.4	10.3	18.8	0.0	0.0	
		7.1	4.3	4.3	0.0	0.0	
6 Service-Maintenance-Other Clerical		3	2	3	1	0	9
		33.3	22.2	33.3	11.1	0.0	12.9
		17.6	6.9	18.8	20.0	0.0	
		4.3	2.9	4.3	1.4	0.0	
Column Total		17	29	16	5	3	70
		24.3	41.4	22.9	7.1	4.3	100.0

$n_e = 72$

27 out of 30 (90.0%) of the valid cells have expected cell frequency less than 5.(
Minimum expected cell frequency = 0.214
Raw Chi square = 18.35275 with 20 degrees of freedom. Significance = 0.5642

Number of missing observations = 2

APPENDIX M

********** MULTIPLE REGRESSION **********

Variable list 1
Regression list 1

Dependent variable: Overall Dissatisfaction

Variable(s) entered on step number 1: Factor 1 (Company Policy and Administration)

Multiple R	0.52870	Analysis of variance	Df	Sum of squares	Mean square	F
R square	0.27952	Regression	1.	22.88577	22.88577	27.15757
Adjusted R square	0.26923	Residual	70.	58.98923	0.84270	
Standard error	0.91799					

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677453D+00	0.52870	0.10895	27.158
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC02	-0.07435	-0.08759	1.00000	0.533
FAC03	0.36227	0.42680	1.00000	15.368
FAC04	0.30986	0.36506	1.00000	10.609
FAC05	0.36341	0.42814	1.00000	15.486
FAC06	0.05018	0.05912	1.00000	0.242
FAC07	0.15407	0.18161	1.00000	2.351

Variable(s) entered on step number 2: Factor 5 (Technical Supervision)

Multiple R	0.64155	Analysis of variance	Df	Sum of squares	Mean square	F
R square	0.41158	Regression	2.	33.69850	16.84925	24.13206
Adjusted R square	0.39453	Residual	69.	48.17650	0.69821	
Standard error	0.83559					

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.09917	32.778
FAC05	0.3902458D+00	0.36341	0.09917	15.486
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC02	-0.07435	-0.09692	1.00000	0.645
FAC03	0.36227	0.47227	1.00000	19.521
FAC04	0.30986	0.40395	1.00000	13.260
FAC06	0.05018	0.06542	1.00000	0.292
FAC07	0.15407	0.20085	1.00000	2.858

Variable(s) entered on step number 3: Factor 3 (Salary Administration)

Multiple R	0.73677
R square	0.54282
Adjusted R square	0.52266
Standard error	0.74193

Analysis of variance	Df	Sum of squares	Mean square	F
Regression	3.	44.44378	14.81459	26.91315
Residual	68.	37.43122	0.55046	

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.08805	41.576
FAC05	0.3902458D+00	0.36341	0.08805	19.643
FAC03	0.3890268D+00	0.36227	0.08805	19.521
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC02	-0.07435	-0.10996	1.00000	0.820
FAC04	0.30986	0.45828	1.00000	17.812
FAC06	0.05018	0.07422	1.00000	0.371
FAC07	0.15407	0.22786	1.00000	3.669

Variable(s) entered on step number 4: Factor 4 (Personnel Policy)

Multiple R	0.79928
R square	0.63884
Adjusted R square	0.61728
Standard error	0.66434

Analysis of variance	Df	Sum of squares	Mean square	F
Regression	4.	52.30508	13.07627	29.62843
Residual	67.	29.56992	0.44134	

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.07884	51.855
FAC05	0.3902459D+00	0.36341	0.07884	24.500
FAC03	0.3890268D+00	0.36227	0.07884	24.347
FAC04	0.3327500D+00	0.30986	0.07884	17.812
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC02	-0.07435	-0.12371	1.00000	1.026
FAC06	0.05018	0.08350	1.00000	0.463
FAC07	0.15407	0.25637	1.00000	4.643

Variable(s) entered on step number 5: Factor 7 (Unable to Interpret)

Multiple R	0.81399
R square	0.66258
Adjusted R square	0.63702
Standard error	0.64698

Analysis of varZxo	Df	Sum of squares	Mean square	F
Regression	5.	54.24854	10.84971	25.92010
Residual	66.	27.62646	0.41858	

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.07678	54.674
FAC05	0.3902459D+00	0.36341	0.07678	25.832
FAC03	0.3890268D+00	0.36227	0.07678	25.671
FAC04	0.3327500D+00	0.30986	0.07678	18.781
FAC07	0.1654467D+00	0.15407	0.07678	4.643
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC02	-0.07435	-0.12799	1.00000	1.083
FAC06	0.05018	0.08639	1.00000	0.489

Variable(s) entered on step number 6: Factor 2 (Interpersonal Relations)

Multiple R	0.81738
R square	0.66810
Adjusted R square	0.63747
Standard error	0.64658

Analysis of variance	Df	Sum of squares	Mean square	F
Regression	6.	54.70109	9.11685	21.80750
Residual	65.	27.17391	0.41806	

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.07673	54.743
FAC05	0.3902459D+00	0.36341	0.07673	25.864
FAC03	0.3890268D+00	0.36227	0.07673	25.703
FAC04	0.3327500D+00	0.30986	0.07673	18.804
FAC07	0.1654467D+00	0.15407	0.07673	4.649
FAC02	-0.7983709D-01	-0.07435	0.07673	1.083
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F
FAC06	0.05018	0.08711	1.00000	0.489

Variable(s) entered on step number 7: Factor 6 (Job Security)

Multiple R	0.81892
R square	0.67062
Adjusted R square	0.63460
Standard error	0.64913

Analysis of variance	Df	Sum of squares	Mean square	F
Regression	7.	54.90728	7.84390	18.61519
Residual	64.	26.96772	0.42137	

Variables in the equation

Variable	B	Beta	Std error B	F
FAC01	0.5677454D+00	0.52870	0.07704	54.313
FAC05	0.3902459D+00	0.36341	0.07704	25.661
FAC03	0.3890268D+00	0.36227	0.07704	25.501
FAC04	0.3327500D+00	0.30986	0.07704	18.657
FAC07	0.1654467D+00	0.15407	0.07704	4.612
FAC02	-0.7983709D-01	-0.07435	0.07704	1.074
FAC06	0.5388921D-01	0.05018	0.07704	0.489
(Constant)	0.2208333D+01			

Variables not in the equation

Variable	Beta in	Partial	Tolerance	F

Maximum step reached

REGRESSION

************************ MULTIPLE REGRESSION ************** Variable list 1
Regression list 1

Dependent variable: Overall Dissatisfaction

Summary table

Variable	Multiple R	R square	Rsq change	Simple R	B	Beta
FAC01	0.52870	0.27952	0.27952	0.52870	0.5677454D+00	0.52870
FAC05	0.64155	0.41158	0.13206	0.36341	0.3902459D+00	0.36341
FAC03	0.73677	0.54282	0.13124	0.36227	0.3890268D+00	0.36227
FAC04	0.79928	0.63884	0.09602	0.30986	0.3327500D+00	0.30986
FAC07	0.81399	0.66258	0.02374	0.15407	0.1654467D+00	0.15407
FAC02	0.81738	0.66810	0.00553	-0.07435	-0.7983709D-01	-0.07435
FAC06	0.81892	0.67062	0.00252	0.05018	0.5388921D-01	0.05018
(Constant)					0.2208333D+01	

REFERENCES CITED

Allport, Gordon W. "Attitudes." Attitude Theory and Measurement, pp. 3-13. Edited by Martin Fishbein. New York: John Wiley and Sons, Inc., 1967.

American Hospital Association. "Hospital costs were 40 percent of 1979 health tab." Hospital Week 16 (August 29, 1980):1.

Appelbaum, Alan L. "AMA commission report on health care costs addresses physicians' responsibilities." Hospitals 52 (January 1, 1978):17-18.

Bensahel, Jane G. "How important is office time keeping?" International Management 32 (July 1977):48-50.

Blalock, Hubert M., Jr. Theory Construction. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.

Burke, R. J. "Are Herzberg's motivators and hygienes unidimensional?" Journal of Applied Psychology 50 (August 1966):317-321.

Centers, R., and Bugental, D. "Intrinsic and extrinsic job motivation among different segments of the working population." Journal of Applied Psychology 50 (June 1966):193-197.

Cincinnati Time Recorder Company. "The case for the time recorder." Modern Office Procedures 24 (March 1979):88-89.

Cohen, Carol Faye, and Bachoffer, Henry J. "Hospital indicators." Hospitals 54 (April 1, 1980):51-54, 177.

Cooling, W. D., and Gittler, Harvey. "Don't by-pass your plant on job time keeping." The Office 64 (September 1966):75-81, 144-153.

Cunningham, Robert M. "What makes workers work?" Hospitals 53 (May 1, 1979):86-89.

DeWindt, E. Mandell. "Job involvement: more than a slogan." The Personnel Administrator 20 (November 1975):23-26.

Donnelly, James H.; Gibson, James L.; and Ivancevich, John M. Fundamentals of Management. Dallas: Business Publications, Inc., 1978.

Dorn, Harold F. "Some applications of biometry in the collection and evaluation of medical data." Journal of Chronic Disease 1 (June 1955):638-664.

Downie, N. M., and Starry, A. R. Descriptive and Inferential Statistics. New York: Harper and Row, 1977.

Drew, Clifford J. Introduction to Designing Research and Evaluation. St. Louis: C. V. Mosby Co., 1976.

Dunnette, M. D.; Campbell, J. P.; and Hakel, M. D. "Factors contributing to job satisfaction and job dissatisfaction in six occupational groups." Organizational Behavior and Human Performance 2 (May 1967):143-174.

Enright, Michael and Jonas, Steven. "Hospitals." In Health: United States, pp. 164-207. Edited by Steven Jonas. New York: Springer Publishing Company, 1977.

Ewen, R. B.; Smith, C.; Hulin, G. L.; and Locke, E. "An empirical test of the Herzberg two-factor theory." Journal of Applied Psychology 50 (December 1966):544-550.

Fahle, LeRoy D. "Cost containment committees: slowing down the increases." Hospital and Health Services Administration 25 (Winter 1980):38-52.

Freund, John E. and Williams, Frank J. Elementary Business Statistics: The Modern Approach. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964.

Friedlander, Frank, and Walton, Eugene. "Positive and negative motivations toward work." Administrative Science Quarterly 9 (September 1964):194-207.

George, Claude S. The History of Management Thought. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.

Graen, George G. "Addendum to an empirical test of the Herzberg two-factor theory." Journal of Applied Psychology 50 (December 1966):551-555.

Hanft, Ruth S. "Health Manpower." In Health Care Delivery in the United States, pp. 67-95. Edited by Steven Jonas. New York: Springer Publishing Company, 1977.

Harman, Harry H. Modern Factor Analysis. Chicago: The University of Chicago Press, 1967.

Health, Education, and Welfare, Department of. Health: United States: 1976-1977. Washington, D. C.: U. S. Government Printing Office, 1977.

Herzberg, Frederick. Work and the Nature of Man. New York: Thomas Y. Crowell, Publisher, 1966.

Herzberg, Frederick; Mausner, Bernard; and Snyderman, Barbara. The Motivation to Work. New York: John Wiley and Sons, Inc., 1959.

Hinton, Bernard L. "An empirical investigation of the Herzberg methodology and two-factor theory." Organizational Behavior and Human Performance 3 (August 1968):286-309.

Hitt, David H., and Harristhal, Michael P. "Financing health care in the 1980s." Hospitals 54 (January 1, 1980):71-74.

House, R. J., and Wigdor, L. A. "Herzberg's dual-factor theory of job satisfaction and motivation: a review of the evidence and a criticism." Personnel Psychology 20 (Winter 1967):369-389.

Houston Northwest Medical Center. Payroll Department Personnel Report (Level 3 Detail), 1980a. (Computer Printout.)

_____. Exempt Employee Roster, 1980b. (Typewritten.)

"How time recorders were developed." The Office 41 (December 1971):41-43.

Howard, Jan, and Derzon, Robert A. "Prospects for humane care are hopeful." Hospitals 53 (November 16, 1979):76-79.

Ivancevich, John; Matteson, Michael; and McMahon, J. Timothy. "Understanding professional job attitudes." Hospital and Health Services Administration 25 (Winter 1980):53-68.

Jung, John. Understanding Human Motivation. New York: MacMillan Publishing Co., Inc., 1978.

Kerlinger, Fredrick N. Foundations of Behavior Research. New York: Holt, Rinehart, and Winston, 1973.

Kibler, Robert J.; Cegala, Donald J.; Miles, David T.; and Baker, Larry L. Objectives for Instruction and Evaluation. Boston: Allyn and Bacon, Inc., 1974.

Kirchner, Wayne K., and Lucas, June A. "Using factor analysis to explore employee attitudes." Personnel Journal 19 (June 1970):492-494.

Kleinbaum, David G., and Kupper, Lawrence L. Applied Regression Analysis. North Scituate, Massachusetts: Duxbury Press, 1978.

Lawlor, Ellen. "Hospitals will survive in an uneasy economy." Hospitals 54 (April 1, 1980):58-60.

Lindsay, C. A.; Marks, E.; and Gorlow, L. "The Herzberg theory: a critique and reformulation." Journal of Applied Psychology 51 (August 1967):330-339.

Lorey, Will. "Mutual trust is the key to open communications." Administrative Management 37 (September 1976):70-74.

Malinovsky, M. R., and Barry, J. R. "Determinants of work attitudes." Journal of Applied Psychology 49 (December 1965):446-451.

Maslow, Abraham H. Motivation and Personality. New York: Harper and Row, Publishers, 1954.

Myers, M. Scott. "Who are your motivated workers?" Harvard Business Review 42 (January/February 1964):73-88.

Nie, Norman H.; Hall, C. Hadlai; Jenkins, Jean G.; Steinbrenner, Karin; and Bent, Dale H. Statistical Package for the Social Sciences. New York: McGraw Hill Book Company, 1975.

Olsen, Rex N. "AHA annual meeting sets constraint of rising health care costs as 1978 goal." Hospitals 52 (March 1, 1978):17-21.

Oppenheim, A. N. Questionnaire Design and Attitude Measurement. London: Heinemann, 1966.

Ratner, Stanley, and Leonardo, Louis. "HRA on-line time and attendance system." Personnel Journal 54 (August 1975):454-455.

Rummel, Rudolph J. Applied Factor Analysis. Evanston: Northwestern University Press, 1970.

Russell, W. A. Texas Woman's University, Houston, Texas. Lecture, September, 1980.

Sanford, Aubrey C. Human Relations: The Theory and Practice of Organizational Behavior. Columbus: Charles E. Merrill Publishing Co., 1977.

Scobel, Donald N. "Doing away with the factory blues." Harvard Business Review 53 (November-December 1975):132-142.

Selltiz, Claire; Jahoda, Marie; Deutsch, Morton; and Cook, Stuart W. Research Methods in Social Relations. New York: Holt, Rinehart, and Winston, 1959.

Siegel, Sidney. Non-parametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company, 1956.

Snedecor, G. W. and Cochran, W. G. Statistical Methods. New York: John Wiley and Sons, Inc., 1967.

Stamps, Paula L.; Piedmont, Eugene B.; Slavitt, Dinah B.; and Haase, Ann Marie. "Measurement of work satisfaction among health professionals." Medical Care 16 (April 1978):337-352.

Taylor, Jack. "How to use time clocks." The Office 51 (April 1960):86-87.

Texas Woman's University. Computing Center, Interactive Statistical Package for the Decsystem-20, 1981. (Computer Programs.)

"Time recorders." The Office 89 (March 1979):164-175.

Tripp, W. H. "One more time: attitude surveys." Personnel Journal 50 (March 1971):231-233.

Wernimont, Paul F. "Intrinsic and extrinsic factors in job satisfaction." Journal of Applied Psychology 50 (February, 1966):41-50.

Wernimont, P. F.; Toren, P.; and Kapell, H. "Comparison of sources of personal satisfaction and of work motivation." Journal of Applied Psychology 54 (February 1970):95-102.

Werther, William, and Lockhart, Carol Ann. Labor Relations in the Health Professions. Boston: Little, Brown and Company (Inc.), 1976.

Wong, Emma. "Improving Employee Motivation Through Job Enrichment." Professional Paper. Texas Woman's University, 1979.