Fitzgerald, Paul Edwin, Jr.

THE HEALTH WORKERS ATTITUDE INVENTORY: A TOOL FOR ASSESSING WORKER/MANAGEMENT RELATIONS IN HEALTH CARE FACILITIES

The University of Alabama in Birmingham PH.D. 1982

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THE HEALTH WORKERS ATTITUDE INVENTORY: A TOOL FOR ASSESSING WORKER/MANAGEMENT RELATIONS IN HEALTH CARE FACILITIES

by
Paul E. Fitzgerald Jr.

A DISSERTATION

Submitted in partial fulfillment of the
requirements for the degree of Doctor
of Philosophy in Administration-Health Services
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ABSTRACT OF DISSERTATION
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The complex social and organizational environment within a health care institution creates numerous problems for managers as they strive to maintain a positive climate. The final product of this project was a response to these problems and was built upon the premise that valid and reliable data reflecting workers' attitudes could be a tool for increasing the probability of achieving a positive organizational climate.

The analysis within the project included a series of tests to design questions, identify the underlying dimensions of worker/management relations, and determine the validity and reliability of the initial analysis. The product of this testing sequence was the Health Workers Attitude Inventory, an attitude survey to assess worker/management relations in health care institutions. Scales were then developed to measure the relative degree of attitudinal harmony or discord for specific behavioral dimensions of worker/management relations within and among organizations.

Survey responses from the sample of 460 non-supervisory workers in 15 health care institutions were subjected to an R-type, exploratory factor analysis with orthogonal rotation. This analysis identified 15 underlying dimensions and 110 statistically and conceptually appropriate items. The subsequent action produced the information to develop a standard scoring system for each of the dimensions, which would provide the means for an institution and its various components to compute a relative score or standing for each of the 15 dimensions. These standard scores supply information for decision making in the personnel and human resource functions of the institution.

The responses were also analyzed by the demographic characteristics of age, race, sex, shift, job classification, and education and the institutional characteristics of bed capacity, number of full-time personnel, and classification as a hospital or nursing home. The examination of demographic characteristics and the analysis of institutional characteristics were conducted as a measure to establish the validity of the instrument.

Abstract Approved by: Committee Chairman Lee H. Hiett

Program Director Richard W. Thompson

Date 3/20/82 Dean of Graduate School

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CONTENTS

Page

TABLES

Page

ILLUSTRATIONS

CHAPTER I

INTRODUCTION

Growth and advancement of the health care industry have frequently been attributed to technological developments, but progress also depends on the people in the workforce who develop, operate, and main- tain this technology. An applied science, by definition, has limited value without the human catalyst to transform the hardware and tech- nology into some functional or practical use. The workforce is also recognized as a valuable economic asset since up to 60 percent of the total costs in the industry has been invested in labor. This economic dominance by the workforce makes labor an essential element in deter- mining the financial health and technological advancement of the industry (17, p.1).

The economic implications associated with labor are accentuated because the cost of health care rose during the 1970's and into the 1980's at a higher rate than most other consumer goods and services. Health care managers faced a challenging situation due to this disproportionate rise in costs and numerous other social and economic influences. The challenge has been complicated by pressure for accountability from industrial concerns, organized labor, government,

and the public who have vested interests in the effort for cost control. The pressure from these interest groups has motivated management to assess cost factors and the financial structure of the health care industry. The proportion of expenses associated with labor made the workforce a logical target in the effort by management to control costs.

Research efforts also responded to cost pressures in the health care industry by examining the relationship of work-related attitudes to the quality of performance. Much of that research was based on the assumption that increased productivity and the quality of performance were positive forces for cost control, which stimulated a more effective use of available funds. One type of research examined the relationship of job satisfaction to the level of performance and productivity within various industries. One emphasis in these studies demonstrated the positive linkage between work performance and attitude. An alternative viewpoint suggested that there was no inherent relationship between satisfaction and performance, and still another school of thought reported that performance determined satisfaction. Additional research efforts examined the linkage between attitude and other behaviors including voting trends in union elections, absenteeism, turnover, and productivity (22, p.35; 26, p.53; and 27, p.60). In most cases, the literature substantiated that job satisfaction and attitude had a positive relationship to the quality of performance and numerous behavioral characteristics. Management responded to these findings and

intensified its concern for increasing job satisfaction and developing positive attitudes within the workforce.

This study has foundations in this body of literature and assumptions, but another philosophy also influenced the research effort. The logic for the study arose from a synthesis of several divergent ideologies, all espousing a commitment to the philosophy that workers' opinions provided valuable information to management. This philosophy stipulates that the perceptions of workers should be considered in the decision-making process, although the worker's perspective should not become the exclusive basis for decisions. There were a variety of formats suggested for collecting the input from workers, but one widely accepted configuration was a satisfaction index or attitude survey.

The study was also based on the philosophy that the flow of information from workers to management was a positive force within an organization. An attitude survey or satisfaction index stimulates the flow of information and can provide management with information for assessing the state of job satisfaction within an organization. The foundation estalished in the literature and a commitment to the philosophy led to the product of this study, a satisfaction index for gathering the perceptions of workers in health care institutions. The goal in the application of this particular instrument was the stimulation of clear communication from workers to management. The feedback from workers can provide information reflecting the level of job satisfaction and the status of attitudes concerning job-related conditions.

Another consideration in the development of the satisfaction index for this study was the inherent need for generating pragmatic information. Social scientists have produced various theories of personnel management and organizational development, but theory has limited value in a labor-intensive situation without a foundation in pragmatism. A satisfaction index or attitude survey can fulfill this need for practical substance by collecting information which reflects the worker's perception of reality and can be applied to the practice of management. If this need for practical substance were achieved, the manager would no longer have to state, "I think," "I feel," or, "my intuition tells me" when making decisons or anticipating the needs of workers. This achievement would manifest itself as an effective and beneficial advantage for management while conducting programs, evaluating policy, and administering human resource management systems. The attitude survey gathers the perceived needs of workers, which can lead to evaluation and decision making.

An attitude survey can generate many advantages for an organization or management, but there are limitations inherent in such a device because it reflects perceptions at only one specific point in time. Despite this limitation, the collective perceptions of the workforce provide additional information for decision making and reduce but not, of course, eliminate the need for depending on speculation or intuition in the decision-making process.

An additional rationale for implementing attitude surveys was supplied by Miller who reported that the key to success in labor

relations was to allow and encourage employee feedback (33, p.5). Management strives to understand the reactions and perceptions of workers concerning decisions, policies, and procedure and this effort should be satisfied by using an attitude survey. The workers surveyed in this study functioned within the work environment and performed under the constraints of institutional policy and procedure. Thus, the workers' perceptions, which were based on their interaction with organizational constraints, could provide additional depth, insight, and practicality to the information processed by management.

There would be no need for attitude surveys if management and labor had identical goals and value systems, but achieving total harmony is an unrealistic expectation. Attitudinal discord between management and labor has intensified during the past two decades as managers in the health care industry have made progress in professional growth and development. The widening of the attitudinal schism is not the result of any single factor, but the situation has been molded by social and legal phenomena including regulation, de-regulation, technological growth, unionization in health care, social changes, economic pressures, and numerous confounding variables. A complex network of changes encouraged and developed an environment where management experiences increased difficulty in perceiving and understanding the needs of workers.

An attitude survey cannot bridge the gap which exists in a pluralistic society, but it can provide information which may encourage or stimulate action toward the optimum state of worker/management

relations in a particular organization. Management cannot manipulate the environment so each worker will attain a high level of satisfaction with most aspects of worker/management relations, nor is this type of environment a reasonable goal for an organization. An attitude survey has the potential to be a positive step in developing the optimum situation for worker/management relations within an organization. The actual application and concomitant effect of the survey is determined by the decision makers within each organization.

A review of research revealed that the attitude survey can be a valuable tool for management which helps control the bias in decision making, provides increased depth to management information, supplies workers with the feeling of being active participants in management, and limits the need for intuitive decision making. Attitude surveys presented numerous potential benefits for the organization, but one note of caution was mentioned along with these positive points. The caution was that the attitudes and perceptions of workers had the same limitations as other sources of information and were not to be taken at face value. The value of perceptual information was limited without considering its source, the environment, or some type of standard. Consequently, a description of attitudes within the organization could only have validity when the information was evaluated according to a standard, after considering the environment, and while keeping the source of the feedback in perspective.

Development of the Concept

Despite these inherent problems, the development of the Health Workers Attitude Inventory is a valuable endeavor. The anticipated benefits far outweigh the potential liabilities associated with the opportunities for misinterpretation of information.

The theoretical frameworks applied to testing inventories from various behavioral and social sciences were integrated into the methodology for developing the Health Workers Attitude Inventory. The following example demonstrates the strength of the theoretical basis and reinforces the applicability of the Health Workers Attitude Inventory as a diagnostic tool.

The specific concept of the Health Workers Attitude Inventory was generated from the broader idea of a clearinghouse for information from health care institutions. One consequence for this hypothetical clearinghouse would be to gather data concerning the manner in which workers perceived worker/management relations in health care institutions. The Health Workers Attitude Inventory was conceived as the tool for gathering information concerning worker/management relations, which would then be analyzed through the resources in this hypothetical clearinghouse. The following section also presents a more detailed description of this hypothetical clearinghouse and the role of the Inventory within that entity.

An analogous situation which relates to the foundation for formulating inventories and attitude surveys lies in the application and selection of diagnostic tests for the classification of illnesses.

The attitude survey exhibits similar diagnostic capabilities and identifies either the strengths or weaknesses which pervade within the organization. The diagnostic procedures for determining illness in the human body are often the first step in resolving problems or maintaining a positive state of health. Diagnosis is not a cure but can lead to positive changes either for alleviating problems or maintaining health if the information gathered in the diagnosis is channelled effectively. The Health Workers Attitude Inventory should have also be such a diagnostic device leading to the elimination of problems or the maintenance of organizational strengths. The difference in situations is that the diagnosis in the inventory relates to the health of the organization rather than the human body and the decision maker is a manager rather than the physician or other health practitioner.

The physician relies rather heavily on the information a patient supplies concerning perceptions of their own physical condition. The medical history and the patient's feelings about their current state of health can reinforce an opinion, contradict other diagnostic procedures, or lead to the choice of the proper diagnostic or therapeutic tool. The responses in an attitude survey can serve the same purpose as the information supplied by the patient, acting to reinforce or contradict other diagnostic tools or the intuition of management. The ensuing steps can lead to further and more specific diagnosis, or determine the appropriate corrective tool for application. The attitude survey gives the manager one more tool to solve

the conundrum of maintaining positive worker/management relations through the diagnosis of problems within the organization.

The clearinghouse is a legitimate extension of a concept which already exists in many industries, including health care. The American Hospital Association maintains a service to collect information concerning patient care, institutional characteristics, and financial data. The extension to this study is that information concerning workers' perceptions of worker/management relations can also provide a resource for improving the management and delivery of health care services. These data serve a multitude of purposes including the improvement of the potential source of information and the decision-making process in health care institutions. The clearinghouse should provide stimulus and growth opportunities toward satisfactory levels in the quality of health care delivery.

The concept of an inventory for the health care industry has also gained credence because health care managers are becoming increasingly more adept at applying information concerning consumer preferences for product decisions and are beginning to accept the "marketing concept." The result of the new marketing orientation is the instigation of marketing projects, the hiring of marketing consultants, and opening of marketing departments to better serve the public. An attitude survey provides an extension of the marketing concept to the workforce, which management must now consider as a less obvious but equally important market. The goal inherent in a successful marketing effort with the health care administrator is the retention

of desirable employees and the attraction of potentially strong newcomers to the organization. This effort is vital to a health care institution because of the difficulty associated with effectively operating an institution with inadequate staffing levels. An output of time and money are associated with every worker in an organization, and managers in health care institutions now realize they must remain "competitive" in the field of worker/management relations. Maintenance of this condition becomes necessary for the institution to uphold a competitive quality of patient care and control labor costs.

Other factors which facilitate the application of attitude surveys are the current accessibility, simplicity, and practicality of data-processing technology. Information-processing systems are easier to operate, cheaper in cost, and more available for use than ever before. Managers can collect, manipulate, and analyze great quantities of information with relative ease. The task of analysis has been simplified and the attitude survey is now a more practical and affordable management tool than in the past.

Another positive point accompanying the potential increase in information flow is that the ability to solve problems and analyze a social system are enhanced through worker input. The worker's role as a component of the health care system is legitimized when management accepts worker's perspectives within the decision-making process. An assumption in the application of attitude surveys as tools for organizational assessment was that workers' feelings, perceptions, and responses to situations could have a direct relationship to their

individual performance and to the cumulative state of worker/management relations within the institution (49, p.39). The product of this project was a direct response to these relationships and needs. The project was also based on the recognition of the value that every component of the health care system, including workers, can bring to the decision-making process.

Goal and Objectives

The goal of this study was to develop a concise, valid, and reliable attitude survey called the "Health Workers Attitude Inventory." This device would assess the current state of workers' attitudes concerning worker/management relations within health care insti- tutions. Worker/management relations was defined as the product comprised of all feelings, attitudes, and perceived relationships which were the components of the formal and informal interactions between workers and management.

The project goal was to be accomplished through meeting the following objectives:

1. Develop an objective and "standardized" device for assessing worker attitudes related to worker/management relations in health care institutions. The standardization established the criteria for comparing the group attitudes to a sample comprised of similar individuals.

2. Identify the dimensions which operationalized, comprised, and measured the concept of worker/management relations.

3. Determine the similarities and differences which existed in reported attitudes among groups classified by the demographic characteristics of job classification, sex, education level, age, shift, race, and length of service.

4. Determine the trends which existed between the reported attitudes of workers and the specified institutional characteristics of number of beds, number of full-time employees, and full-time employee to bed ratio.

Definitions

The following section contains the definitions for selected, key terms used in the proposed project.

Management- Individuals within an organization structure having "supervisory" duties as defined by the National Labor Relations Act definition of supervisor. The terms manager, supervisor, and administrator were used interchangeably in this project, as well as the terms management, supervision, and administration.

Workers- Employees of the organization not having supervisory duties as defined in the National Labor Relations Act definition of supervisor. Within the scope of this study workers were classified as nursing, clerical, maintenance, dietary, allied health professionals, housekeeping, and other. Physicians were excluded from the study.

Worker/Management Relations- The product of all feelings, attitudes, and perceived relationships composed of the formal and informal interactions between workers and management.

CHAPTER II

LITERATURE REVIEW

The philosophies and bodies of knowledge influencing the development of the Health Workers Attitude Inventory represented numerous ideologies. The forces exerting the most influence had their foundations in quite divergent social and behavioral sciences and presented conceptual difficulties in attempts to organize this literature review. Three seperate classifications titled labor relations, attitude surveys, and testing theory were finally selected as the most appropriate vehicles for reviewing the literature from these bodies of knowledge.

The literature focusing on labor relations provided a large number of potential variations in the direction or focus for organizing the material. The discussion within this chapter was limited to issues which were prevention-oriented in their nature. The clarity of this particular presentation relied heavily on establishing the relationship of prevention-oriented behavior in labor relations to analogous situations in other types of prevention-oriented situations.

The topic of attitude surveys was also grounded in a multidisciplinary body of literature. The review emphasized the rationale

Dimensions- The specific components comprising the term Worker/Management Relations. These dimensions were distinct, identifiable, and quantifiable components of Worker/Management Relations.

Inventory- A survey which gives comprehensive coverage to a broad topic and its dimensions.

Preventive Management- A philosophy which advocates the implementation and utilization of a management style having the goals of minimizing problems, taking advantage of strengths in worker/managmenent relations, adopting long range and ongoing programs, and establishing an organizational climate which works toward preventing and minimizing friction.

supplied for applying these instruments from the social and behavioral sciences. The behavioral base, the components of clarity, and the element of pragmatism were all woven into the theoretical foundations of the Health Workers Attitude Inventory throughout this section of the literature review. The essential elements in this presentation stressed the need to integrate theory into the practice of management.

The final portion of the literature review was more limited in its focus than the other sections of the chapter but addresses the vital technical concerns in developing an original attitude survey. The presentation on testing theory examined specific qualities necessary in the development of tests, surveys, or scales. These testing issues were placed in perspective within the study and were examined to provide assistance in determining the best methodology for developing the Health Workers Attitude Inventory. The key was in clarifying how certain techniques led to the development of a valid and reliable instrument.

Labor Relations

An assumption of this project was that listening to the "gripes," complaints, or concerns of employees was vital for preventing serious problems with worker/management relations. If management failed to listen or was insensitive to the perceived needs of workers, they may have contributed to the organization's susceptibility to problems in labor relations. An extension of this logic was that an attitude survey, like the Health Workers Attitude Inventory provided a

tool to satisfy this need by giving workers a forum for identifying and discussing problems while providing a tool for management to assess the data.

The opportunity for communication provided to workers is one tenet of a preventive philosophy which emphasizes a commitment to minimizing the consequences of difficulties in worker/management relations by preventing the development of problematic situations. The commitment of the preventive philosophy was realized through avoiding problems or resolving worker/management problems in their early stages of development. This philosophy generated movement toward an optimal working relationship between workers and management which was vital in the prevention-oriented philosophy, leading managers toward problem resolution and minimizing worker/management friction. The philosophy in its simplest terms is "let's keep workers happy," and "why have problems when we can live without them." One working label given to this philosophy was "preventive management."

An analogy for the preventive philosophy in management which has been implemented and marketed elsewhere is "preventive dentistry." The purpose of a preventive dentistry program is to aid the public in maintaining good dental health, avoiding gum and tooth disease, identifying any existing problems, and making plans to correct the problems for the purpose of reducing minor or serious dental disease. This program, with an emphasis on fighting degenerative disease, should reduce long range costs and eliminate the need for unnecessary dental work. A preventive management program also has parallel goals of

reducing the risk of serious worker/management relations problems and reducing long range costs in dollars and personnel time. The preventive philosophy has the goals of resolving problems before they develope, or once present, avoiding the degeneration into serious situations.

Other authors have discussed concepts and philosophies with a preventive emphasis. Rand (38, p. 498) stated that "preventive maintenance," rather than "after-the-fact fire fighting" needed to be the preferred managerial style. The basic goal in Rand's "preventive maintenance" program was to make unions unnecessary, which could be considered a rather radical approach, but stressed the point of prevention. Rand's philosophy gave further credibility to the Health Workers Attitude Inventory, its objectives, and goal.

Kilgour (28, p.38) discussed "preventive labor relations" which were accomplished through being a "good" employer, by practicing sound personnel management. Kilgour did not define his term "good" but indicated that a well-planned, preventive program was necessary to counteract severe labor relations problems. The inventory developed in this project or a similar instrument should also be part of a well-planned program. Kilgour's theory gave credence to utilizing a preventive diagnostic tool such as the Health Workers Attitude Inventory.

White (48, p.40) discussed the use of attitude surveys for "diagnosing the ills" in worker/management relations. This medical approach for determining obvious or hidden ailments appeared to be a by-product of the philosophy in a preventive medicine program or the

preventive dentistry program mentioned earlier. White's work demonstrated the linkage with the preventive philosophy and the legitimacy of an attitude survey as a diagnostic tool in a prevention-oriented program. Latham (30, p.228) also related worker/management problems to a medical model and discussed personnel and human resources problems as symptoms of a disease. The disease had seven warning signals which mimicked the "seven warning signals of cancer" developed in a marketing campaign conducted during the 1970's by the American Cancer Society. This campaign sought to develop an increase in the awareness of cancer symptoms and the detection of cancer in its early stages for the purpose of reducing cancer deaths. The preventive philosophies in management viewed problems associated with labor relations as negative entities, similar to a devastating disease like cancer, and recognized the need for diagnosis as the initial step in eliminating the ills and reducing the possibility of serious consequences. The Health Workers Attitude Inventory and the philosophy of this project also recognized the need for diagnosis.

One objective of this project was to identify the results of positive management action in an institution and to identify points of vulnerability in the organization which could be attributed to numerous factors, including poor managerial performance. A long range goal in identifying these actions was to supply evidence that particular management philosophies and programs could minimize problems in worker/management relations. An underlying assumption was that a climate which minimized these problems had many implications for a

higher quality of organization functioning and cost-reduction, similar to the qualitative effects of preventive dentistry or preventive maintenance. These goals provide incentive for incorporating an instrument like the Health Workers Attitude Inventory into a human resources program.

The prevention-oriented manager seeks to identify existing or potential worker/management problems and resolve these situations before they became issues for formal employee action, but this preventive approach can be individualized and exhibits two alternative variations. One type is the "reacting" manager who reacts, almost by reflex, to cues from the environment. The reacting manager follows the managerial actions exhibited by managers in other institutions to avoid situations where their institution does not offer competitive wages, benefits, or working conditions. This reacting type of manager could also be referred to as a "follow-the-leader" type of manager. Another form of this reacting manager is the individual who reacts to situations within the organization and "put out fires," or is a manager "by crisis." The other type of preventive manager is the "anticipating" manager who looks ahead by anticipating sensitive issues and takes appropriate steps toward avoiding issue development. The anticipatory manager often relies on planning and empirical evidence for any action which was planned or implemented. Both of these preventive management styles and their variations have advantages and disadvantages, but the ideal situation in a preventive management program is to have anticipatory managers resolving potential problems before they became issues

and reacting to cues from the environment, thus, combining the best elements of the two styles.

A review of the literature revealed that discussions of preventive philosophies in management, and several theorists had taken a "medical model" approach to explaining the philosophy and its ensuing action. The literature supported the contention that preventive management can be a viable management philosophy which translates into a definite and positive pattern of managerial action. The literature also supported the contention that attitude surveys are an important part of preventive action in management. The following section on attitude surveys will explore this issue in greater depth.

Attitude Surveys

The preceding section stressed the contention that an attitude, or the manner in which employees perceived a situation, was critical in assessing worker/management relations in an organization. Attitude surveys are one of many devices developed for gathering data concerning workers' attitudes. This section on attitude surveys explores some basic issues concerning the role of attitude surveys as practical and efficient instruments for gathering information to assess worker/management relations.

The modern hospital certainly must be considered a complex organization in both a micromanagerial and macromanagerial sense. Churchman (6, p.45) advocated the complex organization as the ideal setting for the study of human values. The health care worker is not

only a component of the institutional system, but is also a portion of the macro health care system and the micro-system within the work unit. The Health Workers Attitude Inventory reflected the values and attitudes of health care workers and encouraged intervention in altering their ensuing behavior within the complex hospital organization, making it an ideal tool for studying their values and behavior. The attitude survey was an attempt to gather information concerning as much of the employees' relationships to the complex organization as possible, with the following step being the transformation of the data into practical and manageable information for the purpose of improving worker/management relations.

Connor and Becker (7, p.550) stated that values predicted behavior and gained their meaning as they affected behavior. This statement has been met with mixed feelings in the fields of psychometric testing, psychology, sociology, and social psychology. Despite the criticism and controversy concerning the preceding statement, it was an assumption for this and other attitude surveys already in use that attitudes predicted behavior. The Inventory developed in this study reports attitudes which imply individual values and relate to certain, specified behavior patterns. Therefore, worker behavior and potential behavior were the important phenomena to observe and analyze in the study of worker/management relations.

Connor and Becker maintained that the best methodological approach to assessing values in organizations was the use of profiles and profile analyses. A profile test is an instrument which yields

separate measures of different variables resulting in a picture, or profile of the individual's characteristics across several dimensions (6, p.378). The Health Workers Attitude Inventory met these criteria and utilized a sound methodological approach to assessing values in an organization.

Inventories and profile analysis have had relatively frequent application in the field of psychology. The Minnesota Multiphasic Personality Inventory (MMPI) is just one example of a psychological inventory which provides a "psychological profile" of the patient which can be the basis for more in-depth interviews or counseling. The ultimate goal with MMPI administration is that the profile and follow-up sessions lead to problem resolution. The Health Workers Attitude Inventory provides a worker/management relations profile and had the same long range goal of problem resolution as the MMPI and similar inventories. The Inventory will not solve problems, but the identification of strengths and weaknesses can be the first step in assessing situations in the institution and moving toward optimizing the organizational climate. A disease generally needs diagnosis before it can be cured or treated. The Inventory provides a diagnostic tool and an opportunity for health care management to alleviate conditions rather than merely "patching up" problem areas through "managerial guesswork" under the guise of science.

The attitude survey has numerous applications including those reported by Joiner and Morris (27, p.60) that the attitude survey had value in monitoring the fluctuation in the work force's attitudes

concerning work related issues. These authors thought that the most vital point for survey success was that they be planned and administered at regular intervals. The long range plan of the Health Workers Attitude Inventory also advocates planned, ongoing use as part of its methodology. One long range and rather lofty goal was for the Health Workers Attitude Inventory to become a permanent tool in the manager's program for combatting worker/management problems. This particular long range objective was not to be implemented in this proposed study due to time constraints, but will be developed in future research and encouraged as an extension of this research effort. Many companies, including IBM and Texas Instruments, have integrated attitude surveys into personnel policy-making and planning. The managers in these industries have found that not only were problems identified, but the severity of the problem could also be quantified (44, p.38). Devices similar to the Health Workers Attitude Inventory have had a measure of acceptance in industry as a tool for management.

Szilagyi (42, p.44) thought that the use of attitude surveys, informal communication, and interviews could equip a manager for an "appropriate course of action." This philosophy was based on the assumption that changes in performance, productivity, and attitude could signal impending organizational problems. The proposed Health Workers Attitude Inventory can guide managers in the task of satisfying needs and resolving problems in their institutions after measuring the state of worker/management relations.

Stember, et. al. (40, p.75) identified awareness and assessment as the first steps in problem solving. These steps could be accomplished through an attitude survey which facilitated the transformation of data into management information. This process was identified by Stember and justified the use of an instrument such as the Health Workers Attitude Inventory, illustrating its legitimacy as a tool in determining employee preferences and meeting an organizational need.

Smith (39, p.354) reported that the study of job satisfaction and attitudes contributed to the identification and application of preferences within an organization. Preferences were a reflection of what the respondents desired in the "ideal" organization. A preferred state-of-affairs should have developed positive worker/management relations. The Health Workers Attitude Inventory produces a composite of the preferences expressed by employees which can guide management in its pursuit of the ideal state of worker/management relations.

Fazio and Zanna (13, p.228) discussed some specific points concerning attitude surveys and their relationship to behavior. These authors cited several studies including Fishbein (1966), Wicker and Pomozal (1971), Weiger, Vernon, and Tognacci (1974), and Heiberlien and Black (1976) which stated that specific behaviors were best predicted by specific attitude measures. Specific behaviors which led to, or indicated greater susceptibility to worker/management relations problems, would be identified in the Health Workers Attitude Inventory and should have been in this class of best predictors. These specific behaviors were determined through a literature review and expert

opinion, and will be developed further in the methodology and analysis sections of this report.

The structure of the Health Workers Attitude Inventory relied on the subjects' attitudes and perceptions of direct experience. This logic was reinforced by research of Regan and Fazio (13, p.229) who found evidence confirming their notion that individuals who formed their attitudes based on direct experience with the attitude-object (the organization) displayed greater attitude-behavior consistency than did individuals who formed attitudes through indirect experience. Tests of individuals with this greater attitude-behavior consistency should make the Health Workers Attitude Inventory a relatively strong predictor of behavior because of its reliance on direct impressions. The proximity to the situation made this predictive device more valid than several other instruments according to the preceding logic and arguements.

The literature indicated that the attitude survey was generally a valid tool for reflecting attitudes and values within an organization. The values and attitudes were indicative of behavior and potential behavior within the organization. The literature clarified that a survey instrument similar to the Health Workers Attitude Inventory had legitimacy for assessing attitudes and values and could be valuable in quantifying the state of worker/management relations within a hospital or similar organization. This survey can also influence worker behavior or the perceived levels of satisfaction if management accepts the profile result as one form of guidance for establishing policy and procedure.

Testing Theory

Many critical issues in testing were discussed and clarified in the literature related to testing theory, psychological testing, and psychometrics. The particular issues which were most critical in the development of the Health Workers Attitude Inventory are presented in the following section.

Inventories have been developed for evaluating individuals or groups on some defined quality or sphere of knowledge, and test scores are a quantitative description of some aspect of human behavior to be utilized in the evaluation process. The Health Workers Attitude Inventory was developed as an evaluative device for measuring individual perceptions of worker/management relations. This individual assessment should have then led to a more comprehensive evaluation of the state of worker/management relations within an institution.

Guilford (20, p.36) noted that there were many dimensions of human performance which could be "singled out" and evaluated. The choice of dimensions could be made based on several conditions including:

1. accessibility of the aspect or behavior observed
2. susceptibility to quantitative description
3. relevance to the purposes for which the measurements was taken.

Guilford's statement of conditions led to an examination of Tyler's findings that in many situations a "tailor-made" instrument, produced especially for a particular research project or a particular

selection situation, usually worked better than the standardized tests for general situations (44, p.11). There were numerous tests found in the literature for various components of group and individual behavior like Hemphill's and Seashore's instruments. The Health Workers Attitude Inventory becomes one of many instruments, but the unique feature in the development of the Health Workers Attitude Inventory was its specificity for worker/management relations and the health care industry. The Health Workers Attitude Inventory met Tyler's criteria for a tailor-made instrument with the specific original and final dimensions suited for the purpose of measuring the state of worker/management relations in hospitals. The Inventory was standardized according to the factors identified in the project, and is both industry-specific and project-specific. An additional positive quality was that the standard population could be revised or re-established with relative ease to meet the needs of an extraordinary situation or different industry by duplicating the methodology in this study.

In addition to the Minnesota Multiphasic Personality Inventory (MMPI), numerous other scales and inventories similar to the proposed Health Workers Attitude Inventory have been developed for a multitude of uses. Examples of these scales are those developed by Hemphill (23, p.1-78), Bienvenu and Stewart (5, p.105-111), Batlis and Rogers (2, p.233-240), Smith, Kendall, and Hulin (39, p.1-136), and Farrell and Laughlin (12, p.33-38). The preceding list was not a comprehensive roster of all inventories similar to the product of this project, but a sample of the alternatives. The existence, longeivity, and utilization

in practice of these instruments all added credence to the logic which led to the development and justification of the Health Workers Attitude Inventory.

Hemphill (23, p.1-58) developed a Scale of Group Dimensions which became the foundation for the Health Workers Attitude Inventory. The Scale of Group Dimensions is described in greater detail in the methodology section of the project, but Hemphill did identify 13 distinct dimensions of group behavior. Bienvenu and Stewart (5, p.105-111) developed the Interpersonal Communication Inventory (ICI) which had inventory items placed into eight item clusters and demonstrated the existence of discrete dimensions of interpersonal communication. Farrel and Laughlin (12, p.33-38) devised an inventory and scale which measured the populist ideology among subjects, and although this scale was not a "typical" human behavior or attitude test, it demonstrated the wide utility of inventories and scales. The work of Farrel and Laughlin also demonstrated that dimensions of quite abstract behavior could be identified and measured.

Many authors identified the particular dimensions labeled as components of various types of behavior or activities. As mentioned previously, Hemphill (23, p.1-58) demonstrated that 13 discrete dimensions of group behavior existed. Batlis (2, p.105-111) was also able to discern 11 distinct dimensions in human behavior. Smith, Kendall, and Hulin (39, p.1-136) determined that various facets of satisfaction could be distinguished clearly from one another. The Health Workers Attitude Inventory also identifies dimensions of perceived satisfaction with

worker/management relations. Following these examples, the Health Workers Attitude Inventory demonstrated the existence of discrete dimensions of worker/management relations and accompanying behavior. These discrete dimensions were determined through the project, and an initial listing of the dimensions utilized in the study and their definitions are listed in the methodology section of the report.

The information presented concerning these other scales demonstrated that the Health Workers Attitude Inventory was feasible, and that the concept of testing inventories had reinforcement throughout the literature and in practical applications, particularly in the field of psychology. The literature was also clear that self-reporting, similar to that utilized in the Health Workers Attitude Inventory was an acceptable manner in which attitudes could be measured. There were weaknesses inherent in self-reporting but it was the method most utilized for scales with similar origins.

Attitude surveys and the inventory format for testing were not without their reported problems and concerns for testers. First of all, the items must be simple enough for respondents to read and understand, because a self-reporting scale is useless if subjects have little or no understanding of the questions. Green et. al. (14, p.184) indicated that subjects may not even read rather complex items, leading to inaccurate results or bias. This concern meant that the Health Workers Attitude Inventory must contain items which were simple, yet meaningful. The control for this concern relied on careful construction of questions and thorough pre-testing.

Another concern involved the testing procedure and instructions. Hardy et. al. (21, p.44) cautioned testers of the bias which could contaminate test results without "standard" instructions. The Health Workers Attitude Inventory has standard and consistent instructions for subjects which were included in Appendix C as part of the sample questionnaire. Finally, the testing environments must be similar to initiate some control, so all testing for the Health Workers Attitude Inventory was done on the hospital premises without any collaboration by subjects or deviation from the instructions.

Tyler related an obvious problem in measuring attitudes that subjects may not have been truthful in their self-reporting (44, p.11). An assumption in this project was that any exaggeration would "balance out" for a true measurement of attitude in both directions (Agreement and disagreement). In fact, the Health Workers Attitude Inventory and other attitude surveys were developed from the laws of the threshold theory in which individuals are assumed capable of making relatively fine distinctions between items of varying degrees of judged desirability. Another assumption of this theory was that distinctions made by individual subjects are congruent with a "group consensus" of item desirability. The threshold theory allowed for, and in fact encouraged a divergent range of responses and justified the use of standardization procedures similar to those developed in this study.

Another potential problem existed with the format of the Health Workers Attitude Inventory by encouraging "agreement acquiescence" or "yessaying." The same phenomenon could also occur with false or nega-

tive wording and has been called "disagreement acquiescence" and "acceptance acquiescence." There was the potential that the Health Workers Attitude Inventory may have been likely to experience these phenomena in its results, but the problem should have been controlled after standardization and with a mix of positively and negatively worded questions. This technique helped the researcher find questionnaires which were all answered with the same response or which had not been "thought out" by the respondent and were obviously unacceptable for the analysis. Acquiescence could have been an unmanageable problem without a mixture of positively and negatively worded questions.

One other possible weakness in this study was that poor worker/management relations or excellent worker/management relations may have existed in the entire eligible population. For example, in the former case, even the institutions with the highest ratings may actually have had "poor" or "unsatisfactory" worker/management relations. A high score might only have been an indication that an institution was just the best of a poor group. The scores and ratings for the Health Workers Attitude Inventory were only as reliable as the sample drawn from the base population. This problem may be reduced through use of the Health Workers Attitude Inventory as the potential pool is widened and the test standards are revised.

The choice of response scale posed additional potential pitfalls in the survey's development. An adverb form or worded form could have been used, or numerical responses with an explanation of weighting could have served as an alternative method. A great deal of controversy

surfaced in the literature concerning the best type of response scale, but Dolch (10, p.151) reported that responses of one type could be predicted from the other, in either direction. Dolch's research indicated that the tester should have used whatever appeared best for the situation, or just based choice on preference. The key was the implementation of the response scale which was easiest to understand for the population being tested. Dolch presented a crucial point that simple, worded responses were preferred when raters were not adept at abstraction. There was no guarantee that the sample drawn for this study would be able to interpret a numerical scale, so a combination worded and numerical scale was implemented for what should have been a more accurate response from the subjects.

Dolch (10, p.151) also reported another difficulty with the worded scales. A slight tendency existed for users of these scales to select extreme responses, so distributions of numerical scores tended to be somewhat narrower. The large number of questions for each dimension of the Health Workers Attitude Inventory and its weighting system should have controlled any problem from this narrowing phenomenon. Once again, standardization should have minimized the effect of extreme responses, and this condition should also have helped minimize the possible "agreement acquiescence" mentioned earlier by helping to "spread out" responses through the range of choices.

The problem of defining a "good" or "bad" profile for evaluating each individual and institution is addressed and explained in the methodology and analysis sections of this report. The scales for

evaluating inventory items and institutions which built the comparative component of the project were devised through the study itself and are explained in greater detail in the methodology section of the report. Existing scales were only used as guides in constructing the Health Workers Attitude Inventory, not for validation, and validation procedures are explained in depth in the analysis section.

Post-project evaluation can be judged through two criteria; one criterion is the frequency of use by the active managers in the health care field, the other criterion will be the acceptance of the results by these same managers and their counterparts involved in research. This type of evaluation was not possible in the time-frame of the project.

CHAPTER III

METHODOLOGY

The development of reliable and valid instruments for measuring attitudes poses a difficult task. The situation evolved because attitude surveys had little practical value without some acceptable measure of these qualities. The following chapter reports the techniques which were applied to insure that the "Health Workers Attitude Inventory" demonstrated satisfactory levels of validity and reliability. A major difficulty in establishing these characteristics related to the lack of suitable devices for application as guidelines which measured similar or identical dimensions. A sound methodology for developing the Inventory should have compensated for the weaknesses inherent in the process of building an original attitude survey.

The following chapter presents details concerning the development of the Health Workers Attitude Inventory, explaining how various planning and organizational issues were addressed, specifying the sampling techniques, and describing how the data collection led to data analysis. The chapter first discusses the issues in test development, followed by an explanation of the administration of the inventory which led to data analysis.

Test Development and Pre-Test

Sound test development and a thorough pre-test were essential for the success of this study, because they insured the construction of a valid and reliable instrument.

The methodology for constructing the Health Workers Attitude Inventory was similar to the techniques used by Hemphill (23, p.1-58) in the development of the Index of Group Dimensions. The Hemphill study and Index were utilized as models in developing the Health Workers Attitude Inventory. Hemphill's Inventory measured group dimensions or characteristics with the goal of understanding group behavior. The Index of Group Dimensions did not deal with worker/management relations, but the methodology in scale development was sound and had value for this study.

Hemphill's index measured the 13 independent group dimensions of autonomy, control, flexibility, hedonic tone, homogeneity, intimacy, participation, permeability, polarization, potency, stability, stratification, and viscidity. Each of these dimensions was well-defined in Hemphill's work describing his scale and were included in this study as Appendix A. There were 150 questions in the Index of Group Dimensions and each question was categorized in only one of the 13 independent group dimensions.

The group dimensions were chosen from lists presented to a group of experts. The lists had been formulated by Hemphill and his students from a literature review. The questions relating to the items were selected after monitoring responses on a questionnaire administered

to 500 individuals. Other experts were utilized to match the questions with their appropriate dimensions and Hemphill then developed the scale and scoring based on these data.

The initial step in developing the Health Workers Attitude Inventory was the formulation and identification of specific dimensions, referred to as factors in this report. These factors became the operational definitions of the broad concept termed worker/management relations. The next step was the development of statements, also referred to as items or variables which were to be the operational definitions for quantifying the factors. These factors were the "building blocks" of the broad concept called worker/management relations and each building block represented one limited portion of the general theme. These blocks could stand alone as seperate scales but still maintain their identity as components of the larger theme. An initial list of 17 factors was developed from a review of the literature for application in the first stage of the project. These original factors were selected as guidelines because of their predominance in the literature. Analysis completed later in the study determined a final list of factors, but there was no actual attempt to validate the original factors through any statistical techniques or to compare the original factors and the final list. The original list of factors contained the following titles and definitions:

1. Formal Worker/Supervisor Relations- Described the interaction and relationships which were determined through the formal organization structure. This factor emphasized the communication between worker and supervisor. The scope of this factor was limited to the relationship between the worker and their "immediate supervisor."

2. Informal Worker/Supervisor Relations- Described the interactions and relationships which were determined outside the formal organization structure. This factor emphasized the communication between worker and supervisor. The scope of this factor was limited to the relationship between the worker and their "immediate supervisor."

3. Intra-agency Communication- Described the structural aspects of communication and the manner in which the structure and policy hindered or facilitated communication.

4. Sensitivity to Community Pressures- Described the response of workers to attitudes in the community and the industry concerning organization function, policy, and procedure.

5. Workers Input and Influence- Described the perceptions of workers concerning the input and strength of workers in decision-making.

6. Environmental Comfort- Described the worker's perceptions of the comfort and cleanliness of the institution. This factor did not involve direct questions concerning "emotional" aspects of comfort, only "physical" aspects of comfort.

7. Environmental Safety- Described the perceptions concerning the on-the-job safety of the workers and the manner in which management's response to those needs.

8. Management Priorities- Described the perceptions concerning management's relationship and reaction to workers relative to general concerns within the organization. This factor also defined perceptions concerning sensitivity to the needs of workers and their psycho-social health.

9. Policy and Procedure- Described the presence or absence and effect of certain policy and procedures concerning worker/management relationships.

10. Wages and Fringes- Described perceptions concerning the equity of wages and fringe benefits in the institution.

11. Growth and Development- Described the perceptions concerning opportunities which the institution offered to workers for their personal and professional growth or development.

12. Management Style and Consistency- Described the perceived style management utilized in making decisions concerning the organization and its workers. This factor also reflected the consistency of that style and the effects on workers.

13. Performance Appraisals- Described the form and utilization of performance appraisals and their perceived relationship to rewards.

14. Employee Discipline- Described the assessment of technical aspects of the discipline system and the perceptions of its fairness and consistency.

15. Job Descriptions- Described the perceptions of clarity, consistency, and practical applications of the job description.

16. Treatment of Minorities- Described the perceptions of the treatment given to racial, ethnic, and religious minorities, plus the treatment of women in the workforce.

17. Job Satisfaction- Described the perceptions of job satisfaction at the institution. Job satisfaction was how "good" or "bad" workers felt about their job.

The original list of factors and their definitions were presented to 24 "management" representatives including academicians, health care administrators, students, human resources managers, and personnel officers, plus 14 "worker" representatives including health care workers and workers from outside the health care industry. The request was for these experts to provide input regarding any additional factors they believed should have been added to the original list. The intent in gathering the input from a combination of management and worker representatives was to generate a pragmatic, unbiased, and valid

list of factors for examination in the project. Although a project such as this was a philisophical endeavor by nature, the intent within the project objectives was to develop a practical tool. This objective dictated rather heavy reliance on "expert opinion" for generating the focus of the original factors and the accompanying items. The feedback from the experts was also utilized for developing a more comprehensive final list of factors than could have been formulated individually or from the literature alone, thus controlling individual bias and personal preference. This "expert" review process produced minor semantic changes in the list of factors and added greater depth and clarity to some defintions.

An intial list of 186 questions for quantifying the factors was also formulated through a literature review, practical knowledge, and experience. The questions were reviewed through the same process and by the same individuals involved in the factor review. The management and worker representatives had opportunities to suggest additional questions for any factor, recommend deletion of questions, or advise switching questions from one factor to another they thought would be more appropriate for the particular statement. This review produced a final list of 145 questions after adding eight new questions and deleting 50 original questions. The researcher was quite liberal in developing the criteria for including questions because the factor analysis to be completed on the items was expected to produce a more unbiased reduction. The elimination process was less biased by relying more on the statistical tool than on expert opinion. Another

consideration was that item reduction in the later stages of the project was going to be easier than after-the-fact item expansion. Following this final step in statement development, a revised list of statements remained for each factor and became the original questionnaire.

The next step was to pre-test the questionnaire on 50 individuals with the criteria being to evaluate the potential variance in response, the clarity, and simplicity of the questions. The pre-test subjects included 32 health care workers and 18 students. The pre-test evaluation was conducted through an interview process following administration of the questionnaire. Subjects were informed they were pre-testing the device and were encouraged to make comments concerning the "clarity" and "simplicity" of the questions while completing the questionnaire. Appropriate revisions were made in the questionnaire to meet the stated criteria based on the feedback of these participants. Most comments involved wording or the intent of particular items. A great deal of revision was made on individual items and the entire questionnaire from the time of the initial drafting of questions until the first regular testing session. Despite the amount of revision throughout the developmental stages of the project, some changes still needed implementation in the final form of the questionnaire for any post-project utilization, and these revisions will be noted and discussed throughout the report.

Time was another criterion in the pre-test. The range of times for completing the pre-test was from 14 to 36 minutes, which satisfied

one guideline that each test session would take less than one hour to complete. No questions were eliminated due to time considerations.

Frequency distributions were calculated on the pre-test response information to determine if the responses for particular statements were heavily skewed in either a positive, negative, or neutral pattern. Questions which revealed obvious patterns of skewed responses were to be eliminated from the final questionnaire due to their limited value for analysis. A "satisfactory range" with responses in every category was produced for each item so the frequency-distribution tabulation did not result in the elimination of any questions.

Test Administration

The questionnaire was administered to 598 workers employed by the 15 participating hospitals and nursing homes, and the sample developed for the study was drawn from this pool of 598 workers. A listing of the participating hospitals and nursing homes has been included in the report as Appendix B. A listing of the times, places, and number of workers tested in each test administration are listed in Table 1. There were a total of 53 testing sessions, with an average of 11.2 subjects per session.

The selection of hospitals for project participation was not a difficult task, but the means for approaching the hospitals became a sensitive and troublesome situation. Originally, the researcher attempted to organize the project through a consortium which represented

local hospitals in Birmingham, Alabama. This approach failed due to what appeared to be a lack of interest by the consortium and their representatives. The researcher's alternative was to approach a total of 20 hospitals and eight nursing homes on an individual basis to discuss the possibility of participation in the research. These hospitals were all members of this local consortium and all the nursing homes were licensed by the State of Alabama. Any institution which wished to participate and could meet the time guidelines was included in the project. Although institutional characteristics were analyzed in this project, these characteristics were not considered when selecting the participating institutions. Availability was the primary selection criteria, but a satisfactory range of characteristics was available in the sample of institutions.

The institutions which participated in the research had a wide range of characteristics including those listed in table 2, which were utilized in later analysis. All institutions in the sample were non-unionized, though attempts were made to include unionized facilities in the sample. The unions and management in the three unionized facilities contacted during the project planning stage could not reach agreement on the application of survey results. The sample of institutions also delivered different "types" of health care,

Table 1. Listing of Testing Sites, Dates, Times, and Number of Subjects Tested, in Chronological Order

Hospital	Date	Time	Number of Subjects Tested
University	7-28-1981	9,10, &11AM	69
Lakeshore	7-29-1981	9,10,& 11AM	70
Lakeshore	7-29-1981	1,2,& 3PM	40
Lakeshore	7-30-1981	7 & 8PM	20
Lakeshore	7-30-1981	2 & 3AM	16
Estes #1	8-03-1981	2 & 3PM	24
Estes #2	8-04-1981	2 & 3PM	27
BMC-Montclair	8-05-1981	9,10,& 11AM	27
Estes #5	8-05-1981	2 & 3PM	26
Estes #3	8-06-1981	2 & 3PM	22
Estes #4	8-10-1981	2 & 3PM	29
BMC-Montclair	8-10-1981	6 & 7PM	15
Brookwood	8-11-1981	9AM	15
Hillhaven	8-12-1981	9 & 10AM	22
Hillhaven	8-12-1981	3PM	05
BMC-Montclair	8-13-1981	5AM	10
Brookwood	8-13-1981	10AM	07
Brookwood	8-17-1981	7PM	07
Cooper Green	8-24-1981	2:30AM	03
BMC-Princeton	8-25-1981	9 & 10AM	16
Eye Foundation	8-25-1981	2 & 3PM	19
Cooper Green	8-25-1981	7PM	08
Cooper Green	8-26-1981	1PM	12
BMC-Princeton	8-26-1981	7 & 8PM	10
Brookwood	8-27-1981	12:30AM	00
East End	8-27-1981	9 & 10AM	35
East End	8-27-1981	7PM	07
Brookwood	8-28-1981	1PM	08
East End	8-28-1981	5AM	09
Brookwood	9-02-1981	5AM	06
Hillhaven	9-09-1981	5AM	05
Childrens'	9-17-1981	5PM	10

Table 2. Listing of Participating Institutions by Name, Number of Full-Time Workers, Beds, and Worker to Bed Ratio

Name	Full-Time Workers	Beds	Worker to Bed Ratio
Hillhaven	100	94	1.05
Estes 1	115	190	.61
Estes 2	65	120	.54
Estes 3	36	64	.56
Estes 4	60	120	.50
Estes 5	113	198	.57
Eye Found	244	91	2.68
MontClair	1490	477	3.12
Princeton	1225	439	2.79
East End	579	282	2.05
Cooper-Green	739	191	3.87
LakeShore	196	74	2.65
Univiversity	2745	818	3.36
Brookwood	1083	474	2.28
Children's	651	160	4.06

including five nursing homes, one nursing home specializing in convalescent care, one university-related research hospital, one for-profit hospital, five hospitals which were parts of chains or multi-hospital management organizations, one county operated facility, one hospital specializing in rehabilitation, and one pediatric hospital.

The sample consisted of "front-line workers" with no managerial or supervisory responsibilities and the determination of the term worker used in this project was limited to those individuals excluded in Section 2(11) of The National Labor Relations Act (NLRA), which defined the term supervisor. This definition and term supervisor were considered interchangeable with the terms management and administration.

> The term 'supervisor' means any individual having authority, in the interest of the employer, to hire, transfer, suspend, lay off, recall, promote, discharge, assign, reward, or discipline other employees, or responsibly to direct them, or to adjust their grievances, or effectively to recommend such action, if in connection with the foregoing the exercise of such authority is not of a merely routine or clerical nature, but requires the use of independent judgment (28, 59).

This specific criterion was essential because of the wide variance in job responsibilities accompanying job titles and professional credentials in the health care industry and the project sample. For example, most hospitals could not employ Licensed Practical Nurses (LPN's) as supervisors due to a myriad of regulations, policies, and procedures, but LPN's were generally the supervisors in the sample of nursing homes participating in the project. This differentiation in nursing service personnel appeared to be the most

obvious difference in the samples drawn from the two different types of institutions. Therefore, potential respondents were not included or excluded from the sample because they were LPN's or Registered Nurses (RN's), but due to the responsibilities which accompanied their title or professional credentials. An inquiry was necessary at each testing session to determine whether potential respondents were supervisors or workers. This final verification was needed, despite the original instructions to the institutions to exclude supervisors when selecting sample participants. Those individuals identifying themselves as a supervisor, or identified as a supervisor by other subjects were asked to leave the testing site.

The selection process for participants in the survey varied in each institution, but each selection process was completed through some type of random selection criteria. The goal was for subjects to be stratified by the job classifications of nursing service, clerical, allied health professional, dietary, maintenance, and "other," plus stratification by the standard shifts in most health care institutions; days from 7AM to 3PM, evenings from 3PM to 11PM, and nights from 11PM to 7AM. The final sample had some compromises and revisions due to restrictions generated by the participating hospitals which were beyond the control of the research design. The ideal number of subjects chosen from each hospital and job classification was to be selected according to the proportion of the eligible population represented in that group. The eligible population was defined as the total number of workers in the stipulated job classifications and shifts of all the

participating institutions. Sound sample development was a difficult achievement due to a number of unique factors within each institution. Every insti- tution in this sample established its own final criterion for selection but each adhered to one of the following guidelines:

1. Random selection chosen by shift and job classifications from institution rosters.
2. All available workers were sent to the testing site at specified times.
3. One worker was selected at random from each unit, for each shift.
4. Workers came voluntarily for a meeting of unknown topic, which was the survey.
5. All workers in the institution were to take the survey.

A group of 116 respondents were eliminated from the sample in order to bring a more equitable distribution to the sample by institution, job classification, and shift, producing a final sample of 460 workers. One institution might have represented an extraordinarily large portion of the sample, and this condition could have caused a misrepresentation of the true characteristics of the sample and population, giving limited value to the standard. This procedure was a safeguard against the possibility that one institution or job classification representing an inordinate amount of the sample could generate bias in the results. This system also established criteria for a more realistic and meaningful analysis. Subjects chosen in this manner were extracted from their groups in a selection process of every fourth survey form until the necessary distribution was achieved. The

sample already had limitations and this process was implemented to control more of that potential bias. Twenty two workers were eliminated from the original group of 598 due to reading problems which became evident during the testing session or after a review of the completed survey by the researcher. It must be noted that despite efforts to provide a sound sample, any norms developed from the sample were only "tentative norms," and the sample was limited in what it truly represented. Revisions resulted in a final sample of 460 workers, and tables 2, 3, and 4 represent the distribution of various characteristics identified in the sample.

There was not a set of standard instructions developed for test administration, but the tester adhered to the following guidelines:

1. Tests were administered on-site at the institution. There were no tests taken home by subjects to be returned later.
2. Tests were administered in either group or individual situations but subjects could not collaborate on answers.
3. Directions were consistent. Specific instruction sheets were provided for subjects. Only one tester was involved but guidelines were followed for each test administration.
4. Subjects were informed that the results of the survey were to be utilized by management to make decisions about their job conditions.
5. Tests were given on institution time and not after regular working hours.

Table 3. Frequency and Percent of Distribution in Final Project Sample, Classified by Shift and Job Classification.

Job Class	Shift					
	Days	Evening	Nights	Rotate	Other	Total
Nursing						
Frequency	120	69	27	18	4	238
Percent	26.09	15.00	5.87	3.91	0.87	51.74
Clerical						
Frequency	42	6	3	2	12	65
Percent	9.13	1.30	0.65	0.43	2.61	14.13
Allied Health						
Frequency	27	3	3	0	4	37
Percent	5.87	0.65	0.65	0.00	0.87	8.04
Maintenance						
Frequency	10	0	2	0	2	14
Percent	2.17	0.00	0.43	0.00	0.43	3.04
Dietary						
Frequency	15	3	1	5	9	33
Percent	3.26	0.65	0.22	1.09	1.96	7.17
House-Keeping						
Frequency	36	1	0	2	4	43
Percent	7.83	0.22	0.00	0.43	0.87	9.35
Other						
Frequency	19	0	2	4	5	30
Percent	4.13	0.00	0.43	0.87	1.09	6.52
Total	269	82	38	31	40	460
Percent	58.48	17.83	8.26	6.74	8.70	100.00

Table 4. Frequency, Cumulative Frequency, Percentage, and Cumulative Percentage of All Demographic Characteristics Identified in the Sample

Trait	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Sex				
Male	56	56	12.174	12.174
Female	404	460	87.826	100.000
Job				
Nursing	238	238	51.739	51.739
Clerical	65	303	14.130	65.870
Allied Hlth	37	340	8.043	73.913
Maintenance	14	354	3.043	76.957
Dietary	33	387	7.174	84.130
Other	30	417	6.522	90.652
Hskeeping	43	460	9.348	100.000
Shift				
Days	269	269	58.478	58.478
Evenings	82	351	17.826	76.304
Nights	38	389	8.261	84.565
Rotation	31	420	6.739	91.304
Other	40	460	8.696	100.000
Race				
Black	230	230	50.000	50.000
White	229	459	49.783	99.783
Other	1	460	0.217	100.000
Education				
less t hs	41	41	8.913	8.913
Hs or Equiv	198	239	43.043	51.957
Tech JC	167	406	36.304	88.261
College	51	457	11.087	99.348
MS or Higher	3	460	0.652	100.000
Age				
16-25	127	127	27.609	27.609
26-35	164	291	35.652	63.261
36-45	89	380	19.348	82.609
46-55	53	433	11.522	94.130
56 OR Higher	27	460	5.870	100.000
Experience				
LS Than 1	107	107	23.261	23.261
1-3	167	274	36.304	59.565
4-6	70	344	15.217	74.783
7-10	68	412	14.783	89.565
10 or More	48	460	10.435	100.000

Table 5. Frequency, Cumulative Frequency, Percentage, and Cumulative Percentage of Sample Members From Participating Institutions

Institution	Frequency	Cumulative Frequency	Percent	Cumulative Percent
Eye Foundation	20	20	4.348	4.348
Cooper-Green	23	43	5.000	9.348
Hillhaven	30	73	6.522	15.870
Children's	9	82	1.957	17.826
Princeton	6	88	1.304	19.130
East End	51	139	11.087	30.217
University	66	205	14.348	44.565
Lakeshore	51	256	11.087	55.652
Estes 1	24	280	5.217	60.870
Estes 2	27	307	5.870	66.739
Montclair	42	349	9.130	75.870
Estes 3	24	373	5.217	81.087
Estes 4	20	393	4.348	85.435
Estes 5	29	422	6.304	91.739
Brookwood	38	460	8.261	100.000

6. There were no representatives of management present in any testing session. The tester was introduced in some cases by a management representative but that person would leave the testing area prior to final instructions from the researcher. The researcher was introduced as a student doing work for the institution.

7. The researcher was in the testing room at all times during testing sessions.

8. There was no time limit given for test completion.

The test results from the sample gathered for the Health Workers Attitude Inventory must have the warning attached that the norms for the Health Workers Attitude Inventory were limited in scope. The sample was established from a group of respondents from one limited geographical area, although this area and these subjects may be similar to many other

states, regions, or metropolitan areas. The results of the project cannot state unequivocably that the standard population was an accurate representation of any specific population or sub-population, only that they represented the responses of this particular sample at the specific time they were tested.

Each statement was answered with one of five possible responses indicating the worker's perception of the situation relating to the particular statement. The following alternative responses were available: (1) Strongly Disagree, (2) Disagree, (3) Not Sure, (4) Agree, or (5) Strongly Agree. There were no open-ended questions or any invitation to "write out" a feeling or attitude, although several respondents clarified answers they had given by writing out comments. The statements were worded in both a "positive framework" and "negative framework" in order to minimize "yessaying" and "negative acquiescence." A total of 50 original questions were negatively worded and 94 were positively worded. Computer analysis made response conversion for these revisions quite simple and allowed for satisfactory control of numerous undesireable conditions.

The survey instruments administered in the hospitals and nursing homes were identical with one exception, that being the interchange of the word "hospital" and the term "nursing home" for the appropriate classification of institution. Hospital respondents answered questions which contained the word "hospital," while nursing home respondents had identical questions with the words "nursing home" substituted for the word hospital.

Each survey was reviewed after completion to insure that directions were followed and there were no blank responses. Those individuals whose forms were not complete were asked to return to their seat and finish the form. No person was forced to finish the form, and if the individual decided to return to the job there was no attempt by the tester to stop them and no comment made.

The reactions of workers and management varied concerning the survey and testing process. Responses to the testing sessions and the instrument ranged from apparent hostility, uncertainty, and paranoia to what appeared to be a genuine, total acceptance. Some workers seemed closed and others appeared open in their responses, but these observations were only speculations concerning the feelings of respondents. Overall, most subjects had little or nothing to say to the researcher. The completion of the survey itself appeared to be a positive experience for some workers, illustrated through their enthusiasm in thanking the tester for the opportunity to "speak up" and expressing feelings of relief after having "blown off steam." This effect, if genuine, may be one supplementary, positive rationale for administering an attitude survey.

The survey instrument had problems and deficiencies which became evident after the regular testing sessions began. One problem was with the job classifications listed on the form. The "other" category became larger than anticipated, and an additional specified job category of housekeeping was included for analysis. Any specified responses of housekeeping, environmental services, and laundry were reclassified and

coded as housekeeping. Subsequently, this revision was made on the final survey form. The only other specifed "other" classification with greater than five responses was security, but the researcher determined that the relatively low number of seven respondents from only three institutions did not merit individual reclassification and analysis, so security remained part of the unclassified "other" category. One functional point was that the demographic categories stipulated on the survey form could be revised to meet the needs of a particular institution or workforce. These revisions would make data analysis more realistic for each testing situation.

The remainder of this chapter explains the statistical tests which were essential in the development of the instrument. The section also explains the procedures for developing the standardized scale, satisfying statistical questions, and making this device a valid and reliable tool for analyzing worker/management relations in health care institutions.

Procedures after the administration of the survey were for the tests of validity and reliability of the instrument based on the results of that first test administration. The reliability level was tested by the split-half method and validity was determined through a factor analysis procedure. R-type, exploratory factor analysis was done on the statements to identify the underlying factors and determine which of the test items (variables) were bonded together or were most similar in their relationship to a specific factor. The objective of the analysis was to identify the most limited number of pertinent factors and

variables which were components of the concept called worker/management relations. The VARIMAX option of the Statistical Analysis System (SAS) was exercised in the factor analysis procedure and items which appeared to be related after the orthogonal rotation were "bonded" into one factor. The result of the factor analysis and ensuing rotation was the identification of a more limited number of factors which were recognizable and distinct components of worker/management relations.

All of the statements developed from the original factors and accepted in the final list of 145 items were analyzed as individual variables. The factor analysis grouped those statements which had similar responses and identified a revised set of factors. The new set of factors was similar to the original group, but contained some conceptual and wording changes to better reflect actual content. Statements with factor loadings under + or - .30000 were eliminated as not being representative of the new factors. A possibility did exist that certain statements would have an acceptable statistical fit, above + or - .30000, but not demonstratre a conceptual fit with the factor theme. This possibility became a reality and several items did not fit the conceptual theme of the factor and were labeled as "quirks." A subjective elimination process had to be implemented to exclude statements which did not fit the conceptual parameters or theme of the new factors. These quirks have been identified and were discussed in the analysis section of the report. This type of factor analysis quantified the relationship of each question to the variables and established the content validity among individual questions and factors.

Next, the raw scores for each factor were summed to establish the raw scores for each statement representing that particular factor. Raw scores were then transformed into distributions based on multiplication by a weighted number, identical to the number of questions in that particular factor. The computer had the ability to choose the best statistical method for any transformation of the data, so no stipulation was necessary, but factor analysis in SAS typically transforms data through natural logs or square roots. The computer chose the best transformation and made it possible for more reliable analysis to be carried out on the standard scores. The result of this procedure was the identification of a more limited number of factors, the reduction of the total number of statements, and validation of the remaining statements.

The next step was data transformation for scale development. The scale was scored in standard nines (stanines) with the following hypothetical distribution:

Stanine Score 9 (High Score) for raw scores earned by the highest 4 percent of the standard population.

Stanine Score 8 for raw scores earned by the next lower 7 percent of the standard population.

Stanine Score 7 for raw scores earned by the next lower 12 percent of the standard population.

Stanine Score 6 for raw scores earned by the next lower 17 percent of the standard population.

Stanine Score 5 for raw scores earned by the next lower 20 percent of the standard population.

Stanine Score 4 for raw scores earned by the next lower 17 percent of the standard population.

Stanine Score 3 for raw scores earned by the next lower 12 percent of the standard population.

Stanine Score 2 for raw scores earned by the next lower 7 percent of the standard population.

Stanine Score 1 (Low Score) for raw scores earned by the lowest 4 percent of the standard population.

These stanine scores reflected a relative standing compared to the standard population. Each individual could be categorized with a stanine score for each factor.

The analysis of the demographic and institutional characteristics was completed once the scales had been developed. Each demographic characteristic and category was analyzed through the crosstabulation procedure available in PROC FREQ of SAS. Crosstabulation options provided chi-square values and established the significance of differences in the frequency of scoring patterns. The relationship between the institutional characteristics and standard score in each factor was established through regression analysis, exercising the PROC GLM option of SAS. The regression analysis established the intensity of the relationships between bed-capacity, number of full-time employees, and full-time employee to bed ratio with the scores of workers in the various factors.

The reliability program of the Statistical Package for Social Sciences (SPSS) with the split-half option was utilized in this project. Independent testing for reliability was conducted on each

factor to insure satisfactory levels of reliability for each operational definition representing worker/management relations. It was difficult to decide what standard should have been accepted for reliability in the Health Workers Attitude Inventory. A coefficient of .99 or 1.00 would be excellent, but beyond normal expectations. It is also obvious that a coefficient of .20 would not be satisfactory; but what limits should be imposed? Womer's (50, p.44) standard that "one can accept any reliability coefficients above .80, but hope for the high .80's" would have been an ideal and lofty goal for the Health Workers Attitude Inventory, although reliability levels between .60 and .95 could be considered a satisfactory range (23, p.27). Any reliability levels below .60 would have dictated the necessity of re-examining the factor to seek improvement of the reliability coefficient. The factor analysis and elimination of the less-highly correlated items from the inventory did not make the .60 coefficient an unreasonable expectation.

CHAPTER IV

ANALYSIS OF DATA

The analysis completed in this study involved two distinct phases. The first concentrated on the development of the Health Workers Attitude Inventory. Each of the seperate scales was rationalized and the vital issues of validity and reliability were also examined. The second demonstrated some practical applications of the Inventory. This analysis was completed with the intent of supplying an additional rationale for the implementation of this device in the practice of management.

Data were entered on the word processing system located in the School of Community and Allied Health at the University of Alabama in Birmingham and analyzed through the central computing facilities at the University of Alabama in Birmingham. After the selection of the 460 subjects and the entry of their responses, each questionnaire was checked by two separate parties for errors. Printouts of the original data entry were compared to the responses on the questionnaires, errors were corrected, and after a second subsequent check for errors the data were then considered ready for analysis. The following chapter reports the specific types of analysis completed, the results, their implication

for the project, and their relationship to the findings of similar research efforts.

The chapter is organized with an initial presentation on the factor analysis completed on the raw data. The chapter also presents some critical issues concerning the analytical techniques and their relationship to this study, followed by an interpretation of the factor analysis and scale development. The final portions of the chapter investigate the patterns of responses elicited by the respondents in the various demographic categories.

Factor Analysis

Factor analysis determined the factors which existed within the concept entitled "worker/management relations." Originally, 17 factors had been identified within the broad concept of worker/management relations. The analysis synthesized the respondents' conceptions of the factors existing within this broad concept. The relationships were demonstrated through the test items which had significant statistical relationships in a correlation matrix and had their highest factor loadings in particular factors. The factor loadings were the correlations between the variables and the factors for every variable and factor in the matrix. The highest correlation coefficient for each item in the matrix was the determining criterion for its final factor association.

Sample size was an important consideration when deciding the magnitude for correlation coefficients which would be acceptable in the

analysis. Factor loadings for a sample of 500 had to surpass + or - .115 for a .01 level of significance, and + or - .088 for a .05 level of significance. For a sample of 300, the need was for a coefficient of at least + or - .15 at the .01 level, and + or - .11 at the .05 level of significance. The sample size for this project was 460 and the standards set for acceptable coefficients were quite stringent relative to the relationships established for sample size and level of significance. A minimum loading of + or - .30000 was set as the standard, which established a significance level more rigorous than the .01 level. One general unwritten standard in factor analysis has been that the .30000 loading represented a scientifically sound level for accepting factor loadings in most factor analysis. Therefore, the factor loadings applied in this methodology met not only rather rigorous statistical guidelines, but also the general guidelines accepted by many factor analysts.

Another criterion for selecting the .30000 level was time. A goal within the development of the project was that the Inventory took less than one hour for completion. This time limit did not pose a problem with the size of the final inventory based on a loading limit of .30000, so the inclusion of questions above .30000 was an acceptable limit with the time constraints. This limit gave the Inventory results a greater range of specific descriptive data which could be presented and gave it a more comprehensive nature than with a stricter loading limit, which would have supplied minimal change in the statistical significance of the results.

The factor analysis methodology applied in this study was the R-technique, which attempted to describe variables and factors that would emerge when high correlations existed among variables. The analysis was also considered common factor analysis, using the common factor model, which had the primary objective of identifying latent factors of worker/management relations represented by the survey questions. Factors were derived based only on common variance, and communalities were inserted in the diagonal with the common factor analysis approach. Communality represented the amount of variance any of the original questions shared with other questions from the Inventory.

The factor analysis program in this study was the PROC FACTOR program of SAS with the VARIMAX option which completed orthogonal rotation and produced a rotated matrix. Rotation was the manipulation of the reference axes producing derived solutions which were attempts to clarify the relationships between the variables and the factors. The rotation process turned the reference axes around the origin until an alternative position was reached. The orthogonal rotation maintained the axes at 90 degrees and produced a new correlation matrix. Ambiguities could often be reduced through the rotation process and factors could "make more sense" after this rotation.

The initial computer output from the first factor analysis was an unrotated factor matrix which gave preliminary indications of the number of factors which should be extracted. The unrotated matrix revealed the best linear combination of variables accounting for more

of the variance in the data and achieved the objective of "reducing" or "collapsing" the data. The subsequent progression was that the rotated matrix could reveal the most acceptable interpretation of the variables.

The results of the unrotated principle axes factor analysis were included in this report as Appendix E. Only 15 factors were printed in this appendix which represented the original analysis because of the volume of the original unrotated matrix. Subsequent decisions for the final number of factors retained made 15 factors a relevant and acceptable representation of the original matrix for inclusion in the appendix.

Factor Selection

The next step in the analysis was the extraction of factors for retention in the scale development and the remainder of the analysis. The first attempt at factor selection was unsatisfactory. The original guideline was to follow Kaiser's Criterion that factors having eigenvalues (latent roots) greater than 1.0000 would be considered as common factors and be retained for further analysis. Appendix D contains the eigenvalues calculated for each variable. The dilemna was that the application of Kaiser's Criterion increased the number of dimensions being identified from 17 to 39. This methodology would have been contrary to the goal and objectives of this project for factor reduction and identification, so alternatives were explored. Further study revealed that when more than 50 variables were involved, Kaiser's criterion tended to extract too many factors (9, p.44). This study

involved 145 variables, exceeding this standard of 50 and appeared to reinforce this expansion theory espoused by Child (9, p.44).

Another acceptable alternative was to conduct a "scree test" on the latent roots meeting Kaiser's Criterion in order to extract a more realistic and reliable number of factors (20, p.44). The scree test plots latent roots against the factor number in order of extraction. The shape of the resulting curve determines the cutoff point for factor retention and the cutoff point for factors is established when the curve appears to become linear.

Figure 1 represents the scree test for the factor analysis done in this study and plots the 39 factors meeting Kaiser's criterion for extraction with eigenvalues exceeding 1.0000. The eigenvalues of these 39 factors are listed with their values in appendix D. Starting with the latent root for factor 1, the plot was curved, then transformed into a linear relationship at the point of factor 15. The criterion for the scree test stipulated that the point at which the curve appeared to straighten designated the maximum number of factors for extraction. Beyond factor number 15 the remaining factors were considered the "scree" or "factorial litter" (9, p.45). This scree test designated 15 factors for extraction after the principal axes factor analysis.

Rotation

Factor analysts have agreed that in most cases adjustment of the frames of references reduced ambiguity and improved the interpretation

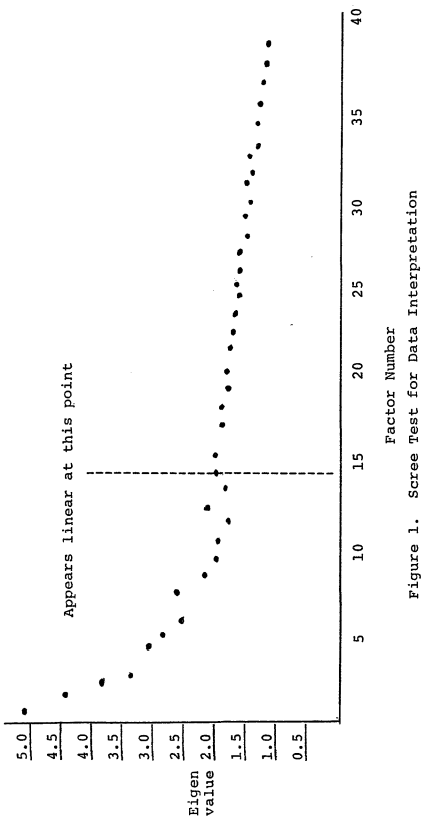

Figure 1. Scree Test for Data Interpretation

of the factor matrix (8, p.78). The rotation of the matrix in this project was an attempt to clarify the factors and relationships among items. The manipulation of reference axes is known as rotaton and the simplest case, orthogonal rotation, was completed on the principal axes matrix produced in this project with the VARIMAX option of SAS. The varimax method was derived by Kaiser and has enjoyed extensive use by factor analysts (9, p.58).

Thurstone attempted to establish criteria for assisting the decision of when rotation should cease. Thurstone's critera had an intuitive origin and have not been rigidly adhered to but hold relevance for most subsequent rotations. Thurstone stated that the derived matrix should meet the following requirements:

1. Each row of the derived matrix should contain at least one zero loading. A zero loading included numbers which were not statistically significant.
2. If there are N common factors being used in the rotation there should be at least N zero loadings in each factor. This statement meant there should have been 15 zero loadings in each factor.
3. For every pair of factors there should be several variables with zero loadings in one factor but having, at the same time, significant loadings in the other.
4. For every pair of factors a large proportion of the loadings should have zero values in both factors where there are four or more factors.
5. For every pair of factors there should only be a small proportion of loadings with significant values in both factors (43, pp.78-80).

The factors identified in this project met all five of Thurstone's criteria, which should lead to easier interpretation of factors because the criteria generally tend to maximize the number of loadings having negligible values and leave a few with large loadings (9, p.58). The product of the rotation yielded common variances which remained constant for each test variable, but high and low loadings were more conspicuous than in the principal axes matrix. The rotated correlation matrix for the 15 factors selected for the project is displayed as Appendix F. The information produced in the rotated factor matrix was the basis for selecting the items which measured each particular factor. Each column of numbers under the heading of a factor represented a separate factor. These numbers were the coefficients representing factor loadings for each variable, in every factor. The results of the PROC FACTOR option of SAS set the factors in columns, numbered consecutively, and each test item was numbered in sequence vertically on the left-hand column.

Another consideration in developing the scale was the variance which provided an index of dispersion of scores and for any item equalled the square of the loadings. Ideally the total sum of square loadings would equal the number of items, in this case 145. The greatest amount of variance was explained in factor 1, which was typical in factor analysis. Each factor in numerical order then accounted for the maximum amount of remaining common variance until variance reached zero. Table 6 illustrates this pattern and displays the amount of variance explained by the factors which were retained for this study.

Variable Selection and Factor Interpretation

The selection and classification within the factors was a major step in the development of the Health Workers Attitude Inventory. Strict guidelines were established and adhered to in the classification process, because these scales would have had limited value without some level of consistency.

Table 6. Listing of Factors Retained for Study and the Amount of Variance Explained by Each Factor

Factor	Variance Explained
1	30.046623
2	4.963324
3	4.063843
4	3.481885
5	3.177773
6	2.849202
7	2.500133
8	2.358383
9	2.299737
10	2.105161
11	2.016429
12	1.944858
13	1.871113
14	1.840252
15	1.718284

The standard of + or - .30000 was the minimum acceptable loading for item retention in this project, and as stated earlier, a general rule in factor analysis has been that the + or - .30000 loading

coefficient was significant. This criterion had particular reinforcement through the demonstration that the .30000 loading requirement surpassed the needs for a .01 level of significance with the sample size utilized in the project.

The analysis started with the researcher moving horizontally across the rotated factor matrix and selecting the highest factor loading for each item, then designating in which factor it had the highest loading. Many items had significant loadings in more than one factor and these items and their loadings were considered with each factor where it contained significant loadings. One criterion of this project was that each item could only "fit" one factor in the final analysis and the criterion utilized for this final selection was based strictly on the highest factor loading. Significant loadings in other factors could have helped conceptualize a factor and its structure, so the items were mentioned in discussions of the factors but not retained as components for quantifying the factor.

Some items were in a quite different position than those being represented in multiple factors, producing all loadings below the minimum acceptable level and demonstrating no significant loadings in any factor. These variables were included in the initial analysis of each factor, but were dropped from consideration as components of the factor and would be excluded in any future use of the questionnaire, for they could not be considered valid items for quantifying any of the factors.

The next step was to analyze the factor loadings and the patterns of variables in an attempt to label each factor. These labels needed to reflect, in the most inclusive manner, all the significantly loaded factors, or those with the highest loadings. Naming each factor with a pertinent label was difficult in several cases and these particular problems are explained in the remainder of the chapter.

These factors and their validity were vital to the success of the study, becoming the operational definitions of the broad concept called worker/management relations. An irrelevant set of factors would produce an irrelevant study and an invalid questionnaire.

The following section reports the manner in which variable selection and factor interpretation were conducted for each individual factor. Headings begin with a factor number 1 through fifteen 15, then state the label, and finally provide a brief definition of the factor. This information is followed by a detailed explanation of the factor's contents and the relatonship of all the factors retained as a portion of that factor. A table accompanies each factor explanation listing the variable number, factor loading, and the corresponding question from the original survey form. Note that all loadings in the tables representing the factors are positive, unless designated otherwise.

Factor 1

Worker Input- Described the formal and informal opportunities for workers to provide input, but did not describe the perceived impact of that input on the organizational decision-making process.

The eleven items retained in factor 1 involved key terms including "speak up," "change," and "suggest." The variables included both formal and informal aspects of worker input, even to the detail of including space for meetings. The factor related to the workers' perceptions of their input in a variety of situations but did not include items concerning the impact of that input. Impact of decision making was measured in another factor. The highly significant loadings (over + or - .50000) in the factor were for items related to the accessibility of formal methods for speaking up to management, having opportunities to suggest changes, and the availability of informal channels to speak up. The high loadings of these factors suggested the strength of the perceived relationship among these variables.

Item 94 was eliminated from the factor because the researcher could make no conceptual linkage between the concept of advancement in the institution and the process of worker input. Item 32 was eliminated because it was identical to item 33 which had a higher loading, but this duplication of items served the purpose of providing a potential consistency check for the sample. Both items loaded significantly in the same factor and provided a measure of significance.

Table 7. Listing of Contents of Factor One, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
34	.65493	There are enough ways for me to speak up to management
33	.63644	I get a chance to suggest changes in my job description
35	.58118	There are many informal ways for me to speak up to management
30	.46327	Administration wants my opinion about my job
128	.45171	I have input into changing my job description
120	.40286	Problems are settled before going to the grievance procedure
117	.40217	The worker's side of problems is heard at this hospital
89	.38334	Management asks workers what types of benefits they want
119	.37141	The grievance procedure is fair to employees
66	.35241	Changes are considered if workers feel they are important
104	.30075	Meetings of employees are held during work hours

Items 21, 29, 101, 102, and 108 had loadings which were higher elsewhere in the matrix, although they did relate to the theme of input and speaking up to management in a variety of situations. This relatively high number of significantly loaded items was typical of first factors in a matrix and explained the presence of five significantly loaded items which fit better into other factors. The amount of variance explained by this factor was 30.046623, the highest in the study and typified first factor characteristics in a correlation matrix.

Factor 2

Worker/Supervisor Relationships- Described the perceptions of the quality in worker/supervisor relations and communications.

This factor retained 23 items and included variables of both a positive and negative nature. Factor 2, containing the largest number of variables for any factor, included items which explored a broad range of supervisory functions, particular elements of human resources management skills, and personal feelings about or perceived as coming from the supervisor. Every item made specific mention of the supervisor in particular or supervisors in general and the 17 highest loaded items in this factor all began with the words "my supervisor."

The original list of dimensions which was generated for this study specified seperate dimensions for both "formal" and "informal" worker/supervisor relations. The merging of these two concepts into one

Table 8. Listing of Contents of Factor Two, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
10	.70438	My supervisor is a good leader
16	.68291	My supervisor and I can discuss things like two adults
14	.67279	My supervisor understands me
4	.67109	My supervisor makes me feel comfortable on-the-job
13	.66463	My supervisor ignores me
7	.66206	My supervisor listens to me
9	.64882	My supervisor understands my job
15	.63812	My supervisor is unfair
2	.63766	My supervisor handles problems poorly
22	.62153	My supervisor ignores my problems on-the-job
12	.61139	My supervisor dislikes me
29	.59998	My supervisor wants my opinion about my job
47	.59948	My supervisor cares about my comfort on-the job

Table 8. (Continued)

Item Number	Loading	Question
6	.59720	My supervisor helps workers
8	.54493	My supervisor talks down to me
48	.52436	My supervisor understands my work conditions
56	.41663	My supervisor knows the safety rules
5	.39279	Supervisors are unfair with workers in this hospital
1	.39215	My supervisor handles problems by-the-book
59	.39109	My supervisor does not understand how I can get hurt on my job
79	.37203	Supervisors "practice what they preach" in policy
18	.38217	You can speak your mind in this hospital and supervisors will listen
17	.36976	My supervisor dislikes his/her job

factor seemed to indicate that workers did not make that same differentiation of formal and informal, and removed the distinction when reporting their own perceptions. The result of this merger was 23 items with relatively high loadings, although future application of the survey might be enhanced by eliminating those items in factor 2 below the .50000 factor loading level because of this relatively large number.

Some of the lower correlated items in the factor which exceeded the minimum acceptable loading value were of interest for discussion. Item 105 which mentioned employees being "pushed around," item 39 which mentioned that employees would not speak up due to lack of security, and item 118 which discussed that things were "unfair" in general, may have been perceived as part of this factor because of the vital role the supervisor can play in representing the institution to the worker. Despite this rather interesting speculation concerning supervisors and their link to the institutional image, items 105, 39, and 118 were eliminated from the factor.

There were 16 items in this factor with loadings over .50000 and each one of those items began with the words "My supervisor." The particular emphasis in the items measured leadership abilities, the communication process, the utilization and interpretation of policy, and the supervisor's ability to do their job. The items which demonstrated significant loadings but had higher loadings in other factors, all related to supervisory functions.

Factor 3

Discipline and Grievance Procedure- Described workers' perceptions of the equity, practicality, and consistency of the grievance process and discipline system in the institution.

Factor 3 described the workers perceptions of the grievance and discipline systems and how those systems related to the general attitudes of management concerning workers in the institution. All items in factor 3 were negative impressions which one could have held concerning these systems. The items related specifically to the concepts of unfairness, the low priority on workers' needs, and the inconsistency in the disciplinary and grievance systems.

The loadings above .50000 were for items related to the difficulty of applying and understanding the grievance procedure. These loadings appeared to demonstrate the value of clarity and practicality in policy as perceived by the workers. Other highly loaded items stressed the concepts of fairness and consistency.

Item 100 relating to the future of the employee produced a significant loading, but had a higher loading in another factor. Item 65 was also a negative item which met minimum factor loading requirements but the item involved perceptions of the situation where an unqualified worker becomes a supervisor. The conceptual linkage was weak and item 65 was eliminated from the factor.

Table 9. Listing of Contents of Factor Three, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
124	.64057	The grievance procedure is hard for workers to use
123	.61871	The grievance procedure is hard to understand
115	.49869	Employee discipline in this hospital is inconsistent
121	.44432	The grievance procedure is set-up to help management
3	.36774	The grievance procedure in this hospital is unfair
69	.36736	Workers are the lowest priority at this hospital
116	.35800	Employee discipline procedures in this hospital hurt people

Factor 4

Work Environment- Described workers' perceptions of the safety, cleanliness, and comfort of the workplace.

This factor described both positive and negative aspects of worker safety, comfort of the workplace, and cleanliness of work areas within the institution. The items all appeared to fit the general theme quite well and the only need for elimination was item 44 which related to the theme, but did not meet minimum factor loading requirements.

Table 10. Listing of Contents of Factor Four, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
41	.58926	This hospital is dirty
49	.49492	This hospital has a clean place for workers to eat
45	.48812	The lighting is good enough for me to do my job
40	.41515	This hospital is a safe place to work
53	.40524	My work area is dangerous
43	.39327	This hospital is warm during the winter

There was one item which exceeded a .50000 loading and this item related to the cleanliness of the institution. One other item had a loading at .49492 which related to workers having a clean place to eat. The loadings of these two items demonstrated the strength of the relationship workers placed on various hygiene concerns in the institution. Other specific items related to lighting, safety, and temperature of the work environment.

Factor 5

Breaks and Lunchtime- Described the workers' perceptions of the equity in the number and length of breaks and the length of lunchtime.

All the items in this factor related to the specific theme of time-off during the work day. The items described perceptions of the number and length of breaks and the length of lunchtime. All three items had loadings above .50000 and demonstrated a satisfactory statistical and conceptual fit. The components of this factor which developed this rather narrow concept had high loadings and demonstrated the strength of the relationship among these variables. Most of the factors identified in this study represented more general themes, but factor 5 was quite limited in its conceptual theme with a high statistical relationship.

Table 11. Listing of Contents of Factor Five, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
81	.68554	I get enough breaks
80	.68207	My breaks are long enough
75	.52784	My lunchtime is long enough

Factor 6

Discrimination- Described the workers' perceptions concerning racial and sexual discrimination in promotional policies, general sex discrimination, and discrimination in the worker/patient relationship.

Factor 6 described the workers' perceptions of discrimination in the institution with race and sex as the focal points. Item 143 described the workers' perceptions that administration would "stick-up" for workers in situations when a patient complained about a worker. Perhaps this perception of management was a form of discrimination against patients or for the workers, and due to this possible linkage item 143 was included as a variable in factor 6.

Table 12. Listing of Contents of Factor Six, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
135	.73408	Female workers and male workers with the same qualifications have the same chance of getting promoted
134	.71035	Black workers and white workers with the same qualifications have the same chance of getting promoted
136	.70135	If two people are up for a promotion, one black and one white, the best qualified person would get the job
137	.65605	If two people are up for a promotion, one male and one female, the best qualified person would get the job
133	.65099	There is racial discrimination in this hospital
132	.46634	There is sex discrimination in this hospital
143	.32229	If a patient complains about a worker, administration will stick-up for the worker.

There were relatively high loadings, above .65000, for five items in factor 6. All five of these items related to specific cases of racial or sexual discrimination. The items within this factor demonstrated relatively strong statistical and conceptual fits.

Factor 7

Self-Esteem and Job Satisfaction- Described the workers' perceptions of their job satisfaction, general feelings about the institution as a place of employment, and their future at the institution.

The majority of the items in this factor related to the workers' perceptions about being satisfied with their job and the institution. Item 100 related to job satisfaction but was oriented to the future of the worker in the institution. Item 50 stated "I am overworked," and it was not beyond comprehension that one measure of satisfaction, or "liking" and not "liking" a job, may have been related to the perception of a manageable workload. The factor loading of item 50 was at a marginal level of significance but the decision was to retain the item as a representative portion of the factor.

The items loading above .50000 related to "liking," "feeling good," and being "satisfied" with the job and the institution. The items also measured the perceptions of the job's contribution to the individual's self-esteem. These high loadings demonstrated the strong perceptions of the relationship between job satisfaction and self-esteem.

Table 13. Listing of Contents of Factor Seven, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
138	.70928	I like my job
98	.66414	I feel good about my job
139	.63072	I am satisfied with my job
97	.60083	My job makes me feel bad about myself
140	.54623	This hospital is a good place to work
142	.45011	This hospital is a bad place to work
100	.34341	I feel bad about my future at this hospital
50	.30890	I am overworked

Factor 8

Performance Appraisals- Described the regularity, equity, and relation of performance appraisals to compensation. The factor also described the productivity of appraisal sessions, supervisory knowledge, and general satisfaction with the appraisal process.

This factor described the regularity, equity, and relation to pay of the performance appraisal system. The factor also described the productivity of appraisal sessions and general satisfaction with that process. The factor also included an item relating to the supervisor's knowledge of the job description, which was consistent with the theme of the factor.

Factors loading above .50000 demonstrated the strength workers perceived in the relationship of regularity, equity, and consistency of the standards for the performance appraisal. All items appeared to exhibit a satisfactory fit with the factor's theme, and there was no need for any elimination on a statistical or conceptual basis.

Table 14. Listing of Contents of Factor Eight, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
107	.65442	My performance appraisals are done on a regular basis
106	.57076	My performance appraisals are fair
112	.54738	Performance appraisals are based on job descriptions
108	.47611	Performance appraisals give me a chance to speak up
113	.45729	I am satisfied with my performance appraisals
109	.45593	Performance appraisals are related to my pay
111	.40194	Performance appraisals help everyone do their jobs better
127	.38165	My supervisor knows what is in my job description

Factor 9

Participation in Decision Making for Policy and Procedure-Described items concerning safety of equipment, input, security, trust, and relationships with patients.

This factor posed great difficulty in the tasks of nomenclature, analysis, and classification. First, the factor was bipolar, having two negative items concerning workers "running" the hospital and their work areas. The bipolar nature of the factor reflected contrasting clusters of variables where some of the test vectors had been resolved in one direction and others in the opposite quadrants. This situation gave rise to positive and negative variables and in geometrical terms, the variables had been resolved in opposite directions but still "fit" with each other (9, p.48).

Other items in the factor described security and lack of security. Two items related to workers feeling trusted and two other items related to the equity and ease of using sick time and vacations. The number of obvious themes presented difficulty in establishing any linkage in the relationship of trust, non-employment security, and the issues of running the hospital and the work area. Perhaps this negative relationship established the workers' feelings that they should have more opportunities to "run" the institution and minimize certain negative situations. Lack of input, along with dissatisfaction concerning policy and procedure may have been reflected in the

Table 15. Listing of Contents of Factor Nine, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
90	.45982	It is hard to use sick time in this hospital
52	.42350	I have the equipment I need to do my job
72	.41092	The way overtime is given in this hospital is unfair
51	.40667	The equipment workers use is not kept-up
36	-.39406	I am active in running my work area
37	-.36036	I am active in running this hospital
86	.35366	The procedures to get vacation and sick time are unfair
27	.34324	Decisions are made about pay after seeing what other hospitals pay
67	.34174	Workers at this hospital feel trusted
54	.33646	This hospital is a safe place to work
144	.32198	Patients treat workers bad at this hospital

development of negative attitudes by workers about decision making and the perceived attitude of management concerning these workers. The key concept appeared to be "inaccessibilty" to a range of tangible and intangible needs, including general policy and procedure, and the specific needs for safety and equipment.

There were no items which loaded above .50000 in this factor, but it was interesting and quite perplexing with its bipolar loadings and the wide conceptual range of items.

Factor 10

Clarity of Policy and Procedure- Described the workers' perceptions concerning general hospital policies, their depth in being understood, how policy changes were implemented, how well workers understood benefits, and the accuracy of job descriptions.

This factor described the perceptions reported for the level of understanding by workers of the institutional policy and procedure. Each item in this factor described some portion of general policy, procedure, or benefits. The factor had two items relating to change; item 78 described how well new policies were explained, and item 103 mentioned changes in general and whether these changes were explained to workers. The relatively high loadings of items 76 and 77 appeared to demonstrate the strength of the relationship between the understanding of institutional policy and procedure by both workers and supervisors. Item 92 described the worker's knowledge of benefits and item 135

Table 16. Listing of Contents of Factor Ten, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
76	.72447	Workers understand hospital policy
77	.65224	Supervisors understand hospital policy
78	.61774	New policies and policy changes are explained well
92	.43696	Workers in this hospital know what benefits they have
103	.40036	Changes are explained to workers
135	.39882	My job description is accurate

described the accuracy of the job description, a specific piece of policy.

Three items loaded above .50000 and related to the worker's and supervisor's specific understanding of policy, plus the adequacy in the explanation of new policies and procedures. Item 79 related to the consistency in supervisory behavior and had a significant loading, but had a higher loading in another factor despite the conceptual fit with factor 10. There was little difficulty in justifying the conceptual fit of these items.

Factor 11

Leaves and Medical Benefits- Described the equity in the amount of vacation and sick time, the ease in understanding the sick leave policy, the fairness of medical benefits, and the value of the maternity leave policy.

This factor described the perceived equity in the amount of vacation and sick time, the ease in understanding the sick leave policy, and the value of the maternity leave policy. All of the items in the factor were positive in nature and described very specific issues involved in the leave package of the institution. These measures were in addition to the satisfaction with general policy and procedure measured in factor 10.

Three items, numbers 84, 85, and 87, loaded above .50000 and related to the fairness in the amounts of vacation time and sick leave received by the respondents, plus the fairness of medical insurance

Table 17. Listing of Contents of Factor Eleven, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
84	.59487	My amount of vacation time is fair
85	.58782	My amount of sick leave is fair
87	.53303	My medical insurance benefits are fair
91	.42095	It is easy to understand the sick leave policy of this hospital
93	.31890	This hospital has good maternity leave benefits

benefits. Apparently, the workers felt strongly enough about the value of these benefits that they developed into a seperate factor.

Factor 12

Employee Development and Pay- Described the employees' perceptions of the opportunities for personal development and growth provided by their jobs or the institution, plus the institution's ability to pay fair and competitive wages.

This bipolar factor contained an interesting relationship between monetary compensation and issues of personal development. Maslow's hierarchy of needs had monetary security and self-esteem at opposite ends of the need spectrum for the self-actualizing man. Herzberg

differentiated between motivating (esteem) and hygiene (monetary) factors (31, p.51). The loadings of items in factor 12 appeared to support these theories through their bipolar nature. Positive items 145 and 99 related to personal development and negative items 23 and 82 on the opposite end of the spectrum and the axis, related to the equity of monetary policy. The workers' perceptions presented a situation of recognizing the relationship of pay and development, but still placed these concepts at opposite ends of the same axes.

Table 18. Listing of Contents of Factor Twelve, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
145	.47987	I have a chance to learn new things about my job
99	.42299	I have a chance to learn things about other jobs in this hospital
23	-.33546	I feel that this hospital pays as well as other hospitals
130	.32870	I have a copy of my job description
82	-.31455	My pay is fair

Item 95 also related to personal development but did not meet minimum loading standards and was eliminated. Negative item 71 related to the equity of the disciplinary procedure of firing employees but was

excluded due to the lack of demonstrating a satisfactory conceptual fit within the theme of the factor.

There were no loadings in this factor above .50000 but the bipolar nature of the factor presented interest in the analysis, particularly in relation to some classical motivational theories. This factor seemed to have supported the contention that personal development opportunities and monetary compensation could both effect satisfaction in a similar fashion, but appeared to be at opposite ends of a conceptual axis.

Factor 13

Decision Making- Described the employees' perceptions of their roles in the decision-making process and the accessibility of private space for workers.

This factor retained a relatively low number of three items. It was desirable to have at least three variables purporting to represent a factor to consider it for retention based on Child's criterion for factor validity (9, p.38). Factor 13 met this criterion of having the minimum of three variables, with items relating to workers' opportunities to "speak up" prior to decision making and also related to the hospital's efforts to provide space for workers. The items related to rather contrasting items of the worker's perception of participation in management decisions and having autonomy in reference to physical space. Perhaps this factor demonstrated the workers' need for both interaction and autonomy.

There were a relatively large number of items assoicated with this factor which had significant loadings, but produced higher loadings in other factors. Items 11, 18, 38, and 131 described the qualities of

Table 19. Listing of Contents of Factor Thirteen, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
21	.58125	Decisions are made about the hospital after workers have a chance to speak up
20	.47940	Decisions are made about workers after workers have a chance to speak up
42	.33561	This hospital provides enough space for "employees only"

respect, speaking up, recognition of real leaders, and equal treatment. The loadings of these items in the factor were significant, but they demonstrated stronger statistical fits elsewhere. Item 88 was eliminated from the factor due to not meeting the minimum loading requirements.

Only one item loaded above .50000 and measured the perception of the availability for input opportunities prior to decision making. The statistical relationship of the items in this factor was significant but the conceptual relationship was questionable.

Factor 14

Style of Management- Described the workers' perceptions of the management style of supervisors and administration, the attitude that administration and supervisors projected toward workers and the institution and the effectiveness of those qualities for "running" the institution.

Factor 14 described very general qualities of administration and the supervisors in the institution. The factor included items describing the perceived feelings toward workers and patients, plus the fairness, caring, respect, and equality which were projected by management. These qualities could be described as the "humane" quality projected by managers.

The factor had three items loading above .50000 which related to administration's "caring" about workers and patients, and the fairness of administration toward the employees. Most items mentioned the administrator but supervisors were specified in other items and this relationship could be evidence of the perceived role of the supervisor as part of the management team.

Item 114 was eliminated due to its failure in meeting the minimum loading requirements. Two items, 38 and 67, had significant loadings for factor 14, but had higher loadings in other factors. These items described feelings of trust and whether administration recognized the "real" leaders among the workers.

Table 20. Listing of Contents of Factor Fourteen, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
63	.67477	The administration of this hospital cares about workers
64	.58682	The administration of this hospital cares about patients
101	.50161	The administration of this hospital is fair to employees
102	.46481	The administration of this hospital is consistent in the way they treat employees
62	.43950	Supervisors in this hospital care about workers
68	.43569	This hospital is run poorly
11	.42866	Workers and supervisors in this hospital respect each other
60	.35596	There are good inspections of equipment and work areas in this hospital
131	.34418	All workers in this hospital are treated equally
31	.32249	Administration ignores what I think is important

Factor 15

Status and Image- Described the monetary and non-monetary status, and the personal security and safety attached to working in the institution.

This factor described the status attached to working at the institution, the status of pay and benefits, how objectively management measured the worker's value to the organization, and the safety of the individual workers and their property. This factor appeared to contain a broad range of themes, but all the items could be related to the status or image of the institution.

Loadings above .50000 were produced for items relating to the status attached to working at the institution and the benefits given for working at the institution. The value of wages and benefits appeared to demonstrate statistical and conceptual relationships with one another, specifically with the status attached to working at the institution.

Items number 31, 68, 116, and 118 had significant loadings, but demonstrated higher loadings in other factors. These items related to the concepts of administration ignoring workers' needs, how poorly the institution was run, the discipline procedure's effect on workers, and "things" being unfair. Item 46 related to security, but was eliminated due to not meeting minimum loading requirements. Item 57 related to safety, which fit another factor but did stress the role of safety in developing the image of the institution.

Table 21. Listing of Contents of Factor Fifteen, Including Item Number, Loading, and Corresponding Questions

Item Number	Loading	Question
25	.56356	There is little status for working at this hospital
24	.55036	This hospital gives less benefits than other hospitals
58	.43325	We have poor security for personal property at this hospital
28	.40601	I would work at another hospital for less money
61	.36239	Wage plans are picked that benefit the hospital more than the workers
83	.36154	My benefits are unfair
110	.35768	Performance appraisals mean nothing
38	.32857	Administration ignores the "real" leaders among the workers

Summary of Factor Selection

The 15 factors selected in the preceding process became the operational definitions of the concept of worker/management relations. Some of the factors demonstrated stronger statistical and conceptual correlations among their items than did others. A copy of the final questionnaire, with revisions based on the preceding analysis is included as appendix G.

The 15 factor labels and the final number of items contained in the scale are listed in table 22.

Table 22. Listing of Final Factors and Number of Items Retained

Factor Number	Factor Name	Number of Items
1	Worker Input	11
2	Worker/Supervisor Relations	23
3	Discipline and Grievance Procedure	7
4	Work Environment	6
5	Breaks and Lunchtime	3
6	Discrimination	7
7	Self-Esteem and Job Satisfaction	8
8	Performance Appraisals	8
9	Participation in Decision Making for Policy and Procedure	11
10	Clarity of Policy and Procedure	6
11	Leaves and Medical Benefits	5
12	Employee Development and Pay	5
13	Decision Making	3
14	Style of Management	10
15	Status and Image	8

Scale Development

The major step following factor analysis was the development of the scale. The development of the scale allowed interpretation of the inventory, and it would appear obvious that the inventory had limited value without measurement criteria. The raw scores were tabulated for each individual in every dimension, then placed in culmulative percentage frequency tables which supplied information for completing the scales. The raw scores were stratified by standard nines (stanines) according to the following distribution.

Stanine Score 9 (High Score) for raw scores earned by the highest 4 percent of the standard population.

Stanine Score 8 for raw scores earned by the next lower 7 percent of the standard population.

Stanine Score 7 for raw scores earned by the next lower 12 percent of the standard population.

Stanine Score 6 for raw scores earned by the next lower 17 percent of the standard population.

Stanine Score 5 for raw scores earned by the next lower 20 percent of the standard population.

Stanine Score 4 for raw scores earned by the next lower 17 percent of the standard population.

Stanine Score 3 for raw scores earned by the next lower 12 percent of the standard population.

Stanine Score 2 for raw scores earned by the next lower 7 percent of the standard population.

Stanine Score 1 (Low Score) for raw scores earned by the lowest 4 percent of the standard population.

The stanine score reflected a relative standing compared to the standard population, so each individual, institution, or various subgroup could be categorized with a stanine score for every dimension.

Table 23 represented the raw scores for factors 1 through 15 identified in the Health Workers Attitude Inventory and included the stanine in which particular scores fell plus it provided an illustration of the proportion from the sample scoring in each stanine. The wide ranges of scores in the conversion table reflected the differences in the number of questions associated with the various dimensions.

The conversion table could be used by locating the appropriate dimension on the left-hand side of the table corresponding to the raw score to be converted. Next, find the group of raw scores to the right of the letter of the factor within which the specific raw score of concern fell. The corresponding stanine score is the number that heads the column of the group of scores selected in the preceding step. For example, assume an individual received a raw score of 27 on factor 3. Read down the list of dimensions until factor 3 is reached, then read across to find the appropriate range of scores for the raw score of 27. A range of 27 is found eight columns to the right which includes only the raw score of 27. Read up the column to find the corresponding stanine score which is eight (8). Another example would be the raw score of 33 in factor 9. Read down the list of dimensions again until factor 9 is reached, then read across to find the appropriate range of scores for the raw score of 33. A range of 32, 33, 34, and 35 is found

Table 23. Conversion Table for Factors Based on Raw Scores of Base Population

Factor Number	Stanine 1	2	3	4	5	6	7	8	9
	Raw Scores								
1	13-18	19-23	24-27	28-30	31-33	34-36	37-39	40-42	43-53
2	37-54	55-64	65-73	74-82	83-91	92-97	98-104	105-09	110-20
3	8-13	14-15	16-18	19-20	21-22	23-24	25-26	27	28-35
4	11-16	17-18	19-20	21-22	23	24	25-26	27	28-40
5	3	4-5	6-7	8-9	10	11	12	13	14-15
6	7-11	12-15	16-18	19-20	21-24	25-26	27	28-30	31-35
7	9-17	18-21	22-25	26-28	29-31	32	33-35	36-38	39-40
8	10-17	18-20	21-23	24-25	26-28	29-30	31	32-35	36-40
9	13-25	26-28	29-31	32-35	36-37	38-40	41-42	43-45	46-51
10	6-12	13-14	15-17	18-19	20-21	22	23	24-25	26-30
11	5-9	10-11	12-13	14-15	16-17	18	19	20-21	22-25
12	5-8	9-10	11-12	13-14	15-16	17-18	19	20	21-25
13	3	4-5	6	7	8-9	10	11	12	13-15
14	12-18	19-22	23-26	27-31	32-34	35-37	38-39	40-42	43-49
15	9-15	16-19	20-22	23-25	26-27	28-29	30-31	32-34	35-39
Proportion in Sample	.04	.07	.12	.17	.20	.17	.12	.07	.04

four columns to the right which includes the raw score of 33. Read up the column to find the corresponding Stanine Score which is four (4). Table 23 represented the final distributions of the raw scores in each factor and will be the basis for any future scoring of the Health Workers Attitude Inventory.

All the score distributions did not fall precisely on the specified percentages stipulated for standard nines, so the closest score below the cutoff percentages were specified as the maximum score for that stanine in each particular factor. For example, if a raw score of 6 in a particular factor represented 3.31 percent of the cumulative percent of respondents, a figure just below the four percent level required for inclusion in stanine one (1) would have been produced. The addition of raw score 7 made the cumulative percent 5.22, so a raw score of 6 would have been established as the new cutoff point for the stanine in question. This scoring method was applied consistently in making determinations about the sample. Other difficult cases involved factors 5 and 13 which were represented by relatively few items, resulting in a pattern of raw scores and corresponding cumulative percentages that did not "neatly" fit the scoring criterion. In these cases, at least one score was made representative of each stanine to develop some distribution in the scoring range of the factors.

One note of caution was that table 23 represented a sound distribution of individual scores, but revisions must be made for scoring groups or institutions. Individual stanine scores gave truer

results for conversion to group or institutional averages than did raw scores. The raw score averages tended to cluster in stanines four (4), five (5), and six (6) with less variance than when using stanine averages (23, p.6).

Validity

The Health Workers Attitude Inventory was designed to yield a valid description or profile of an individual's attitudes concerning worker/management relations in their workplace. The following discussion examined various topics related to the concept of validity and how these particular concerns were satisfied in the development of Health Workers Attitude Inventory.

The face validity of this measurement device related to the identification of obvious differences among various identifiable groups. A thorough description of the similarities and differences in group responses was presented in the analysis section of this report. There certainly was not an expectation that each member of any particular group would have identical responses and attitudes. Such stringent criterion should not be utilized as a standard for validity, and in fact, differences were expected in responses and attitudes of group members. Further evidence of face validity was the verification of numerous strengths and weaknesses which were identified after administration of the Inventory and verified by the administrators at the various institutions. The validation was provided at follow-up sessions with management representatives in the hospitals which

participated in the project. All the strengths and weaknesses with particular institutions were not anticipated or identified prior to the Inventory administration. If the preceding situation was the rule, then there would be no need for a device like the Health Workers Attitude Inventory. The instrument demonstrated practical value, and the results appeared valid to the practitioners involved in feedback sessions.

The issue of content validity questioned whether the test items being measured were a representative sample of the range of items associated with the factor being quantified. Absolute content validity would be achieved by measuring the universe, but this methodology is unacceptable and difficult to accomplish in most cases and would be contradictory to the criterion and objectives of this project. The content validity of this Inventory relied heavily on expert opinion during initial scale development and this methodology has been generally accepted as a means for achieving content validity (41, p.47). The technique for generating the questionnaire, plus the corresponding strength of the factor loadings determined the content validity of the instrument. One non-scientific indicator of content validity was the acceptance of the questionnaire as a legitimate measuring device by both workers and management during the actual testing sessions.

Criterion-related validity examined the issues of whether the instrument, items, and concurrent scores could be predictors. The vital question was whether the scores could infer future behavior or

satisfaction. The high factor loadings from the factor analysis procedure provided evidence of criterion related validity. A true measure of this attribute could only be determined after many test administrations and follow-up sessions to examine whether the test measures of attitude actually predicted behavior.

Reliability

A reliability coefficient was determined for each of the dimensions of worker/management relations. The RELIABILITY program of the SPSS was applied, using the split-half option to determine the reliability coefficients. Table 24 listed the coefficients for each of the seperate scales.

Table 24. Listing of Reliability Coefficients for Each Factor, Determined by the Split-Half Method

Factor	Coefficient
1	.80
2	.85
3	.65
4	.45
5	.78
6	.78
7	.80
8	.76
9	.66
10	.74
11	.65
12	.66
13	.65
14	.78
15	.77

There was a great deal of variability associated with the list of coefficients and this characteristic can be attributed to the wide variance in the number of items contained in the factors. The factors with the highest number of items tended to have the highest reliability coefficients and factors with the lowest number and the bipolar factors tended to have lower reliability coefficients, although there were exceptions to these trends.

All dimensions demonstrated satisfactory levels of reliability with the exception of factor 4, having a reliability coefficient of .45. This factor labeled "work environment," contained an average number of items, although the loadings of these items tended to be moderate in their loading level. Other explanations for this low coefficient may be that the items represented a wide variety of conditions or that some of the wording may have been confusing.

Analysis of Institutional Characteristics

The following section discussed the similarities and differences which were evident within the response patterns of respondents in the demographic categories of sex, age, educational level, job classification, experience, race, and work shift. The stanine scores for individuals were analyzed through the PROC FREQ program of SAS, using the CHISQ (chi-square) option to make determinations whether the differences in the observed and expected frequencies of stanine scores could be attributed to chance or to the influence of the specified demographic characteristics. This analysis explored a limited number

of characteristics which were identified in the sample, although many characteristics have been shown to mediate attitudes (45, p.305). The section was categorized according to each demographic classification and the analysis of each characteristic followed the appropriate headings. The null hypothesis being tested in each instance was that there was not a significant difference demonstrated in the scoring patterns of the various demographic categories.

A warning must be attached that the expected frequencies in some cells of the chi-square calculation charts were below five and may have produced questionable measures on some tests. A p=.05 was considered significant, but some factors where the probability approached .05, or which exceeded the .95 level were described or mentioned in this report.

Sex

The demographic characteristic of sex appeared to have made little difference in the stanine scores of respondents within the sample. Other reasearchers have found that sex produced significantly different attitudes in the work-related dimensions of worker/supervisor relations and in occupational health and safety (37, p.22), while other research reported no significant or consistent differences between the sexes in their job satisfaction (47, p.438). This study reinforced the prior findings that some differences did exist between sexes.

Factor 5, "breaks and lunchtime," was the dimension most affected by sex in this study with a significant p=.0029 as indicated in table 25. Men scored in stanines six (6) through nine (9) in 66.08

percent of the cases with an expected frequency of 40 percent, as opposed to women who scored closer to the expected frequency with 39.86 percent in stanines six (6) thorugh nine (9). Men appeared more likely to be satisfied with breaks and lunchtimes.

Factor 4 ,"work environment," also demonstrated an interesting relationship with sex, but this relationship was less significant than in factor 5. Men scored in stanines six (6) thorugh nine (9) in 60.72 percent of the cases with the dimension of "work environment," while women also exceeded the expected frequency of 40 percent but only had a

Table 25. Significant or Notable Chi-Square values and p for the Characteristic of Sex

Factor	Chi-square	p
4	13.110	.1081
5	23.424	.0029*
13	12.700	.1226

* significant at .05 level

frequency of 49.75 percent. The p was only .1081, which would not be considered a significant value, but did deserve mention.

Factor 13 had a p=.1226 in the dimension of "decision making," and the situation of interest was that there were no men scoring in stanines one (1) or nine (9) and 46 percent of the men scored in stanine five (5), with the expected frequency being only 20 percent. Men appeared to be more consistent or neutral in their feelings about the dimension of decision

making in the institution, although the relationship was not statistically significant.

Age

The demographic characteristic of age also demonstrated some interesting patterns related to stanine scores. Factor 1, "worker input," contained a higher proportion of scores above stanine six (6) for workers in the age categories of 46 to 55 and 56 and up, while the remaining younger categories appeared to follow the expected distribution.

Factor 4 ,"work environment," demonstrated an interesting pattern in the 46 to 55 category, where only 11.23 percent of respondents scored in stanines one (1), two (2), eight (8), and nine (9), with an expected frequency of 22 percent. The age category of 56 and older had only 11.11 percent in these same stanines, and the pattern in factor 4 displayed greater neutrality of attitudes for the older workers. The category with ages 36 to 45 had 40.45 percent of responses in stanines seven (7) through nine (9) with an expected frequency of 23 percent, indicating a higher likelihood of satisfaction in this dimension for that age group.

Table 26. Significant or Notable Chi-Square values and p for the Characteristic of Age

Factor	Chi-square	p
1	46.196	.0500*
4	43.047	.0919
5	53.760	.0094*
14	56.139	.0167*

* significant at .05 level

Factor 5, "breaks and lunchtime," also revealed a pattern that older workers were more likely to be satisfied with this dimension. Stanines seven (7) through nine (9), with an expected frequency of 23 percent contained 39.33 percent of respondents age 36 to 45, 64.15 percent of respondents in age class 46 to 55, and 55.55 percent of the workers age 56 and older.

Factor 14, "style of management," had a p=.0167 and a distribution where workers age 16 to 25, and 26 to 35 had less than expected frequencies. The tendency was for stanines three (3) through six (6) to contain higher than expected frequencies in the extreme stanines. Younger workers were more likely to be consistent or report neutral feelings concerning this dimension.

Other researchers reported similar findings related to the characteristic of age with job satisfaction. Batlis and others (1, p.13) reported that age and job satisfaction had an inverse relationship and reinforced the information gathered in this project. Vecchio also found that age was a characteristic that would moderate attitudes, with older workers being more positive and younger workers having a diminished likelihood of positive response patterns (45, p.305).

Shift

The response patterns for the demographic classifications by shift revealed no significant relationships, demonstrating that workers in any particular shift were more likely to score in a particular stanine. This finding was contradictory to most previous studies

examining shift and worker attitudes which found greatest job satisfaction reported by day shift of first shift workers (27, p.66).

All values of p ranged from .6949 to .3099 with the exception of factor 14, "style of management," which had a p=.9824. This value was noteworthy because it indicated that less than two out of 100 times would this distribution have fit better by chance. There has been much speculation that workers on particular shifts were more satisfied with worker/managment relations than workers on other shifts, but this study gave no reinforcement to the previous research.

Job Classification

There has been a great deal of research which examined the relationship of job classification or title to satisfaction and attitude. Most of this research also included the element of pay, which had an obvious link to job titles and prestige. Pay was not considered as a demographic characteristic in this study, and in restrospect any effort to speculate pay ranges would have been futile. Most studies linked high prestige or high pay with job satisfaction (49, p.438) and this study partially reinforced these prior findings.

Factor 2, "worker/supervisor relations," had a p=.0004 and appeared to have interesting relationships in the unclassified "other" category and the housekeeping category. Nursing, clerical, allied health professionals, maintenance, and dietary all fit the expected distribution well, but the "other" category had 56.66 percent of respondents with stanine scores seven (7) through nine (9), above the expected frequency of 23 percent while housekeeping had 48.84 percent

scoring in stanines seven (7) through nine (9). Respondents in the housekeeping and "other" categories were more likely to be satisfied with this dimension than other categories of job classification.

Factor 7, "self-esteem and job satisfaction," had a p=.0282 and close to expected score distributions in nursing, clerical, maintenance, dietary, and housekeeping. Allied health professionals deviated from the expected frequency, having no scores in stanines one (1) and two (2), but 63.00 percent in stanines four (4) through six (6), with an expected frequency of 44 percent. The "other" category had only 23.33 percent in stanines two (2) through five (5), with an expected frequency of 50 percent, and had higher than expected frequencies in both stanine one (1) with 16.67 percent, and in stanines six (6) through nine (9) with 60.00 percent. The "other" category had workers who were more likely to percieve high satisfaction or high dissatisfaction with their jobs and self-esteem.

Table 27. Significant or Notable Chi-Square values and p for the Characteristic of Job Classification

Factor	Chi-square	p
2	87.709	.0004*
7	68.372	.0282*
9	88.844	.0003*
11	66.100	.0425*
14	78.047	.0178*

* significant at .05 level

Factor 9, "participation in decision making for policy and procedure," had a p=.0003 and a most interesting scoring pattern for allied health professionals. Stanines one (1) through three (3) had only 5.40 percent of the scores although the expected frequency was 23 percent, and stanines seven (7) through nine (9) had 40.54 percent with an expected frequency of 23 percent. Allied health professionals appeared more likely to perceive satisfaction in this dimension of worker/management relations than all other job classifications excluding the "others." The "others" had 60.00 percent of their scores in stanines six (6) through nine (9), exceeding the expected frequency of 40 percent.

Factor 11," leaves and medical benefits," had scoring patterns for particular job classifications which appeared different than expected. Clerical had 46.17 percent of scores in stanines seven (7) through nine (9), above the expected frequency of 23 percent. Allied health professionals had only 18.92 percent of their respondents in stanines one (1) through four (4), below the expected frequency of 40 percent, but the remaining respondents in this category were distributed closer to the expected frequencies. The "other" category had 56.66 percent in stanines six (6) to nine (9), above the expected frequency of 40 percent. These figures indicated that respondents in the job classifications of clerical, allied health professional, and "other," were more likely to be satisfied with their vacation time, sick leave, maternity policies, and medical benefits than workers in the remaining categories.

One final interesting association with job classification appeared in factor 14, "style of management." Housekeeping had 72.09 percent scoring in stanines five (5) and lower, with the expected frequency being 60 percent. The "other" category had 60.01 percent of respondents scoring in stanines six (6) and above, surpassing the expected frequency of 40 percent. Housekeeping appeared less likely to be satisfied with the style of management, while "others" appeared more likely to be satisfied with the style of management in their particular institutions.

Education

The literature revealed that education was a moderator of behavior in a complex fashion. Previous findings demonstrated that lower education would relate to lower satisfaction and individuals with moderate education levels would exhibit a pattern similar to individuals with lower education (45, p.303). Other studies revealed that individuals with higher education had a greater tendency to question, examine, and rebel against the organization (15, p.609). Findings in this study reinforced these previous reports.

Several factors appeared to have demonstrated strong relationships with particular educational levels. Factor 4, "work environment," with a p=.0338 had respondents with less than a high school education scoring in stanines six (6) through nine (9) 60.98 percent of the time. This observed frequency exceeded the expected frequency of 40 percent and appeared to indicate that the lower educated workers

were more likely to be satisfied with the dimension of "work eviron-ment" in their institutions. Respondents with a bachelors degree had only 5.88 percent scoring in stanine five (5) with an expected frequency of 20 percent, indicating that respondents in this category were more likely to be highly satisfied or highly dissatisfied with the environmental hygiene and safety.

Factor 6, "discrimination," had an interesting relationship for workers with less than high school educations where 73.18 percent of respondents scored in stanines five (5) and above, exceeding the expected frequency of 60 percent. The least educated workers were more likely to be positive about the state of discrimination at the institution, although the next category in sequence with high school educations were the most likely educational category to be negative about the dimension of discrimination. Respondents with bachelors degrees had 64.71 percent in stanines four (4) through six (6) and junior college or technical school graduates had 53.29 percent in the same stanines. The expected frequency in stanines four (4) to six (6) was 44 percent, indicating that respondents with more than a high school education appeared to be neither highly satisfied nor highly dissatisfied with the dimension of discrimination. There was high agreement on this issue with a low tendency to score in the extreme stanines for the technical school graduates, junior college graduates, and college graduates. The individuals with high school diplomas differed from the other groups and were more likely to have negative feelings.

Factor 13, "decision making," had a p=.1090 but still had some interesting relationships. Respondents with bachelors degrees had only 27.44 percent of scores in or above stanines six (6), and technical

Table 28. Significant or Notable Chi-Square values and p for the Characteristic of Education Level

Factor	Chi-square	p
4	48.087	.0338*
6	45.027	.0631
10	17.632	.9813
13	42.106	.1090

* significant at .05 level

school and junior college graduates had a similar pattern with 25.15 percent of scores in stanines six (6) to nine (9), below the expected frequency of 40 percent. This pattern indicated that the more highly educated people in the sample were less likely to be satisfied with the decision making process in their institutions.

One other interesting note concerned factor 10, "clarity of general policy and procedure," with a p=.9813, meaning that a better fit could have occurred by chance less than two out of 100 times. This high probability indicated that education level had no apparent relationship to the satisfaction with "clarity of general policy and procedure."

Experience

Workers who remained in jobs for relatively longer periods of time would be more satisfied with their jobs than peers who had less

time on-the-job, because certain levels of job longevity demonstrated relationships to scoring patterns in certain factors. Factor 5, "breaks and lunchtime," which had a p=.0944 illustrated an interesting pattern. Workers with greater than 10 years experience had a total of 8.33 percent of respondents scoring in stanines one (1), two (2), eight (8), and nine (9), below the expected frequency of 22 percent and had 54.17 percent of its scores in stanine seven (7), above the expected frequency of 13 percent. The pattern demonstrated that this group of respondents were less likely to have satisfaction or dissatisfaction levels in the extreme ranges of scores but generally maintained a high level of satisfaction. Respondents with less than one year of experience did not appear to have abnormally low scores but had only 2.80 percent of respondents scoring in the highest stanines categories of eight (8) and nine (9), below the expected frequency of 11 percent. Longevity at the institution appeared to contribute to high satisfaction in this dimension, but neither the least experienced nor most experienced groups had frequencies which met the expected levels in stanines seven (7) to nine (9).

Factor 11, "leaves and medical benefits," had some relationship to experience with a significant p=.0222. Workers with more than 10 years experience were most likely to be satisfied, having 66.66 percent of workers with stanine scores of six (6) to nine (9), above the expected frequency of 40 percent. Other categories were close to the expected frequencies with their scores, indicating that the more experienced

workers had a greater likelihood of high satisfaction with these benefits. One explanation could be that job longevity meant more benefits and the increased benefits could have led to a greater likelihood of satisfaction.

Table 29. Significant or Notable Chi-Square values and p for the Characteristic of Experience Level

Factor	Chi-square	p
5	42.903	.0944
11	50.011	.0222*
13	45.597	.0564

* significant at .05 level

Factor 13, "decision making," had an interesting pattern for workers with 4 to 6 years experience and 7 to 10 years experience, with a corresponding p=.0564. Neither of these groups had any respondents with a stanine score of nine (9), and scores were of a greater than expected frequency in stanines five (5) and six (6). These categories of respondents demonstrated they were more likely to report high levels of satisfaction in this dimension, but did not manifest the extreme level of satisfaction as demonstrated by a score of nine (9).

Race

The literature examining the relationship between race and job satisfaction was consistent. Blacks were generally less satisfied or

more dissatisfied with their jobs and work conditions than whites (47, p.438). Vecchio attributed this tendency to the "Protestant work ethic" by establishing that the higher the exposure to the work ethic in the subculture, the more likely the individual would be satisfied with their job (45, p.308). Further examination by Vecchio found that the Protestant work ethic was more likely to be part of the white subculture, meaning whites would be more satisfied with their jobs than blacks. The results of this research project verified previous findings concerning the relationship of race and job satisfaction.

The demographic characteristic of race contained the most numerous and most significant distinctions in this phase of the study. Black workers were more likely to have lower stanine scores and white workers were more likely to have higher stanine scores in most factors identified in the analysis.

Table 30. Significant or Notable Chi-Square values and p for the Characteristic of Race

Factor	Chi-square	p
1	26.556	.0467*
2	76.600	.0001*
3	27.101	.0453*
5	28.400	.0283*
6	97.333	.0001*
7	48.918	.0001*
8	37.300	.0019*
9	39.880	.0008*
11	34.604	.0045*
13	27.943	.0321*
15	35.049	.0039*

* significant at .05 level

Factor 1, "worker input," had a p=.0467, and the interesting point was that white workers had 37.12 percent of respondents in stanines seven (7) to nine (9), above the expected frequency of 20 percent. This situation established a clear tendency toward higher levels of satisfaction in this dimension by white workers.

Factor 2, "worker/supervisor relations," had a highly significant p=.0001, which could be attributed to the marked difference in score distributions between black and white workers. Whites had 15.72 percent of scores in stanines one (1) to three (3) while blacks had 27.40 percent of their scores in the same stanines, compared to the expected frequency of 23 percent. Correspondingly, white workers scored in stanines seven (7) to nine (9) in 34.06 percent of the sample, while black workers had 11.74 percent of their total in these same stanines, with the expected frequency being 23 percent. A marked dichotomy appeared to exist in the perceptions of black and white workers concerning worker/supervisor relations in their institutions.

A pattern similar to that exhibited in factor 2 appeared in factor 3, "discipline and grievance." The p was significant at .0453 and black workers were more likely to have lower scores, while white workers were more likely to score highly in this dimension. This familiar pattern repeated itself with factor 5 "breaks and lunchtime," factor 6 "discrimination," factor 7 "self-esteem and job satisfaction," factor 8 "performance appraisals," factor 9 "participation in decision

making for policy and procedure," factor 11 "leaves and medical benefits," factor 13 "decision making," and factor 15 "status and image."

This strong pattern made it worthwhile to note those dimensions where race did not appear to have a significant relationship to score patterns; those dimensions included factor 10 "clarity in general policy and procedure," factor 12 "employee development and pay," and factor 14 "style of management."

Race appeared to be a significant determinant in the scoring patterns for 12 of the 15 factors identified in this analysis and appeared to be the strongest modifying characteristic of workers.

Analysis of Institutional Characteristics

The next step in the research was to analyze the relationship between the institutional characteristics of the number of full-time personnel, the number of beds, and the full-time personnel to bed ratio and their effect on the stanine scores in the various dimensions. The ratio could be recognized as an unsophisticated indicator of the workload carried by individuals through establishing the number of workers available to deliver care per each patient unit. Average daily census figures may have been a better indicator of patient units, but the meaning of the patient census had numerous implications for the different facilties and was dropped from consideration as a demographic indicator.

All of the analysis completed in this section of the report was simple regression done with the general linear model package available

in PROC GLM of SAS. Table 2 listed the range of various characteristics present in the sample and utilized for the particular analysis. The following section presented the analysis of the relationship of the these characteristics in four ways: the first section reported the relationships which appeared in the entire sample, followed by an examination of the hospitals, then limited the discussion to the nursing homes, and finally analyzed the differences between the hospitals and the nursing homes in the sample.

Entire Sample

The following section reported the relationships which appeared to exist between the stanine scores and institutional characteristics for the entire sample. Table 31 listed the factor number, the F-test score, and the probability associated with that score for each of the factors being discussed for the entire sample. The point .05 level was considered significant for this test and any values exceeding .01 were considered "highly" significant.

Number of Beds

The first factor which had a strong relationship to number of beds was factor 1, "worker input." Although the significance level in the F-test did not surpass the .05 level, the relationship deserved mention. There was some indication that workers in the hospitals with the largest bed capacities perceived more input in decision making on both the formal and informal levels. This finding might be attributed to the ability of the larger institutions to provide more progressive

personnel programs, which may involve more worker input. This rationale was reinforced by the high, but not significant, probability associated with factor 8, "performance appraisals." The performance appraisal could be a formal mechanism for input and the items within factor 8 related specifically to the two-way communication and input within appraisal sessions.

Factor 2, "worker/supervisor relations," also had a high value and deserved discussion despite its lack of significance due to its conceptual relationship to factors 1 and 8. The supervisor can be a pivotal point in the worker's perception of being heard or having input because the supervisor could be the listener. This same supervisor could also be the individual conducting the performance evaluation. The large institutions could have scored higher in these items for several reasons including more effective policy and procedure, the development and implementation of better human resources programs, or the presence of better supervisors either through the selection process, availability, or training.

Table 31. Listing of Factor, R-Square, F-test Score, and p of Factors Discussed With Bed Capacity for Entire Sample

Factor	R-Square	F-test	p
1	.20	3.28	.0932
2	.21	3.54	.0826
8	.23	3.86	.0712
9	.26	4.64	.0507*
11	.52	13.86	.0026*
15	.35	7.07	.0197*

* significant at .05 level

Three factors had significant p values levels associated with bed capacity including factor 9, "participation in decision making for policy and procedure." Institutions with more beds and generally more personnel were perceived as being able to supply more satisfactory time off for sick leave and to handle a range of situations more efficiently. Factor 9 appeared to relate conceptually to factor 11, "leaves and medical benefits," which had a highly significant p. A wide range of benefits were covered by the items in these two factors and the probabilities established the pattern toward higher satisfaction with benefits in the larger institutions. This tendency could also have been related to the difference in abilities of the larger and smaller institutions to provide benefits due to fiscal or size constraints.

The final significant dimension with bed capacity was factor 15, "status and image," which may also have been related to the institution's ability to provide workers with "important" benefits. It appeared that "bigger was better" with relationship to ability in providing the benefits necessary to keep workers satisfied. This satisfaction could have been transformed into a positive image of the institution, particularly when considering that several items in factor 15 actually related to benefits.

Number of Full-Time Personnel

It was not surprising that several factors which had significant relationships to bed capacity had similar relationships with the characteristic of number of full-time personnel. Institutions with more beds

should have been more likely to have greater numbers of personnel to care for patients in those beds and to conduct the other non-patient care activities associated with more potential patients. Table 32 listed the factors and their scores and revealed that factors 2, 8, 9, 11, and 15 all had positive relationships with both bed capacity and number of full time personnel.

Table 32. Listing of Factor, R-Square, F-test Score, and p of Factors Discussed With Number of Full-Time Personnel for Entire Sample

Factor	R-Square	F-test	p
2	.19	3.10	.1016
5	.25	4.33	.0579
8	.25	4.22	.0606
9	.25	4.34	.0576
11	.55	15.84	.0016*
15	.28	5.04	.0428*

* significant at .05 level

The number of full-time personnel in an institution appeared to have a relationship to scores on many of the same factors as bed capacity. One difference was that factor 1, "worker input," no longer had a significant or even margainal significance level. Perhaps this change demonstrated that more individuals in the workforce related to perceptions of diminished opportunities for input. The larger organization may have increased the demands on the supervisor's capacity as a listener or communication facilitator. Although factor 2, "worker/supervisor relations," and factor 8, "performance appraisals," remained

strong indicators, these strengths may have been offset by the size of the workforce. This situation diminished the perception of the quality in the formal and informal input mechanisms and demonstrated significant levels of probability.

Higher satisfaction in factor 5, "breaks and lunchtime," had a strong relationship with the number of full-time personnel. Supervisors may have had less difficulty scheduling breaks and giving lunch periods in facilities with larger work forces. A larger number of workers could have provided scheduling flexibility and allowed this time off. The smaller institutions faced a situation where the absence of a smaller number, but perhaps larger proportion of workers at any one time could cause difficulties in maintaining work flow. This complication might have reduced the opportunities for a satisfactory length of lunch, or number and time of breaks and lunchtime.

Personnel to Bed Ratio

There did not appear to be a great deal of difference in the quality being measured by the characteristics of bed capacity and number of full-time personnel. Institutions with larger capacities would be more likely to have a greater number of personnel, so the previous analysis may have been examining the same or strongly related characteristics. A Spearman rank order test was conducted on these two characteristics which produced a significant $r = .79$, and demonstrated the strength of the positive relationship between these two characteristics. An attempt was made to devise a measure which would account for the similarity between these two characteristics and find a better gauge

for observing institutional traits and satisfaction. The product of this search was the ratio of full-time personnel to number of beds, which quantified the amount of workload per worker. A higher number in this ratio, for instance 4.00, would mean there were 4.00 individuals available to conduct the work for each patient unit measured in beds. A lower number of 2.56 would mean there were 2.56 individuals available to conduct the work for each patient unit, and related to the previous example with 4.00 workers per unit, there would be the same amount of work expected from the 2.56 individuals as the 4.00 individuals. This ratio and calculation did not consider several factors which could contribute to higher or lower amounts of work, or differences in what the single unit of a "bed" actually meant. Despite this limitation several relationships did occurred in the analysis and were discussed in the following section.

Full-time Personnel to Bed Ratio

Many of the factors which were related to the other institutional characteristics examined in this project appeared to have significant relationships with this ratio. Table 33 listed the factors and values from the analysis associated with those particular factors.

Factor 2, "worker/supervisor relations," had a strong but not significant relationship with this characteristic. The higher the ratio, and possibly the lower the work responsibilities, the greater the satisfaction in this dimension. Another strong but not significant relationship was with factor 9, "participation in decision making for

policy and procedure," which evaluated the accessibility or inaccessibility of these various policies and items. A higher ratio, and lower work responsibility per unit could have provided supervisors and administration better opportunities to allow sick time, have fair overtime policies, and satisfy other needs perceived in this dimension. The flexibility of management may have increased as the ratio increased, providing management with better opportunities to meet these perceived needs.

Table 33. Listing of Factor, R-Square, F-test score, and p of factors Discussed With Full-time Personnel to Bed Ratio for Entire Sample

Factor	R-Square	F-test	p
2	.17	2.62	.1295
5	.53	14.57	.0021*
8	.32	6.00	.0292*
9	.17	2.71	.1237
11	.30	5.56	.0347*
12	.33	6.35	.0256*

* significant at .05 level

A highly significant p was generated in factor 5, "breaks and lunchtime," which could be related to the flexibility gained by management as the ratio increased. Another point was that this satisfaction level may not have related to management's flexibility, but simply to the fact that workers who did not perceive themselves as being overworked were more satisfied with many aspects of worker/mangement relations. Another significant relationship appeared between the ratio and

factor 8, "performance appraisals." The relationship established earlier between supervisors and performance appraisals could also be one explanation for the strong relationship between the factor and the ratio.

Two remaining factors had significant probabilities, including factor 11, "leaves and medical benefits." Prior discussions mentioned the flexibility available when work loads were relatively low, thus giving supervisors and management more opportunities to offer vacations when workers wanted them, and maintaining a higher level of satisfaction. Another consideration was that management may have been more willing to give more vacation time in benefits packages if the benefit did not place scheduling and workload pressures on the workforce and supervisors. Administration may have been more likely to offer a benefit if that benefit were easier to manage.

Factor 15, "status and image," which appeared to demonstrate a relationship with both bed capacity and full-time personnel did not demonstrate a significant relationship with the ratio. There did not appear to be a logical explanation for this occurrence.

The final factor which established a relationship with the full-time personnel to bed ratio had not demonstrated a significant or notable relationship with either full-time personnel or bed capacity. Factor 12, "self-esteem and pay," had a significant relationship with the ratio and raised some interesting questions. Was the relatively high satisfaction with pay related to the concept of not being overworked, or were the institutions with the higher ratios able to attract a better quality employee who would be more satisfied with this range of

factors? Another interesting point of speculation was whether the relatively high satisfaction with the non-monetary benefits and relationships brought greater satisfaction with pay, or did satisfaction with pay lead to greater satisfaction with the other factors?

Relationship With Stratified Data Sets

The data set utilized in the prior analysis was from both hospitals and nursing homes, but the following analysis stratified the data according to hospital and nursing home classifications. These two different sectors of the health care industry have different types of institutions, employees, and patients, which made the differentiation and this analysis valuable endeavors.

Hospital Data

Factor 11, "leaves and medical benefits," had relatively strong relationships with both full-time personnel and bed capacity in the hospitals and table 34 listed the factors, characteristics, and appropriate values which were the basis of the following discussion. Neither of the probabilities were significant but both demonstrated a strong relationship. Factor 11 did not have a notable relationship with the ratio of full-time personnel to bed capacity when observing only the hospital data.

Factor 13, "decision making," also demonstrated a strong positive relationship to the number of full-time personnel in the hospital data. Members of a larger workforce may have perceived greater influence in the decision-making process, merely on the strength of their larger

number. Despite the strong relationship in this dimension there was not a corresponding relationship with factor 1, "worker input." Even without a more positive perception of input, the individuals in larger work forces perceived more impact on the decision-making process.

Table 34. Listing of Factor, p, Data Set, and Demographic Characteristic

Factor	p	Data set	Demographic Characteristic
11	.0960	Hospital	Full time personnel
11	.0628	Hospital	Bed capacity
13	.1441	Hospital	Full time personnel
1	.0768	Hospital	Ratio
9	.1409	Hospital	Ratio
14	.0483*	Hospital	Ratio
10	.9990	Nursing Home	Full-time personnel
1	.9912	Nursing Home	Full-time personnel

* significant at .05 level

The ratio of full-time personnel to bed capacity demonstrated strong relationships with three factors. Factor 1, "worker input," had a marginal relationship and may have related to the need and corresponding presence of input channels with larger numbers of staff. Factor 9, "participation in decision making for policy and procedure," also had a strong, but marginally significant relationship with the ratio.

The ratio did have a significant relationship with factor 14,"style of management" and may have interesting implications. One probable explanation was that workers who tended to be least overworked thought more highly of the manner in which management controlled and

operated the institution. Certainly, factors 1 and 9 had some common threads with this perceived style of management, and reinforced this speculation.

Nursing Home Data

There were no significant positive relationships between any of the characteristics and the data generated from the nursing homes in the sample. There were some relationships that did merit discussion because of their strength in having no observable relationship. Table 34 also listed these factors and relationships.

Factor 10, "general policy and procedure," had a p=.9990 which demonstrated almost no relationship at all between the number of full-time personnel in a nursing home and the satisfaction with this dimension of worker/management relations. Factor 1, "worker input," had a similar p=.9912 with its relationship to the number of full-time personnel and demonstrated this same apparent lack of relationship.

Differences in Hospitals and Nursing Homes

Additional analysis was completed after classifying the responses from the various institutions by the categories of hospital or nursing home. Several interesting relationships were found, most of which favored the state of worker/management relations in hospitals. A summary of significant relationships was listed as table 35.

Factor 1, "worker input," demonstrated a pattern of scores heavily skewed in a positive direction for hospital respondents. Stanines seven (7) to nine (9) contained 34.1 percent of the responses

for hospital workers, while nursing home respondents had 18.9 percent of their respondents in the same stanines. The expected frequency in these stanines was 23 percent, which reflected a more positive situation in hospitals.

Table 35. Listing of Factors, Chi-square, and p value for Factors with Significant Differences Between Hospitals and Nursing Homes

Factor	Chi-square	p
1	18.862	.0156*
2	37.084	.0001*
5	43.220	.0001*
7	29.687	.0002*
8	57.955	.0001*
9	61.734	.0001*
11	50.039	.0001*
12	32.676	.0001*
14	24.469	.0036*
15	31.721	.0001*

* p significant at .05 level

"Worker/supervisor relations" which were measured in factor 2 revealed a pattern similar to that in the responses for factor 1. Only 12.39 percent of nursing home respondents scored in stanines seven (7) to nine (9), while 35 percent scored in stanines one (1) to three (3). The expected frequency was 23 percent and a negative scoring pattern was established in the dimension of "worker/supervisor relations" by the nursing home respondents. Patterns similar to factors 1 and 2 were demonstrated in factor 7 "self-esteem and job satisfaction," factor 8 "performance appraisals," factor 12 "worker development and pay," and factor 15 "status and image."

Factor 5, "breaks and lunchtime," had an even more prominent negative relationship for the nursing home respondents than in previously mentioned factors. Stanines one (1) through three (3) with an expected frequency of 23 percent contained 33.13 percent of respondents. This pattern appeared even more significant when observing that only 1.3 percent of nursing home respondents scored in stanines (8) and (9), with an expected frequency of 11 percent.

Factor 11, "leaves and medical benefits," and factor 14, "style of management," demonstrated patterns which were significant, but somewhat different than the other factors in this particular analysis. Factor 11 had scores for nursing homes distributed close to the expected frequency, but hospitals were heavily skewed in the higher categories. The hospital respondents had only 10.78 percent of respondents in stanines one (1) to three (3), and 39.23 percent in stanines seven (7) to nine (9), with the expected frequency in both cases being 23 percent. Hospital workers had a greater likelihood of being satisfied with factor 11 than the respondents from the nursing homes. This finding was not surprising due to the relatively deficient and depressed pay scales and benefits packages offered by the nursing home industry (11, p.27).

Factor 14 had a pattern where hospital respondents were heavily skewed toward the middle stanines in the distribution. Hospital workers were more likely to be neither highly satisfied nor dissatisfied with the style of management when compared to nursing home workers.

Overall, the hospital workers had more positive scoring patterns than the respondents from the nursing homes. This pattern may have been the result of many factors which differed between these two portions of the health care industry, but these factors were not discussed within this study.

CHAPTER V

SUMMARY AND CONCLUSIONS

Despite the detail, intricacy, and rigor of this research effort, a lack of relevance to the practice of management would have produced an inadequate product. This potential deficiency was averted because this study fulfilled the needs for relevance and usefulness within some body of knowledge. The value of research expanded proportionally with the increased potential for practical application and the corresponding presentation of that utility. The study has utility and value by presenting implications for this research within the social and behavioral sciences and demonstrating practical applications for health care managers.

One objective of this chapter is to demonstrate how the Health Workers Attitude Inventory and analytical information from this study provide assistance to health care managers in the administration of progressive human resource and personnel programs. Another goal is to clarify the pragmatic role these findings and the Health Workers Attitude Inventory perform in improving the state of health care management. The chapter presents an investigation of these issues from several viewpoints including the implications for organizational growth, individual development, and group development.

The first section of the chapter presents a brief description of the major findings and contributions from this study. The remainder of the chapter develops the rationale for accepting the applicability of the Health Workers Attitude Inventory, the value of the results, both the general and specific limitations of the instrument, and future research considerations.

Summary of Findings

The following section contains a series of brief statements explaining the significant findings of this study. Detailed explanations of each finding were presented in the analysis section of this report.

A valid and reliable instrument was developed for measuring worker/management relations in health care institutions.

There were 15 distinct factors of worker/management relations identified in this project.

Men tended to be more satisfied than women with the dimension of "breaks and lunchtime."

Older workers were more likely to be satisfied than young workers with the factors of "worker input," "breaks and lunchtime," and "style of management."

There was no significant relationship between shift and the likelihood of satisfaction in any factor identified in this study.

Clerical workers tended to have a higher level of satisfaction with the factor of "leaves and medical benefits" than other categories of workers.

Allied health professionals tended to report relatively high job satisfaction and self-esteem, had a higher likelihood of satisfaction with "participation in decision making for policy and procedure," and also demonstrated higher scoring patterns in the factor of "leave and medical benefits."

Housekeeping personnel demonstrated a higher level of satisfaction with "worker/supervisor relations" and a higher likelihood toward dissatisfaction or lower levels of satisfaction with the "style of management."

Respondents with lower education levels (high school diploma or less) had higher likelihoods of satisfaction with the "work environment" than workers in other educational categories.

Subjects with a high school education were more likely to respond negatively about the "discrimination" in their institution. Subjects with less than high school educations were more similar to the respondents with college educations and technical degrees when reporting attitudes concerning this factor.

More experienced workers were more likely to be satisfied with their "leaves and medical benefits."

Race was a significant determinant of attitude in almost every factor. Black workers were less satisfied or more dissatisfied with every dimension of worker/management relations than white workers, and this relationship was significant in 12 of 15 factors.

There were significant positive relationships established between the characteristic of bed capacity and the factors of "participation in decision making for policy and procedure," "leave and medical benefits," and "status and image."

There were generally higher levels of satisfaction reported by workers in hospitals than by respondents from nursing homes.

There was a significant relationship established between the ratio of full-time personnel to bed capacity in the factors of "lunch-time and breaks," "performance appraisals," "leaves and medical benefits," and "decision making."

Rationale for Developing The Health Workers Attitude Inventory

The application of an attitude survey has been associated with numerous positive benefits for an organization. These benefits included increases in productivity and efficiency, an increased ability to prioritize components of organization strategy, increased individual

and organizational effectiveness, opportunities for employees to express feelings, and the facilitation of clear communication. The following section discusses each of these benefits in relation to the development of the Health Workers Attitude Inventory.

Despite the abundance of research demonstrating the benefits of attitude surveys, management professionals have voiced skepticism concerning the practical value of implementing an attitude survey and applying the information gathered through that process. This skepticism was also accompanied by a debate concerning the efforts of management to raise employees to high states of job satisfation. The foundation for this debate was that high job satisfaction actually may have contradicted management's efforts toward the productivity-orientation.

Some specific arguements relevant to this study established the uncertainty in the relationship between satisfaction and productivity. One contention was presented by Fisher (14, p.608) that happy workers were not necessarily the most productive workers. Baird presented similar findings that dissatisfaction actually increased workers' labor efforts and led to greater productivity. This increase was attributed to a psychological phenomenon which caused workers to become more productive in order to gain attention and gratification (1, p.13). These arguments established the questionable quality of the relationship between satisfaction and the performance of workers.

The relationship between job satisfaction and productivity is uncertain, but specific research in the health care industry demonstrated

that raising satisfacton levels encouraged workers to meet the organizational goal of productivity, and facilitated the delivery of competitive levels of quality (1, p.13). The evidence presented in the research demonstrated the validity of both arguments, but was weighted more heavily in favor of the utility of attitude surveys than against them.

The uncertainty in this relationship between satisfaction and performance has been recognized, but there were other problematic conditions and reactions which occurred with dissatisfaction. These behaviors included sabatoge, turnover, apathy, high absence rates, and many other forms of problems for the organization (22, p.36; and 1, p.14). Despite the uncertainty which was reported concerning the relationship of satisfaction and productivity, the literature linked dissatisfaction to many other negative behaviors and was considered an undesirable condition within the organization. Based on this information, a preponderance of satisfied workers, or those without dissatisfaction should be the desired state of satisfaction in a health care institution.

Statements throughout this report stressed the serious economic implications of labor costs in health care. These financial considerations were one reason that the behaviors associated with dissatisfaction became concerns for the organization. Turnover and absence are problem behaviors which have generated considerable costs for health care institutions, particularly in high-skilled and critical positions for patient care like nursing service (16, p.32). These costs are a portion of the costs of labor which concern decision makers in the health care industry. A high frequency of behaviors such as turnover and absence diminish

the emphasis placed on the relationship of satisfaction and productivity. Productivity and motivation became a secondary concern because measures of these attributes have limited meaning when an organization experiences high levels of absenteeism and turnover.

An examination of work units in health care institutions may raise questions concerning the relevance of productivity measures for the amount of "work" generated by an individual or work group. The rationale for this question is that certain tasks must be achieved to maintain accreditation standards and for completing the work routine in a health care institution. Perhaps differences could be quantified with the quality of "caring" for patients, but the measurement of this dimension would be a complicated procedure and was not within the scope of this study. If the definition of productivity held by management is "the ability of the organization to maintain a certain level of average daily census," then satisfaction might become a relevant concern. Turnover levels and absence rates dictate the hospital's ability to maintain levels of census, and only a limited amount of patient care can be delivered with diminished or depressed staffing patterns. This situation was not fabricated because institutions in the metropolitan area of Birmingham, Alabama, have been forced to close complete wings and floors due to the turnover of nursing personnel and the inability to refill the positions. The example from Birmingham represented one limited metropolitan area but should not have been considered an atypical or isolated situation. Regardless of one's beliefs concerning the relationship of satisfaction and productivity, satisfaction appears to

moderate the ability of the organization to maintain levels of staff and census. The ongoing monitoring of satisfaction levels can aid management in maintaining the ideal level of satisfaction and staffing for their institution, and the attitude survey provides the means for monitoring the satisfaction level within the workforce.

Efficiency was another quality reinforcing the rationale for this study. The relationship between high satisfaction and higher efficiency justified the use of attitude surveys, because attempts to maintain higher levels of census with shortages of staff might then cause the deterioration of efficiency. Human beings have "breaking points" at their physiological and psychological limits which are induced by a state of mental or physical fatigue, and the literature reported that work quality suffered when individuals reached this state of fatigue (3, p.62 and 15, p.40). Inefficiency could have been the result of fatigue, mental stress, or dissatisfaction, all conditions which could be measured in an attitude survey (3, p.61). The identification of these problems establishes an opportunity for management to take corrective action and control costs. Inefficiency becomes a concern for health care management because of the potential cost to the institution, through two quite different channels. First, the patient can suffer physical and emotional damage, and the other potential expense relates to the organization's loss of prestige, medical staff, census, and money. The identification of problems through an attitude survey can be one step toward avoiding inefficiency.

Another characteristic of the organization which had been measured and monitored with an attitude survey was effectiveness. The attribute related not only to the effectiveness of policy and procedure but also to the process of delivering the product. Prior research reported that employee feedback had value for measuring organizational effectiveness and stimulated more than the expected increases in productivity by building employee awareness of organizational goals (33, p.15). This process builds a positive movement in the organization that Kirby referred to as a "productivity-orientation" (29, p.512). Another benefit can be that employees who perceived their involvement in goal setting or who were aware of organizational goals had a greater tendency to strive toward meeting those goals which will benefit the organization (29, p.512).

Studies of organizations by Kirby revealed that every institution with an employee feedback system had higher productivity levels than those without feedback systems. The evidence was contradictory concerning whether information from the feedback system led to productivity, or whether the presence of the system itself and the perception of input led to productivity. Regardless of the causal flow, higher productivity has a positive relationship with feedback systems. Perhaps the positive changes related to the worker responding favorably to the formal channels for speaking up and having this perception of input. The system did not have to be elaborate, but the presence of even simple feedback systems appeared to have positive implications (29, p.512). Regardless of the actual source of stimulation, the

employee feedback system has been associated with increased organization functioning, and this relationship supplied additional rationale for implementing attitude surveys in the organization.

Another positive point concerning attitude surveys was that information generated in this form of communication was less likely to become distorted than messages sent through the routine communication channels of an organization. Typically, communication could become tainted or distorted as it moved through a complex communication network from the worker, to a supervisor, and finally to administration or the point of decision making. Perhaps no message would be sent at all in such a restrictive system, producing an equally undesirable situation. The self-reporting survey eliminates the middleman and minimizes the threat, while communication flows with fewer opportunities for misinterpretation or distortion of the message. Another hazard related to the communication flow which could be eliminated is the situation where the supervisor has answers before the employee developed questions (46, p.11). Evidence supported the contention that communication became more direct and less intimidating with the application of the self-reporting attitude survey.

Another advantage of collecting information in an attitude survey concerns the assistance given to management in prioritizing certain actions which were being planned or considered for the organization. The manager now had additional empirical evidence that a certain course of action will be more beneficial to the organization,

had a greater likelihood of success, or will be received in a positive or negative fashion by employees.

The attitude survey has another potential benefit by presenting workers with an opportunity to express their feelings, or as many workers reported after the test sessions for this study, to "blow off steam." Many survey participants reported a sense of relief after completing the questionnaire, and similar phenomena have been reported from other testing situations. Overall, the evidence supported the positive role of attitude surveys and feedback systems as tools which encouraged positive relations between workers and management. The positive relationship led to benefits for both the individual and the organization.

Application and Benefits of Survey Results

The process of survey development attains greater meaning after the instrument has been tested and yielded results. The information supplied from the administration of the Health Workers Attitude Inventory has numerous applications within an organization. The literature cited diversified applications and benefits of attitude surveys which should have demonstrated the practical value of such a device, and the Health Workers Attitude Inventory illustrated some of these positive attributes. A primary application can be as a tool for assessing the training needs for individuals and supervisors; other applications include the use of a survey for ongoing evaluation of the organizational climate and for assessing the management style. Benefits

include the stimulation of participative management, the synthesis of workers into the planning process, and the development of an opportunity to match management style with the needs of a group or organization. Another point is that these benefits have a comprehensive effect on a health care institution due to the labor-intensive nature of the industry. Benefits for labor stimulate the development of accompanying benefits which can prevail throughout the organization. These benefits and applications are discussed in depth within this section of the chapter. Since the rationale for instituting attitude surveys and applying their results has now been established for health care institutions, the next step is the identification of particular applications for attitude survey results in general, and the Health Workers Attitude Inventory in particular.

One general application of an attitude survey has been as a tool to identify problems or deficiencies which translated into training needs. These needs can be identified for individual workers, supervisors, or the organization. Workers are presented with opportunities to identify their own needs on-the-job through the attitude survey. Workers can define weaknesses in supervisors and the organization from the employee's perspective. These applications of the attitude survey are positive steps for maintaining sound worker/management relations and efficient methods for identifying problems (36, p.43).

The emphasis on training needs relates to the time-consuming and expensive nature of training (15, p.516). If an organization plans

to implement training programs, then certainly a more cost-effective strategy would be to train individuals in subjects or skills where there is a known deficiency or weakness, or in a subject matter where the potential trainees showed some interest. The organization also benefits when known weaknesses or deficiencies are targeted for correction, and when the training recipients hold a positive perception of the training session. This type of response also builds the perception in workers that management empathizes with their concerns and needs, which by itself improves morale and the attitude of the work force concerning management.

Another particular application of attitude survey results involves monitoring the fluctuation or consistency of the organizational climate. Results of a survey may illustrate an unsatisfactory gap between management and labor in philosophy, goals, and objectives. Management can also monitor any fluctuations in attitude which are of interest for decision making. The gap in philosophy may be reduced by several means, but the key is in the ongoing assessment of attitudes in the movement toward a satisfactory state of worker/management relations.

An unsatisfactory level of worker/supervisor relations may also illuminate deficiencies in the selection and training systems for supervisory personnel. Information from the survey can supply added direction to management in developing their programs for supervisory selection, training, and development. Regardless of the problem's etiology, the attitude survey supplies feedback from the workforce concerning the perception of those selection criteria. The attitude

survey provides additional information to management in its effort to assess their selection criteria, training programs, and related policy (33, p.42).

Another factor within the organization which is exposed through an attitude survey is the style of management. The attitude survey increased management's awareness of the employees' perceptions of style in delivering general policy and procedure. This awareness can provide an early warning system of impending problems concerning the interpretation of policy and procedure (33, p.6). One vital point is that management can now measure the effectiveness of their own style, policy, and procedure from the worker's perspective. This data should not become an exclusive measuring device but can present valuable insight from a divergent point of view (33, p.77).

The attitude survey and assessment process has also encouraged management to become committed to a new style of participatory management by involving employees in the identification of problems (33, p.77). Subsequently, the likelihood increases that employees may become involved in the analysis and solution of problems once they are involved in the diagnosis. Management could build greater respect from the workers through their willingness to accept feedback (33, p.79). An additional step in participatory management involves employee participation in planning, which Hoh considered a positive application of attitude survey results (24, p.30). The attitude survey could yield positive benefits for the organization by allowing and encouraging workers to become involved in all aspects of planning.

The effects on management style produced through the influence of an attitude survey may be less comprehensive and more direct than described to this point. Pryor and Monday thought that attitude could and should effect the manner in which groups were managed (37, p.18). Certain individuals or groups could state their satisfaction or dissatisfaction with the particular style of management through the feedback mechanism. Subsequently, the supervisor or manager could adopt a style which was more complimentary to group needs, with the intent of developing a more positive reception and response by the group. The ultimate development from this experience would produce a more satisfactory group relationship and climate.

Particular applications of the Health Workers Attitude Inventory were inherent in the potential ability provided to management for evaluating specific components of worker/management relations. The operational definitions of this broad concept were the 15 separate scales developed for each distinct dimension. The manager now had specific information in 15 well-defined dimensions which could stimulate numerous benefits for personnel programs and human resource management. The benefits also reached beyond personnel management, because human resources are only one limited concern within the management system. Despite the complexity of the management system, the potential benefits have additional significance due to the labor-intensive nature of the industry.

Value of Data Analysis

The key to the analysis and study of relationships associated with various demographic characteristics and institutional traits was grounded in the principles of epidemiology. The epidemiologist attempts to establish tendencies or patterns of certain illnesses related to physiological characteristics or lifestyle. For instance, consider a situation where research determined that cigarette smokers were more likely to develop a bronchogenic carcinoma than non-smokers. This trend was established through analyzing the existence of this particular cancer with the "trait" or characteristic of smoking within the population. Another example would be that people employed in the asbestos industry were more likely to develop emphysema than workers in most other industries. The existence of disease occurrence in this industry was compared to other industries and the relationship was established. These two examples demonstrate the applicability of analyzing trends which are related to specific traits. The analysis of data in this project presented findings similar in construction to the epidemiological study.

The analysis of characteristics in the institution and the existence of certain problems in worker/management relations are similar to the epidemiological study. Specified types or classifications of institutions within the sample were more likely to report particular attitudes related to particular conditions. For instance, based on results from this study the administrator in a health care institution

with a relatively small bed capacity realizes there is a greater likelihood of problems in worker/supervisor relations in his particular institution than in a larger institution. The manager could then comtemplate or implement revisions and adjustments in policy and procedure, training plans, or in management style which strengthens the conditions related to this dimension and minimize the probability of problems. The manager is enlightened concerning organizational vulnerability based on trends which had been established. This knowledge places the manager in a position of anticipating problems and enhancing the opportunities for avoiding serious consequences for himself or the organization.

General Limitations

There must be warnings and limitations attached to any research, but particularly to a study where a tool has been developed for practical application. The following section reports some of the limitations with attitude surveys in general and some specific limitations of the Health Workers Attitude Inventory.

One limitation mentioned by Verheyen was that attitude surveys and feedback systems were ineffective without forethought concerning their application (46, p.40). If the system does not deal effectively with the information, then the process and feedback become a useless and expensive waste of effort. Meyer thought that the application of the attitude survey without thorough study of its role in the system was the greatest failure of management when applying and interpreting

the device (33, p.74). One reason this situation occurs is that many organizations conduct surveys or implemented other new programs under the guise of being "progressive," but the actual reason for instituting the tool or the new program was related to the fact that "everyone else was doing it." This situation and impetus for action is often damaging to the organization, and demonstrates a backward approach. The negative result emphasized the need to plan and develop the feedback system, and to conceptualize the application of the feedback system prior to actual implementation.

Another problem with attitude surveys is that they usually indicate a greater degree of discontent than anticipated by management. This suprising result has often encouraged management to halt further application of the tool (33, p.74). Franklin mentioned that a rather frequent assumption on the part of management had been that feedback would automatically yield positive results (17, p.13). Management conducted a survey expecting to hear good things about themselves and the organization. When discontent was reported the manager protected his security by ignoring the information or developing excuses to rationalize the undesirable results. This series of events was likely to leave the institution in a position of having identified problems, but not taking the final steps of corrective action (33, p.74). Awareness of problems is valuable, but corrective action facilitates problem resolution. This limited use of a survey does not take advantage of its entire range of capabilities. This problem with undesirable results is controlled through the standard

scoring utilized in the Health Workers Attitude Inventory, because at least half of all individuals and institutions had scores ranging from average to high. Even if discontent had been reported to an unsatisfactory degree, management might receive the comfort of knowing that the attitudes reported in their institution were the norm, or better than expected. The results may be accepted more readily if some positive feedback accompanied the less pleasing information.

There are other problems with survey feedback but the most potentially serious misconception may be that the survey itself resolves problems. The survey might produce benefits directly from its implementation, but by definition it is a diagnostic tool. A diagnosis is not a treatment for illness in the human body and certainly should not be considered a treatment for the ills of a social system. This misconception has been accompanied by an additional complication that problems are often difficult to resolve, primarily due to the lack of skill possessed by management (4, p.301).

Another potential difficulty is that survey results and analysis may be viewed from too narrow a perspective. Analysis must be thorough and broad-based, including perceptions of the past, present, and future (4, p.301). Raw data and its accompanying analysis were shown to be limited in value without background and history being taken into account (18, p.14).

Specific Limitations

Despite a rigid methodology and the use of statistically significant guidelines, the Health Workers Attitude Inventory and this study exhibited some specific limitations. The following section presents the specific limitations which became evident in the methodology and analysis of this study. Other limitations existed in the actual instrument which were discussed in greater detail within the methodology section of this report.

A specific limitation of the Health Workers Attitude Inventory is that the sample had been drawn from institutions in a limited geographical region. The conclusions drawn may only apply to one geographical region, but this limitation may not be relevant because a great deal of the analysis seemed to reinforce other studies completed in different geographical regions. These results would tend to demonstrate that the study could have been applied to workers and health care facilities in other parts of the United States. The expert opinion which was called upon in the early stages of the study also had the same geographical limitation.

Another limitation involved the lack of any unionized facilities in the study. This limitation restricts the application of these results when discussing unionized work situations. There must be some hesitation before transferring the findings from this sample to a unionized situation without further standardization.

One final note is that the happy or satisfied employee may not necessarily be the most productive employee or the "best" employee. Happiness at any cost is not good for organizational health and development. The goals and the objectives of the institution, the future, the past, and the present must be considered. Additional consideration must be given to the purpose of the survey itself when interpreting, analyzing, and applying the results.

Future Development and Research

There were many potential benefits of implementing the Health Workers Attitude Inventory, but this current research effort raised several questions concerning future developments of attitude surveys, future research concerning this device, and the development of similar measurement tools based on the Health Workers Attitude Inventory. The following section presents some of those possibilities for improving the state of human resources management.

One possible development is the continual expansion of information banks containing attitudinal responses of health care workers. These banks would allow the ongoing restandardization of the device and provide opportunities for further refinement. The elaboration could be in the form of standardized tests for various geographical regions of the country, different classes or sizes of institutions, diverse job classifications, and numerous other demographic categorizations. This expansion could produce quite sophisticated and detailed information for managerial decision making.

Another dimension for expansion would be in comparing the perceptions of union and non-union workers. This particular project was deficient in its representation of unionized workers, but a new scale could be developed if significant differences manifested themselves in testing results for unionized workers. Results of this comparison might contain valuable information for assessing the needs of management and workers in these diversified organizational structures.

The results of this study can also become a focal point for developing similar devices which measure the attitudes of administration, supervisors, and patients. Any combination of these devices could be examined to determine what levels of harmony and discord in attitudes would be best for organizational growth or development. These devices and their results might also be appropriate for productivity studies, by determining which state of harmony or discord provides the greatest levels of productivity, when productivity is an applicable measure. Management could then attempt to lead the organization to that most productive level.

The opportunities are unlimited for this type of device, because modifications appear rather simple to implement. The limits of this tool, or any other, exist only in the minds of those who fail to implement the appropriate applications.

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APPENDICES

Appendix A. Listing of Partial Definitions of Hemphill's Group Dimensions

Autonomy- The degree to which a group functions independently of other group functions.

Control- The degree to which a group regulates the behavior of individuals while they are functioning as group members.

Flexibility- The degree to which a group's activities are marked by informal procedures rather than by adherence to established procedures.

Hedonic Tone- The degree to which group membership is accompanied by a general feeling of pleasantness or agreeableness.

Homogeneity- The degree to which members of a group are similar with respect to socially relevant characteristics.

Intimacy- The degree to which members of a group are mutually acquainted with one another and are familiar with the most personal details of one another's lives.

Participation- The degree to which members of a group apply time and effort to group activities.

Permeability- The degree to which a group permits ready access to membership.

Polarization- The degree to which a group is oriented and works toward a single goal which is clear and specific to all members.

Potency- The degree to which a group has primary significance for its members.

Stability- The degree to which a group persists over a period of time with essentially the same characteristics.

Stratification- The degree to which a group orders its members into status hierarchies.

Viscidity- The degree to which members of the group function as a unit.

Appendix B. List of Participating Hospitals and Location

Childrens' Hospital
619 S. 19th St.
Birmingham, AL 35233

BMC-Princeton
701 Princeton Ave.
Birmingham, AL 35211

BMC-Montclair
800 Montclair Rd.
Birmingham, AL 35213

Brookwood Hospital (AMI)
2010 Brookwood Medical Center Drive
Birmingham, AL 35209

Lakeshore Hospital
3800 Ridgeway Dr.
Birmingham, AL 35209

Cooper Green Hospital
1515 Sixth Ave. S.
Birmingham, AL 35233

Hill Haven Nursing Home
2728 10th Ave. South
Birmingham, AL 35205

Estes Health Care Centers
209 Oxmoor Circle
Homewood, AL 35209

University Hospital
1601 Sixth Ave. South
Birmingham, AL 35233

East End Memorial Hospital
7916 Second Ave S.
Birmingham, AL 35206

Appendix C. Sample Questionnaire From Health Workers Attitude Inventory

Appendix C. (continued)

Instructions

The following survey is your chance to tell administration how you feel about certain situations in this hospital. I am an outside consultant and will be the only person to see each answer sheet. Identify the issues you feel are positive and negative in the hospital so administration can do what is best for the workers.

There is no way you can be identified from this survey, so please give honest responses. The best way to answer the statements is to read each one, and give the first answer that comes to mind about your feelings.

Each statement has five possible answers which are always the same.
1 -Strongly Disagree
2 -Disagree
3 -Not Sure
4 -Agree
5 -Strongly Agree

Circle the best answer for each statement, or which is true in most cases. For example, take the statement "Supervisors and workers in this hospital speak honestly to one another." If you feel the best answer is "Disagree," circle the 2 under "Disagree" as in the example below.

Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	(2)	3	4	5

If you feel the best answer is "Agree," circle the 4 under "Agree" as in the following example.

Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	2	3	(4)	5

Only give one answer to each statement. Remember, your first answer is the best answer. If you have any questions please come see the tester. Do not ask any other person about any statement, or compare answers during the survey.

Appendix C. (continued)

Page 1

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
My supervisor handles problems by-the-book.	1	2	3	4	5
My supervisor handles problems poorly.	1	2	3	4	5
The grievance procedure in this hospital is unfair.	1	2	3	4	5
My supervisor makes me feel comfortable on-the-job.	1	2	3	4	5
Supervisors are unfair with workers in this hospital.	1	2	3	4	5
My supervisor helps workers.	1	2	3	4	5
My supervisor listens to me.	1	2	3	4	5
My supervisor talks down to me.	1	2	3	4	5
My supervisor understands my job.	1	2	3	4	5
My supervisor is a good leader.	1	2	3	4	5
Workers and supervisors in this hospital respect each other.	1	2	3	4	5
My supervisor dislikes me.	1	2	3	4	5
My supervisor ignores me.	1	2	3	4	5
My supervisor understands me.	1	2	3	4	5
My supervisor is unfair.	1	2	3	4	5
My supervisor and I can discuss things like two adults.	1	2	3	4	5
My supervisor likes his/her job.	1	2	3	4	5
You can speak your mind in this hospital and supervisors will listen.	1	2	3	4	5
Workers are scared to speak up about problems in this hospital.	1	2	3	4	5
Decisions are made about workers after workers have a chance to speak up.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Decisions are made about the hospital after workers have a chance to speak up.	1	2	3	4	5
My supervisor ignores my problems on-the-job.	1	2	3	4	5
I feel that this hospital pays as well as other hospitals.	1	2	3	4	5
This hospital gives less benefits than other hospitals.	1	2	3	4	5
There is little status for working at this hospital.	1	2	3	4	5
This hospital is the best in the area.	1	2	3	4	5
Decisions are made about pay after seeing what other hospitals pay.	1	2	3	4	5
I would work at another hospital for less money.	1	2	3	4	5
My supervisor wants my opinion about my job.	1	2	3	4	5
Administration wants my opinion about my job.	1	2	3	4	5
Administration ignores what I think is important.	1	2	3	4	5
I get a chance to suggest changes in my job.	1	2	3	4	5
I get a chance to suggest changes in my job description.	1	2	3	4	5
There are enough ways for me to speak up to management.	1	2	3	4	5
There are many informal ways for me to speak up to management.	1	2	3	4	5
I am active in running my work area.	1	2	3	4	5
I am active in running this hospital.	1	2	3	4	5

Appendix C. (continued)

Page 3

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Administration ignores the "real" leaders among the workers.	1	2	3	4	5
I will hurt my position in this hosptial by speaking up.	1	2	3	4	5
This hospital is a safe place to work.	1	2	3	4	5
This hospital is dirty.	1	2	3	4	5
This hospital provides enough space for "employees only."	1	2	3	4	5
This hospital is warm during the winter.	1	2	3	4	5
This hospital is too hot during the summer.	1	2	3	4	5
The lighting is good enough for me to do my job.	1	2	3	4	5
My personal belongings are unsafe at work.	1	2	3	4	5
My supervisor cares about my comfort on-the-job.	1	2	3	4	5
My supervisor understands my work conditions.	1	2	3	4	5
This hospital has a clean place for workers to eat.	1	2	3	4	5
I am overworked.	1	2	3	4	5
The equipment workers use is not kept-up.	1	2	3	4	5
I have the equipment I need to do my job.	1	2	3	4	5
My work area is dangerous.	1	2	3	4	5
This hospital is a safe place to work.	1	2	3	4	5
This hospital takes good care of workers who get hurt.	1	2	3	4	5
My supervisor knows the safety rules.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Administration ignores my safety.	1	2	3	4	5
We have poor security for personal property at this hospital.	1	2	3	4	5
My supervisor does not understand how I can get hurt on my job.	1	2	3	4	5
There are good inspections of equipment and work areas in this hospital.	1	2	3	4	5
Wage plans are picked that benefit the hospital more than the workers.	1	2	3	4	5
Supervisors in this hospital care about workers.	1	2	3	4	5
The administration of this hospital cares about workers.	1	2	3	4	5
The administration of this hospital cares about patients.	1	2	3	4	5
Unqualified workers become supervisors.	1	2	3	4	5
Changes are considered if workers feel they are important.	1	2	3	4	5
Workers at this hospital feel trusted.	1	2	3	4	5
This hospital is run poorly.	1	2	3	4	5
Workers are the lowest priority at this hospital.	1	2	3	4	5
The way workers are hired for this hospital is unfair.	1	2	3	4	5
The way workers are fired in this hospital is fair.	1	2	3	4	5
The way overtime is given in this hospital is unfair.	1	2	3	4	5
Schedules are set fairly in this hospital.	1	2	3	4	5
The way shifts are determined is unfair.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
My lunchtime is long enough.	1	2	3	4	5
Workers understand hospital policy.	1	2	3	4	5
Supervisors understand hospital policy.	1	2	3	4	5
New policies and policy changes are explained well.	1	2	3	4	5
Supervisors "practice what they preach" in policy.	1	2	3	4	5
My breaks are long enough.	1	2	3	4	5
I get enough breaks.	1	2	3	4	5
My pay is fair.	1	2	3	4	5
My benefits are unfair.	1	2	3	4	5
My amount of vacation time is fair.	1	2	3	4	5
My amount of sick leave is fair.	1	2	3	4	5
The procedures to get vacation and sick time are unfair.	1	2	3	4	5
My Medical Insurance benefits are fair.	1	2	3	4	5
Workers in this hospital get raises when they deserve them.	1	2	3	4	5
Management asks workers what types of benefits they want.	1	2	3	4	5
It is hard to use sick time in this hospital.	1	2	3	4	5
It is easy to understand the sick leave policy of this hospital.	1	2	3	4	5
Workers in this hospital know what benefits they have.	1	2	3	4	5
This hospital good maternity leave benefits.	1	2	3	4	5
I have a chance to advance in this hospital.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I have a chance to go to training and school on the hospital's time.	1	2	3	4	5
My supervisor wants me to learn more about my job.	1	2	3	4	5
My job make me feel bad about myself.	1	2	3	4	5
I feel good about my job.	1	2	3	4	5
I have a chance to learn things about other jobs in this hospital.	1	2	3	4	5
I feel bad about my future at this hospital.	1	2	3	4	5
The administration of this hospital is fair to employees.	1	2	3	4	5
The administration of this hospital is consistent in the way they treat employees.	1	2	3	4	5
Changes are explained to workers.	1	2	3	4	5
Meetings of employees are held during work hours.	1	2	3	4	5
Employees are pushed around in this hospital.	1	2	3	4	5
My performance appraisals are fair.	1	2	3	4	5
My performance appraisals are done on a regular basis.	1	2	3	4	5
Performance appraisals give me a chance to speak up.	1	2	3	4	5
Performance appraisals are related to my pay.	1	2	3	4	5
Performance appraisals mean nothing.	1	2	3	4	5
Performance appraisals help everyone do their jobs better.	1	2	3	4	5
Performance appraisals are based on job descriptions.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I am satisfied with my performance appraisals.	1	2	3	4	5
Employee discipline in this hospital is fair.	1	2	3	4	5
Employee discipline in this hospital is inconsistent.	1	2	3	4	5
Employee discipline procedures in this hospital hurt people.	1	2	3	4	5
The worker's side of problems is heard at this hospital.	1	2	3	4	5
Most things are unfair at this hospital.	1	2	3	4	5
The grievance procedure is fair to employees.	1	2	3	4	5
Problems are settled before going to the grievance procedure.	1	2	3	4	5
The grievance procedure is set-up to help management.	1	2	3	4	5
I am secure in my job.	1	2	3	4	5
The grievance procedure is hard to understand.	1	2	3	4	5
The grievance procedure is hard for workers to use.	1	2	3	4	5
My job description is accurate.	1	2	3	4	5
My job description is different from what I do.	1	2	3	4	5
My supervisor knows what is in my job description.	1	2	3	4	5
I have input into changing my job description.	1	2	3	4	5
My job description confuses me.	1	2	3	4	5
I have a copy of my job description.	1	2	3	4	5
All workers in this hospital are treated equally.	1	2	3	4	5

Appendix C. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
There is sex discrimination in this hospital.	1	2	3	4	5
There is racial discrimination in this hospital.	1	2	3	4	5
Black workers and white workers with the same qualifications have the same chance of getting promoted.	1	2	3	4	5
Female workers and male workers with the same qualifications have the same chance of getting promoted.	1	2	3	4	5
If two people are up for a promotion, one black and one white, the best qualified person would get the job.	1	2	3	4	5
If two people are up for a promotion, one male and one female, the best qualified person would get the job.	1	2	3	4	5
I like my job.	1	2	3	4	5
I am satisfied with my job.	1	2	3	4	5
This hospital is a good place to work.	1	2	3	4	5
If another hospital offered me a job at the same pay, I would not take it.	1	2	3	4	5
This hospital is a bad place to work.	1	2	3	4	5
If a patient complains about a worker, administration will stick-up for the worker.	1	2	3	4	5
Patients treat workers bad at this hospital.	1	2	3	4	5
I have a chance to learn new things about my job.	1	2	3	4	5

Appendix D.
Results of Unrotated Matrix Analysis

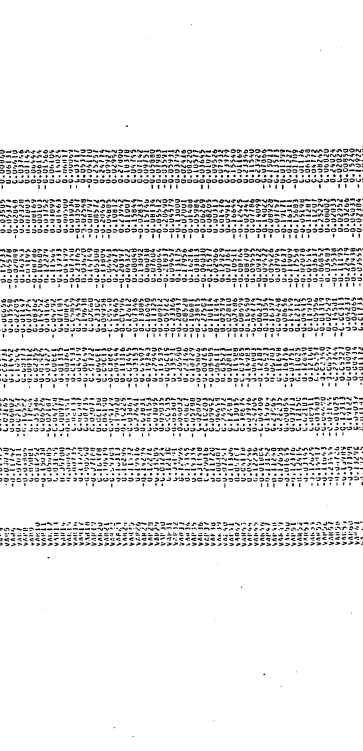
Appendix D. (continued)

Appendix D. (continued)

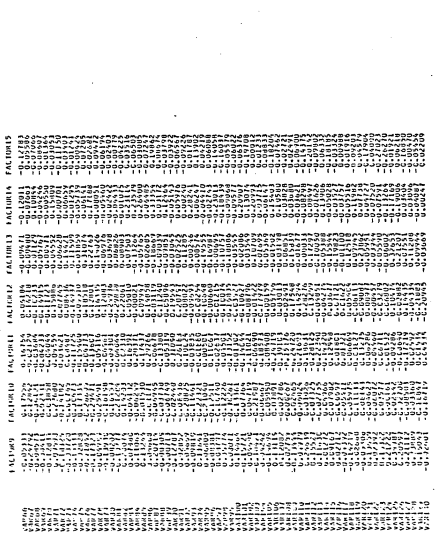
FACTOR PATTERN

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6	FACTOR7	FACTOR8
VAR66	0.40611	0.21475	-0.06056	-0.18168	-0.14882	0.11031	0.02091	0.04375
VAR67	0.61278	0.12199	-0.07712	-0.00922	-0.04348	-0.00752	-0.02801	0.12733
VAR68	0.62930	0.07762	0.04264	-0.16407	0.22366	0.18462	-0.15456	0.06542
VAR69	0.52132	0.08132	0.14446	-0.22622	0.09858	0.01343	-0.01377	0.04923
VAR70	0.59492	0.07755	0.22063	-0.03672	0.16401	-0.03126	0.00085	0.09566
VAR71	0.05261	0.07925	-0.07469	-0.06208	0.07213	-0.14060	-0.03652	0.13312
VAR72	0.49628	0.01714	0.20648	-0.00666	-0.15130	0.01630	-0.02998	0.05229
VAR73	0.43719	0.05677	0.02358	-0.00420	-0.03695	0.02456	-0.07309	-0.02780
VAR74	0.41315	-0.07045	0.29615	0.01530	-0.00080	0.05022	0.07799	0.07430
VAR75	0.27510	0.16423	0.15519	0.22718	-0.14534	-0.07799	0.20897	-0.30420
VAR76	0.24526	0.36137	-0.13026	0.18362	0.26104	0.07674	0.00087	-0.25051
VAR77	0.44767	0.14503	-0.08569	0.13770	0.27117	-0.01464	0.01231	-0.27704
VAR78	0.52302	0.23276	-0.19892	0.07585	0.10431	0.10572	0.17287	-0.25043
VAR79	0.62031	0.02457	-0.21221	-0.02669	0.10968	-0.03448	0.11835	-0.23541
VAR80	0.34409	0.15513	0.21151	0.29614	-0.28455	-0.06601	0.03419	-0.33487
VAR81	0.36163	0.16022	0.20270	0.23065	-0.27089	-0.04319	0.03608	-0.28740
VAR82	0.35675	0.15972	0.08565	0.16598	-0.22455	-0.18092	-0.09195	-0.26530
VAR83	0.33043	0.00686	0.21576	-0.10098	-0.06924	0.12764	-0.13335	0.22723
VAR84	0.35123	0.14962	0.11541	0.18459	-0.21968	-0.13416	0.22682	-0.17962
VAR85	0.28142	0.01841	0.20433	0.17617	-0.17093	-0.15398	0.27303	-0.21810
VAR86	0.31637	-0.04332	0.22703	-0.15743	-0.10382	0.13891	-0.02187	0.17980
VAR87	0.34155	0.06679	0.12299	0.17111	-0.21746	0.04484	-0.01119	-0.18415
VAR88	0.33246	0.17849	-0.13425	-0.15019	-0.24757	-0.07169	-0.08532	-0.05579
VAR89	0.42236	0.18082	-0.21624	-0.14820	-0.24211	0.06330	-0.10099	-0.11840
VAR90	0.25342	-0.00136	0.24602	-0.01021	-0.10205	-0.02202	0.16017	0.21781
VAR91	0.31039	0.13469	0.05569	0.05346	-0.21246	-0.01007	0.16083	-0.13753
VAR92	0.30711	0.32147	-0.01220	0.17606	0.00101	0.19267	0.29271	-0.05461
VAR93	0.49060	0.16264	0.05645	0.14936	-0.24146	0.02757	-0.01319	-0.01311
VAR94	0.52573	0.22301	-0.05660	-0.12493	-0.24480	-0.00554	-0.03732	0.02325
VAR95	0.49538	0.15324	-0.00171	0.04671	-0.25732	-0.00963	-0.07070	0.05617
VAR96	0.54775	-0.14094	-0.25830	0.16601	-0.00675	-0.03623	0.05614	0.07481
VAR97	0.42379	-0.08031	0.30320	0.27559	0.06204	-0.04614	-0.27070	0.15655
VAR98	0.53050	0.02538	0.00859	0.30366	-0.00220	-0.04886	-0.28006	0.14255
VAR99	0.41270	0.05781	-0.25812	0.11973	-0.15101	0.06969	-0.03157	0.06150
VAR100	0.34590	0.08270	0.21433	-0.08577	-0.02495	-0.09491	-0.21574	-0.02141
VAR101	0.50283	0.24014	-0.12758	-0.12627	0.00123	-0.05459	-0.10748	-0.00173
VAR102	0.45785	0.26373	-0.24560	-0.15411	0.22251	0.00739	-0.03789	0.06077
VAR103	0.35022	0.14409	-0.15869	-0.00450	0.05500	0.18182	0.22071	-0.04593
VAR104	0.25907	0.10225	-0.07763	0.07976	0.02459	0.13816	0.17014	0.19110
VAR105	0.63188	-0.01211	0.20654	-0.15425	0.10017	-0.09203	-0.02558	-0.05467
VAR106	0.40159	-0.11183	0.01281	-0.00807	-0.18032	0.07430	0.20926	0.21412
VAR107	0.42509	-0.10150	-0.03057	0.01089	-0.25374	0.06216	0.19517	0.25427
VAR108	0.61353	-0.03645	-0.02679	-0.12406	-0.31928	0.08036	0.11642	0.16153
VAR109	0.39965	0.08128	0.02834	-0.11869	-0.33579	0.07251	0.01087	0.15046
VAR110	0.44163	-0.04848	0.23209	-0.10217	-0.04514	-0.09859	-0.16574	0.06678
VAR111	0.41191	-0.10337	-0.15448	0.08331	-0.04660	0.05095	-0.06730	0.05527
VAR112	0.25361	-0.05340	-0.10839	0.00531	-0.10605	0.08249	-0.02991	0.20278
VAR113	0.47984	-0.08349	-0.03036	0.04552	-0.25412	-0.09049	0.23445	0.09359
VAR114	0.47306	0.03883	-0.14086	-0.07220	0.07007	-0.03840	0.08616	0.02163
VAR115	0.25518	0.16977	0.14460	-0.26350	0.28597	0.01554	0.07670	-0.03366
VAR116	0.49754	0.16403	0.20682	-0.20799	0.07101	-0.12293	-0.09136	-0.09336
VAR117	0.55385	0.15445	-0.19155	-0.20863	-0.01368	0.12454	0.02453	0.14272
VAR118	0.62176	-0.05620	0.17740	-0.05511	-0.01404	-0.13418	-0.21251	0.12520
VAR119	0.57010	0.13072	-0.06951	-0.11305	-0.12714	-0.12602	0.07073	0.06666
VAR120	0.37760	0.37615	-0.13563	0.03784	-0.14945	-0.04276	0.01286	0.01443
VAR121	-0.43719	0.09693	0.31550	-0.14442	0.09496	-0.04296	0.23120	-0.11497
VAR122	0.41004	0.02140	-0.00150	0.06617	-0.17936	-0.05017	-0.10762	0.06549
VAR123	0.31131	0.05129	0.15472	-0.18465	-0.02936	-0.10685	0.27543	-0.01181
VAR124	0.40772	0.07941	0.27448	-0.26653	-0.01827	-0.09901	0.22401	-0.02171
VAR125	0.13546	0.06732	-0.09465	0.09947	0.07309	0.12922	0.07756	-0.18060
VAR126	0.47195	-0.03677	0.28119	0.02106	0.06451	0.04575	0.03334	-0.18774
VAR127	0.36511	-0.25605	-0.17684	0.29856	0.05706	0.13790	0.10099	0.02953
VAR128	0.27683	-0.01159	-0.31220	-0.19643	-0.07861	0.08126	-0.30367	0.19478
VAR129	0.45812	-0.11033	0.27334	0.10567	0.04349	0.05365	0.08544	-0.04555
VAR130	0.25528	0.08418	-0.06555	0.01159	-0.08084	0.13249	0.11748	0.06248

Appendix D. (continued)



Appendix D. (continued)



Appendix D. (continued)

FACTOR PATTERN

	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6	FACTOR7	FACTOR8
VAR131	0.52636	0.21511	-0.18620	-0.06342	-0.00292	-0.06234	-0.01155	-0.01996
VAR132	0.31671	0.04653	0.16643	0.18400	0.27155	-0.28280	0.17627	0.06623
VAR133	0.59113	0.13625	0.11368	0.07451	0.16427	-0.47634	0.05722	0.12019
VAR134	0.55077	0.19695	-0.02052	0.13000	-0.03583	-0.46013	0.10776	0.21530
VAR135	0.51536	0.07780	-0.01713	0.14331	0.11119	-0.46553	0.19408	0.20129
VAR136	0.57790	0.13439	-0.04469	0.15214	0.03984	-0.45073	0.11100	0.22458
VAR137	0.59777	0.05773	-0.06523	0.17226	0.24330	-0.39165	0.14475	0.17966
VAR138	0.61615	0.01062	0.00340	0.49470	0.17087	-0.07198	-0.31245	0.02160
VAR139	0.53649	0.08066	0.00830	0.33731	0.00483	-0.05801	-0.23935	-0.03921
VAR140	0.64093	0.06236	-0.01155	0.27910	0.04661	-0.04739	-0.35130	0.07912
VAR141	0.31542	-0.01021	-0.11370	0.08646	0.15120	-0.11836	-0.18407	0.03506
VAR142	0.54197	-0.00215	0.20662	0.14440	0.15719	0.04991	-0.31422	0.06054
VAR143	0.33544	0.16983	-0.19371	-0.14733	-0.07642	-0.14426	0.08011	0.09869
VAR144	0.38754	0.05256	0.19204	-0.05174	-0.04003	-0.03497	0.06954	0.02630
VAR145	0.59715	-0.05521	-0.12619	0.23951	-0.04354	0.09020	-0.08907	0.12010

Appendix D. (continued)

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INITIAL FACTOR METHOD: PRINCIPAL AXIS

                                        FACTOR PATTERN

                 FACTOR9   FACTOR10  FACTOR11  FACTOR12  FACTOR13  FACTOR14  FACTOR15

      VAR131     -0.00261   0.07085  -0.10024   0.02502  -0.09142  -0.08043   0.02495
      VAR132      0.07134  -0.15758   0.00845   0.10872  -0.08816  -0.02150   0.12281
      VAR133     -0.05467   0.75173   0.64359   0.07187  -0.08422  -0.03560   0.03840
      VAR134     -0.09652   0.04507   0.04236   0.00130  -0.05325  -0.10814   0.14004
      VAR135     -0.00850  -0.01995  -0.01345   0.00330   0.03714  -0.05779   0.19078
      VAR136     -0.03313   0.05120   0.04545   0.02540  -0.02143  -0.02292   0.14848
      VAR137      0.00351  -0.05273  -0.07657  -0.03161   0.00996  -0.02963   0.17609
      VAR138      0.21325   0.03278  -0.01333   0.01352  -0.12404  -0.09602  -0.10662
      VAR139      0.18400  -0.03961   0.03663   0.02986  -0.19600  -0.16943  -0.04990
      VAR140      0.16276   0.17078   0.00440   0.00718   0.09543   0.06219  -0.02634
      VAR141      0.21151  -0.00736   0.00150   0.06849   0.15377  -0.03077   0.12838
      VAR142      0.05232  -0.03543  -0.04091   0.11443   0.10875   0.04787  -0.04220
      VAR143     -0.13200   0.15790  -0.16062  -0.14809   0.11068  -0.05977   0.18966
      VAR144     -0.29524  -0.03926   0.01712   0.05060   0.16734  -0.07962  -0.05097
      VAR145     -0.03621  -0.33437  -0.02190  -0.21635  -0.08964  -0.02420   0.04184

                                VARIANCE EXPLAINED BY EACH FACTOR

           FACTOR1   FACTOR2   FACTOR3   FACTOR4   FACTOR5   FACTOR6   FACTOR7   FACTOR8
          10.046623  4.963324  4.063843  3.481805  3.177773  2.849202  2.500133  2.358383

           FACTOR9   FACTOR10  FACTOR11  FACTOR12  FACTOR13  FACTOR14  FACTOR15
          2.299737  2.105161  2.016429  1.944058  1.871113  1.840252  1.718204

                                  FINAL COMMUNALITY ESTIMATES

     VAR1      VAR2      VAR3      VAR4      VAR5      VAR6      VAR7      VAR8      VAR9     VAR10     VAR11     VAR12     VAR13
 0.367488  0.478139  0.367122  0.525059  0.388660  0.512162  0.508656  0.432650  0.555867  0.629964  0.452298  0.553024  0.592320

    VAR14     VAR15     VAR16     VAR17     VAR18     VAR19     VAR20     VAR21     VAR22     VAR23     VAR24     VAR25     VAR26
 0.577573  0.546141  0.527147  0.372139  0.487484  0.299823  0.417944  0.493217  0.520828  0.419312  0.433972  0.472040  0.422307

    VAR27     VAR28     VAR29     VAR30     VAR31     VAR32     VAR33     VAR34     VAR35     VAR36     VAR37     VAR38     VAR39
 0.219366  0.486321  0.641262  0.497540  0.330583  0.595268  0.605828  0.591228  0.461562  0.316997  0.313102  0.479241  0.477640

    VAR40     VAR41     VAR42     VAR43     VAR44     VAR45     VAR46     VAR47     VAR48     VAR49     VAR50     VAR51     VAR52
 0.472358  0.482670  0.236078  0.332777  0.287343  0.253158  0.362675  0.615576  0.533107  0.383264  0.394377  0.506427  0.449068

    VAR53     VAR54     VAR55     VAR56     VAR57     VAR58     VAR59     VAR60     VAR61     VAR62     VAR63     VAR64     VAR65
 0.309731  0.444429  0.383394  0.394005  0.433202  0.452055  0.429629  0.436541  0.413264  0.595629  0.674000  0.523361  0.306572

    VAR66     VAR67     VAR68     VAR69     VAR70     VAR71     VAR72     VAR73     VAR74     VAR75     VAR76     VAR77     VAR78
 0.339676  0.522912  0.572174  0.514342  0.445984  0.180599  0.433379  0.257559  0.351116  0.393377  0.610323  0.633026  0.647936

    VAR79     VAR80     VAR81     VAR82     VAR83     VAR84     VAR85     VAR86     VAR87     VAR88     VAR89     VAR90     VAR91
 0.599575  0.580290  0.576770  0.453922  0.257530  0.477596  0.471138  0.361332  0.483433  0.481354  0.407205  0.366149  0.351432

    VAR92     VAR93     VAR94     VAR95     VAR96     VAR97     VAR98     VAR99    VAR100    VAR101    VAR102    VAR103    VAR104
 0.478631  0.415111  0.508040  0.366079  0.504467  0.547840  0.640780  0.483925  0.466984  0.554404  0.473400  0.556307  0.245726

   VAR105    VAR106    VAR107    VAR108    VAR109    VAR110    VAR111    VAR112    VAR113    VAR114    VAR115    VAR116    VAR117
 0.538488  0.533325  0.550025  0.577415  0.447354  0.453063  0.438240  0.372532  0.405070  0.324089  0.372122  0.442061  0.451095

   VAR118    VAR119    VAR120    VAR121    VAR122    VAR123    VAR124    VAR125    VAR126    VAR127    VAR128    VAR129    VAR130
 0.553520  0.452405  0.137020  0.262730  0.502811  0.491575  0.530489  0.506706  0.471394  0.463936  0.348615  0.375768  0.214258

   VAR131    VAR132    VAR133    VAR134    VAR135    VAR136    VAR137    VAR138    VAR139    VAR140    VAR141    VAR142    VAR143
 0.520744  0.406441  0.625503  0.531185  0.648013  0.669280  0.586118  0.616975  0.607660  0.690349  0.283694  0.521807  0.372151

   VAR144    VAR145
 0.290436  0.540772
```

Appendix E.
Listing of Eigenvalues

Appendix E. (continued)

```
INITIAL FACTOR METHOD: PRINCIPAL AXES

                                          PRIOR ESTIMATES OF COMMUNALITY:

      VAR1       VAR2       VAR3       VAR4       VAR5       VAR6       VAR7       VAR8       VAR9      VAR10      VAR11      VAR12      VAR13
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR14      VAR15      VAR16      VAR17      VAR18      VAR19      VAR20      VAR21      VAR22      VAR23      VAR24      VAR25      VAR26
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR27      VAR28      VAR29      VAR30      VAR31      VAR32      VAR33      VAR34      VAR35      VAR36      VAR37      VAR38      VAR39
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR40      VAR41      VAR42      VAR43      VAR44      VAR45      VAR46      VAR47      VAR48      VAR49      VAR50      VAR51      VAR52
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR53      VAR54      VAR55      VAR56      VAR57      VAR58      VAR59      VAR60      VAR61      VAR62      VAR63      VAR64      VAR65
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR66      VAR67      VAR68      VAR69      VAR70      VAR71      VAR72      VAR73      VAR74      VAR75      VAR76      VAR77      VAR78
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR79      VAR80      VAR81      VAR82      VAR83      VAR84      VAR85      VAR86      VAR87      VAR88      VAR89      VAR90      VAR91
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

     VAR92      VAR93      VAR94      VAR95      VAR96      VAR97      VAR98      VAR99     VAR100     VAR101     VAR102     VAR103     VAR104
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

    VAR105     VAR106     VAR107     VAR108     VAR109     VAR110     VAR111     VAR112     VAR113     VAR114     VAR115     VAR116     VAR117
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

    VAR118     VAR119     VAR120     VAR121     VAR122     VAR123     VAR124     VAR125     VAR126     VAR127     VAR128     VAR129     VAR130
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

    VAR131     VAR132     VAR133     VAR134     VAR135     VAR136     VAR137     VAR138     VAR139     VAR140     VAR141     VAR142     VAR143
  1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000   1.000000

    VAR144     VAR145
  1.000000   1.000000

                       1          2          3          4          5          6          7          8          9         10         11         12
EIGENVALUES    30.046623   4.963324   4.063843   3.481885   3.177773   2.849202   2.500133   2.358303   2.299737   2.105161   2.016429   1.944858
PORTION            0.207      0.034      0.028      0.024      0.022      0.020      0.017      0.016      0.016      0.015      0.014      0.013
CUM PORTION        0.207      0.241      0.269      0.293      0.315      0.335      0.352      0.369      0.384      0.399      0.413      0.426

                      13         14         15         16         17         18         19         20         21         22         23         24
EIGENVALUES     1.871113   1.840252   1.710284   1.703716   1.662492   1.554500   1.528847   1.470165   1.437514   1.376265   1.341586   1.314221
PORTION            0.013      0.013      0.012      0.012      0.011      0.011      0.011      0.010      0.010      0.009      0.009      0.009
CUM PORTION        0.439      0.452      0.464      0.475      0.487      0.498      0.508      0.518      0.528      0.538      0.547      0.556

                      25         26         27         28         29         30         31         32         33         34         35         36
EIGENVALUES     1.307077   1.301730   1.288277   1.256279   1.233407   1.199912   1.172843   1.138722   1.136125   1.103895   1.075628   1.058985
PORTION            0.009      0.009      0.009      0.009      0.009      0.008      0.008      0.008      0.008      0.008      0.007      0.007
CUM PORTION        0.565      0.574      0.584      0.592      0.600      0.608      0.616      0.624      0.632      0.640      0.647      0.654

                      37         38         39         40         41         42         43         44         45         46         47         48
EIGENVALUES     1.034864   1.028390   1.002600   0.985396   0.977612   0.955616   0.938119   0.930019   0.909620   0.898085   0.879799   0.863112
PORTION            0.007      0.007      0.007      0.007      0.007      0.007      0.006      0.006      0.006      0.006      0.006      0.006
CUM PORTION        0.662      0.669      0.676      0.682      0.689      0.696      0.702      0.709      0.715      0.721      0.727      0.733

                      49         50         51         52         53         54         55         56         57         58         59         60
EIGENVALUES     0.823222   0.817907   0.808170   0.783249   0.781277   0.760246   0.748304   0.741019   0.729044   0.717120   0.707270   0.684447
PORTION            0.006      0.006      0.006      0.005      0.005      0.005      0.005      0.005      0.005      0.005      0.005      0.005
CUM PORTION        0.739      0.744      0.750      0.755      0.761      0.766      0.771      0.776      0.781      0.786      0.791      0.796

                      61         62         63         64         65         66         67         68         69         70         71         72
EIGENVALUES     0.671216   0.665143   0.650405   0.640974   0.639198   0.634304   0.617060   0.610423   0.599044   0.591407   0.589251   0.573510
PORTION            0.005      0.005      0.005      0.004      0.004      0.004      0.004      0.004      0.004      0.004      0.004      0.004
CUM PORTION        0.800      0.805      0.810      0.814      0.818      0.823      0.827      0.831      0.835      0.840      0.844      0.848
```

Appendix E. (continued)

```
INITIAL FACTOR METHOD: PRINCIPAL AXIS

                    73         74         75         76         77         78         79         80         81         82         83         84
EIGENVALUES   0.565249   0.560274   0.550136   0.537432   0.532460   0.515099   0.510225   0.497817   0.491664   0.485451   0.475269   0.466546
PORTION          0.004      0.004      0.004      0.004      0.004      0.004      0.004      0.003      0.003      0.003      0.003      0.003
CUM PORTION      0.851      0.855      0.859      0.863      0.866      0.870      0.874      0.877      0.880      0.884      0.887      0.890

                    85         86         87         88         89         90         91         92         93         94         95         96
EIGENVALUES   0.462727   0.449075   0.436324   0.434493   0.431553   0.420098   0.415968   0.402222   0.397375   0.392007   0.387555   0.376235
PORTION          0.003      0.003      0.003      0.003      0.003      0.003      0.003      0.003      0.003      0.003      0.003      0.003
CUM PORTION      0.893      0.897      0.900      0.903      0.905      0.908      0.911      0.914      0.917      0.919      0.922      0.925

                    97         98         99        100        101        102        103        104        105        106        107        108
EIGENVALUES   0.373246   0.367478   0.350086   0.349153   0.337554   0.328574   0.320653   0.319867   0.312996   0.310599   0.303430   0.290624
PORTION          0.003      0.003      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002
CUM PORTION      0.927      0.930      0.932      0.935      0.937      0.939      0.941      0.944      0.946      0.948      0.950      0.952

                   109        110        111        112        113        114        115        116        117        118        119        120
EIGENVALUES   0.290667   0.278623   0.267052   0.264726   0.261066   0.259732   0.252865   0.244268   0.236920   0.236236   0.233537   0.224107
PORTION          0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002
CUM PORTION      0.954      0.956      0.958      0.960      0.961      0.963      0.965      0.967      0.968      0.970      0.972      0.973

                   121        122        123        124        125        126        127        128        129        130        131        132
EIGENVALUES   0.220956   0.215982   0.207663   0.205123   0.194749   0.192055   0.188346   0.182067   0.181599   0.168447   0.166398   0.165365
PORTION          0.002      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001
CUM PORTION      0.975      0.976      0.978      0.979      0.980      0.982      0.983      0.984      0.985      0.987      0.988      0.989

                   133        134        135        136        137        138        139        140        141        142        143        144
EIGENVALUES   0.155017   0.151628   0.148267   0.139492   0.137431   0.130254   0.124921   0.121196   0.120594   0.117326   0.107500   0.095735
PORTION          0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001      0.001
CUM PORTION      0.990      0.991      0.992      0.993      0.994      0.995      0.996      0.996      0.997      0.998      0.999      1.000

                   145
EIGENVALUES   0.066391
PORTION          0.000
CUM PORTION      1.000

                         15 FACTORS WILL BE RETAINED.
```

Appendix F.
Rotated Matrix

Appendix F. (continued)

ROTATED FACTOR PATTERN

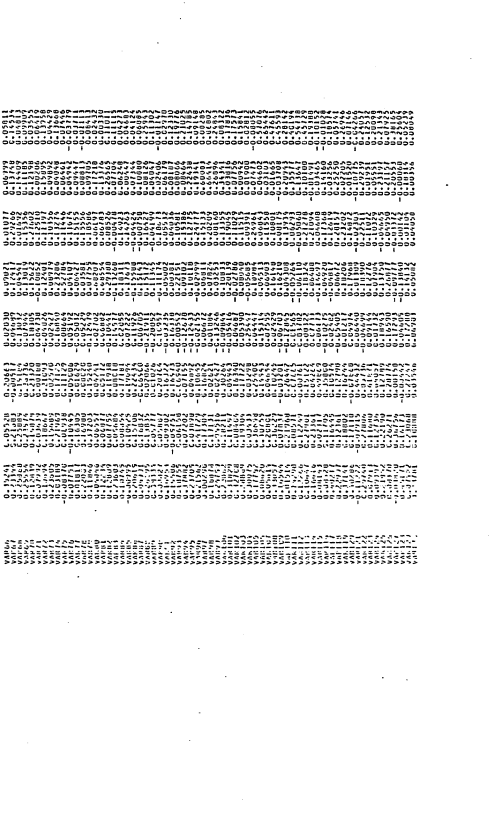
	FACTOR1	FACTOR2	FACTOR3	FACTOR4	FACTOR5	FACTOR6	FACTOR7	FACTOR8
VAR1	-0.01630	0.33125	0.01729	0.05915	-0.07383	0.06424	-0.00661	0.00166
VAR2	0.00051	0.63769	0.15557	0.01515	0.01005	0.06492	0.08051	-0.00213
VAR3	0.22982	0.14131	0.36174	0.07599	0.10059	0.16019	0.03028	0.00050
VAR4	0.15388	0.67109	-0.00942	-0.01195	0.00076	0.03308	0.01298	0.13734
VAR5	0.10598	0.39219	0.26596	0.00451	0.15378	0.04436	-0.03097	0.10747
VAR6	0.11226	0.55720	-0.12810	0.08365	0.06109	0.08792	0.16507	0.05365
VAR7	0.10663	0.66205	-0.00821	0.09728	-0.03044	-0.00565	0.12949	0.06375
VAR8	0.07815	0.54493	0.14747	-0.01840	-0.01197	0.12036	-0.12337	0.11435
VAR9	0.08539	0.64802	-0.09262	0.05530	0.17310	-0.00043	0.20548	0.10732
VAR10	0.08927	0.70438	-0.05181	0.01049	-0.02420	0.05549	0.12094	0.05891
VAR11	0.15190	0.27650	0.09174	-0.05345	0.03871	0.10367	0.07596	0.12434
VAR12	0.05026	0.61139	0.22659	0.04064	-0.01704	0.21023	0.04016	0.13986
VAR13	0.64160	0.64463	0.13708	0.12501	-0.02225	0.11088	0.01007	0.14817
VAR14	0.37088	0.67279	-0.05349	0.01048	-0.03898	0.07740	0.12735	0.12309
VAR15	0.10544	0.63812	0.12703	-0.04232	-0.05852	0.14700	0.02355	0.13759
VAR16	0.06715	0.68291	0.02443	0.02406	0.07059	0.07372	0.00876	0.07204
VAR17	-0.01758	0.36976	0.01123	0.11010	-0.21976	0.07555	0.25461	0.13264
VAR18	0.22357	0.30217	0.01108	0.02131	0.00455	0.12634	0.09027	0.15942
VAR19	0.15092	0.23978	0.23545	0.02642	0.14837	0.05012	0.00730	-0.03515
VAR20	0.22571	0.16605	0.01767	0.15571	-0.14461	0.14047	-0.05191	0.08570
VAR21	0.11260	0.05466	0.03555	0.07763	-0.02486	0.09963	-0.01280	-0.04023
VAR22	0.03181	0.62153	0.15072	0.00682	0.12238	0.12193	0.00195	0.03913
VAR23	0.29171	0.01925	0.01829	0.02677	0.22604	-0.00453	0.10988	0.14516
VAR24	0.07411	0.14429	0.04388	0.06082	-0.09608	0.06257	0.09748	-0.07091
VAR25	0.12976	0.17473	0.15535	-0.05768	0.01015	0.10394	0.11622	0.07420
VAR26	0.28924	0.05043	0.00410	0.22510	0.21496	0.06165	0.21267	0.10564
VAR27	0.07825	0.93122	-0.12199	0.04150	0.04931	0.09912	-0.05202	0.19977
VAR28	0.01182	0.21315	0.07583	0.10061	-0.00861	0.09573	0.12640	0.06740
VAR29	0.45308	0.59998	0.06667	0.01342	0.02982	-0.04304	0.10687	0.05026
VAR30	0.46327	0.15758	0.10661	0.04876	0.05079	-0.00870	0.16096	-0.00626
VAR31	0.00956	0.07806	0.25851	0.10417	-0.01631	0.00009	0.03714	-0.02493
VAR32	0.50110	0.40126	0.12920	-0.03220	0.00295	0.05220	0.12577	-0.05745
VAR33	0.63644	0.25040	0.12061	-0.00630	0.10962	0.06315	0.20227	-0.04550
VAR34	0.65493	0.16618	0.05361	0.07726	0.02526	0.12973	0.13931	0.07277
VAR35	0.58110	0.05416	0.03032	0.12760	-0.07790	0.20923	0.05674	0.14703
VAR36	0.11753	0.12408	-0.05442	0.20510	0.02157	0.11368	0.13077	0.05898
VAR37	0.20790	-0.04286	0.19155	0.16874	-0.01541	0.05776	0.07155	-0.00309
VAR38	0.97479	0.18585	0.32166	0.00901	0.04900	0.06446	0.05597	0.05727
VAR39	0.27607	0.33233	0.23393	0.07734	0.10441	0.17872	0.04742	-0.05421
VAR40	0.11126	0.16405	-0.09634	0.41515	0.25701	-0.01349	0.23379	0.07817
VAR41	0.01450	-0.05440	0.06060	0.58926	-0.06146	0.09422	0.02099	-0.06696
VAR42	0.07957	-0.06154	0.03639	-0.07203	0.29411	0.05902	-0.02999	-0.00303
VAR43	-0.38941	0.03802	0.02335	0.39127	0.21512	0.16659	0.07168	0.07418
VAR44	-0.04534	0.16023	0.06742	0.28714	0.17002	0.00458	-0.13262	0.13744
VAR45	0.03044	0.03746	0.00534	0.48812	0.02291	0.03766	-0.02043	-0.00509
VAR46	-0.08649	0.18904	-0.00653	0.20886	0.00146	-0.13004	0.06085	0.09641
VAR47	0.21323	0.59948	0.10663	-0.04481	0.23477	0.10340	0.14255	0.01479
VAR48	0.27215	0.52436	0.05271	0.02150	0.23430	0.04504	0.10105	-0.00537
VAR49	0.16005	-0.31305	0.16200	0.44492	-0.05239	0.09244	0.06092	0.05645
VAR50	0.04206	0.76517	0.14540	-0.01904	0.24303	0.03467	0.30890	0.05103
VAR51	-0.01078	0.14904	0.16786	0.24123	0.00026	-0.02476	0.25354	0.09194
VAR52	0.05567	0.13736	0.08123	0.21353	0.14038	-0.05462	0.26069	0.02804
VAR53	0.33171	0.10921	0.16535	0.40524	0.01516	-0.06102	0.12732	-0.01421
VAR54	0.05054	0.12686	-0.10017	0.31135	0.15125	0.02964	0.31624	-0.00940
VAR55	0.23174	0.27258	-0.07411	0.09871	0.13029	0.19733	0.14205	0.10138
VAR56	-0.04506	0.41063	-0.09723	0.18688	0.01380	0.06242	0.15708	0.08491
VAR57	0.05957	0.11110	0.07417	0.22113	0.03000	0.14132	0.08300	0.08517
VAR58	0.34398	0.11934	0.04745	0.10337	0.24702	-0.02058	-0.00561	0.13535
VAR59	-0.03945	0.39107	0.13240	0.05025	0.05842	0.12050	0.21079	-0.01431
VAR60	0.02470	0.68701	0.05512	0.35251	0.11359	0.00163	0.15064	0.08951
VAR61	0.23741	0.07523	0.20413	0.02025	0.19132	0.12049	0.12479	0.04281
VAR62	0.19937	0.42058	0.13067	-0.01088	0.10358	0.27804	0.17267	0.00408
VAR63	0.24855	0.14147	0.14673	0.00126	0.10522	0.23053	0.11225	0.05937
VAR64	0.13562	0.15439	-0.01882	0.13362	-0.01004	0.09576	0.15808	0.01463
VAR65	0.11759	0.26286	0.33482	0.03637	0.02037	0.16421	0.17130	0.04141

Appendix F. (continued)

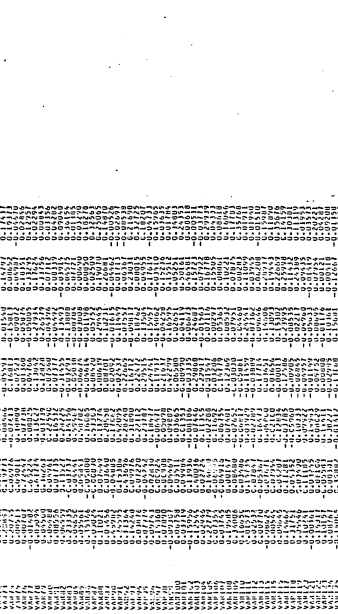
ROTATED FACTOR PATTERN

	FACTOR9	FACTOR10	FACTOR11	FACTOR12	FACTOR13	FACTOR14	FACTOR15
VAR1	0.07154	0.05756	0.14401	0.03099	0.03632	0.29773	-0.00698
VAR2	0.02893	-0.01915	0.03501	-0.01921	0.04410	0.04008	0.15716
VAR3	0.08796	0.05436	-0.00421	-0.02067	-0.05232	0.16412	0.21123
VAR4	0.04019	0.01007	0.09770	-0.04940	0.09053	0.06122	0.03530
VAR5	0.00692	0.12074	-0.05155	-0.07613	-0.04235	0.05728	0.27407
VAR6	0.17651	0.00071	0.13563	0.05621	0.03077	0.15033	0.03222
VAR7	0.03116	0.04603	0.09105	0.08929	0.00535	-0.00782	0.03242
VAR8	0.09182	0.10035	-0.05373	0.04704	-0.11492	-0.05422	0.13966
VAR9	-0.01172	0.02800	0.09077	-0.10607	0.07092	0.00809	0.00440
VAR10	-0.04711	0.08208	0.08973	-0.02558	0.17040	0.21654	0.08639
VAR11	0.07835	0.12019	-0.02153	-0.01535	0.30408	0.42866	0.03986
VAR12	0.07414	0.03074	0.01964	-0.04936	-0.14516	-0.04352	0.15502
VAR13	0.07271	0.02141	-0.03817	0.06674	-0.14598	-0.05734	0.20315
VAR14	0.02913	-0.01815	0.10285	0.07381	0.18604	0.06203	0.13942
VAR15	0.04335	0.01690	-0.04046	0.05930	-0.03211	-0.00135	0.22697
VAR16	-0.05203	-0.04435	0.06633	0.03501	0.04752	0.13209	0.01434
VAR17	0.01267	-0.01707	0.12361	0.00663	0.25081	0.11978	-0.06437
VAR18	0.05358	0.22016	-0.01904	-0.11520	0.30870	0.25776	0.11119
VAR19	0.13430	0.21627	-0.09547	-0.06105	0.01811	0.13515	0.17046
VAR20	-0.00205	0.15101	0.05119	-0.06476	0.47940	0.01924	0.06918
VAR21	-0.01796	0.14437	0.01575	0.05437	0.50125	0.00318	0.05051
VAR22	0.05098	0.10156	-0.04848	0.14152	-0.04175	-0.01464	0.20525
VAR23	0.15742	0.14309	0.25277	-0.33546	0.00914	-0.02179	0.14357
VAR24	-0.09716	-0.05400	0.23754	0.05305	0.05336	0.01746	0.55036
VAR25	0.11150	0.04089	0.06658	-0.10296	0.12378	0.06708	0.56356
VAR26	-0.09872	0.02647	0.08764	-0.19058	0.07020	0.22340	0.25705
VAR27	0.34324	0.03613	0.10486	0.06747	-0.02469	-0.13466	-0.08444
VAR28	-0.13906	0.05528	-0.13267	0.04234	-0.12557	0.15530	0.40601
VAR29	0.10844	-0.01677	-0.01447	0.09564	0.05159	0.11369	0.03310
VAR30	0.06097	0.12256	-0.05520	0.06019	0.20830	0.36120	0.11260
VAR31	-0.16110	0.03524	0.11644	0.02258	0.11002	0.32249	0.30377
VAR32	0.05237	0.04015	0.11055	0.13553	0.00145	0.10187	0.04267
VAR33	-0.01846	0.08496	0.03420	0.05813	0.09161	0.00011	0.00009
VAR34	0.01803	0.14117	0.05521	-0.03069	0.15243	0.15770	0.08828
VAR35	0.05744	0.04273	0.04589	0.00687	0.07096	0.02595	0.08460
VAR36	-0.39406	0.05452	0.05052	0.00771	-0.01032	-0.00999	0.01306
VAR37	-0.36036	0.06662	0.00814	0.20049	0.08367	0.04597	-0.01955
VAR38	-0.05704	0.04541	0.07063	-0.10415	0.30789	0.31282	0.32057
VAR39	0.01254	0.13700	0.02332	0.02035	0.12043	0.19535	0.24310
VAR40	0.28475	0.10273	0.06298	-0.02662	0.02287	0.12445	0.10788
VAR41	-0.09592	0.14660	-0.04130	0.00698	0.04098	0.07587	0.28158
VAR42	-0.03822	-0.01326	-0.00310	0.00870	0.33561	-0.00521	0.06277
VAR43	-0.01400	-0.16013	-0.04230	-0.03222	0.12095	0.05466	-0.18476
VAR44	0.04331	-0.00276	0.03017	0.22762	0.10419	-0.06031	0.10084
VAR45	-0.01209	-0.02221	0.02004	-0.08110	-0.03663	-0.02995	0.03154
VAR46	0.21026	0.07200	-0.05062	0.22899	0.24053	-0.08365	0.26452
VAR47	0.04181	-0.03293	-0.02429	0.05999	0.17178	0.25765	-0.03318
VAR48	0.01961	-0.02695	-0.09642	-0.03431	0.01226	0.27120	-0.06751
VAR49	-0.03296	0.05582	0.02715	-0.05313	0.00336	0.18040	-0.16013
VAR50	0.12429	0.21050	-0.00535	0.00927	0.10851	0.12774	0.20832
VAR51	0.40467	0.07716	-0.05367	0.14467	0.20659	0.15745	0.23327
VAR52	0.42159	-0.02787	0.04669	0.11977	0.22719	0.13620	0.07242
VAR53	0.17943	0.04065	0.05429	0.17400	0.00613	0.00788	0.10003
VAR54	0.33646	0.15371	0.12920	0.10145	0.13900	0.10643	-0.02132
VAR55	0.17730	0.10753	0.15544	0.12543	-0.02423	0.23917	0.11634
VAR56	-0.00733	0.10058	0.20731	0.13983	-0.00116	0.37060	-0.01012
VAR57	0.31195	0.15250	-0.07182	0.13100	-0.02600	0.27849	0.32238
VAR58	0.12762	-0.01900	-0.04689	0.27395	0.21735	0.11053	0.43325
VAR59	0.24111	0.06317	0.10677	0.19188	-0.07212	0.17741	0.21144
VAR60	0.17597	0.01661	0.10788	0.11252	0.26313	0.35596	0.07346
VAR61	0.07131	0.06953	0.12101	-0.01342	0.20052	0.07660	0.36239
VAR62	0.13519	0.10856	0.01031	0.04892	0.15357	0.43950	-0.00733
VAR63	0.06110	0.10026	0.02500	0.06197	0.00726	0.67477	0.07098
VAR64	0.04853	0.18612	0.11020	0.00116	-0.16003	0.50402	0.06762
VAR65	-0.02005	0.04106	-0.17167	0.12208	0.16057	0.19922	-0.04775

Appendix F. (continued)



Appendix F. (continued)



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ROTATION METHOD: VARIMAX

                                        ROTATED FACTOR PATTERN

               FACTOR1   FACTOR2   FACTOR3   FACTOR4   FACTOR5   FACTOR6   FACTOR7   FACTOR8

   VAR131      0.27647   0.17555   0.00319  -0.03663   0.17944   0.27262   0.16645   0.15320
   VAR132     -0.14907   0.12703   0.17636   0.10859  -0.04106   0.46634   0.14234  -0.05821
   VAR133      0.08297   0.16103   0.22773   0.01707   0.06655   0.65099   0.20013  -0.01017
   VAR134      0.20606   0.11206   0.06033  -0.00822   0.12565   0.71035   0.17410   0.09272
   VAR135      0.12734   0.19913   0.05977   0.06972   0.08004   0.73408   0.08682   0.00035
   VAR136      0.20854   0.15345   0.04745   0.06055   0.07908   0.70135   0.17019   0.09062
   VAR137      0.09436   0.20254   0.04597   0.12684   0.01560   0.65605   0.14731   0.07630
   VAR138      0.07155   0.14136  -0.05737   0.11011   0.07854   0.15695   0.70920   0.03370
   VAR139      0.17702   0.15819   0.06669   0.04276   0.14660   0.18447   0.63072   0.04935
   VAR140      0.25786   0.21533  -0.07773   0.14104   0.13170   0.19743   0.54623   0.13261
   VAR141      0.10782   0.17658  -0.06114   0.05407  -0.05647   0.19277   0.26888   0.03858
   VAR142      0.08497   0.71237   0.00008   0.12441   0.01776   0.09678   0.45011   0.09372
   VAR143      0.20590   0.05710  -0.03008   0.03495   0.27332   0.32229  -0.14515   0.14468
   VAR144      0.12657   0.11103   0.19674   0.01716   0.15925   0.18143   0.02789   0.07026
   VAR145      0.21045   0.24871  -0.13454  -0.02050   0.03610   0.14511   0.29280   0.12837
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Appendix F. (continued)

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                                 ROTATED FACTOR PATTERN

              FACTOR9   FACTOR10  FACTOR11  FACTOR12  FACTOR13  FACTOR14  FACTOR15

   VAR131     0.07616   0.11550  -0.00547   0.01582   0.31824   0.34418   0.11794
   VAR132    -0.12281   0.70743   0.15196   0.07469   0.04058   0.02690   0.09505
   VAR133     0.09243   0.02799   0.09798  -0.07917   0.04036   0.10888   0.11616
   VAR134     0.15750   0.01333   0.19461  -0.00534   0.12598   0.10691   0.03150
   VAR135     0.03899   0.10553   0.05404   0.03820   0.03320   0.07068   0.04514
   VAR136     0.06742   0.01871   0.12565  -0.02033   0.06776   0.12535   0.06311
   VAR137    -0.09916   0.14850   0.01707   0.00930   0.04157   0.12295   0.07714
   VAR138    -0.09592   0.02927   0.11657  -0.00524   0.00816   0.13959   0.04552
   VAR139     0.01105   0.05940   0.14511   0.05070   0.13458   0.10109   0.10944
   VAR140     0.08513   0.05927   0.67144  -0.19604  -0.60717   0.25465   0.22751
   VAR141    -0.13743   0.16679  -0.03016  -0.14365   0.04629  -0.02545   0.15765
   VAR142     0.14958   0.15517  -0.01375  -0.07569  -0.09454   0.17614   0.34778
   VAR143     0.03040  -0.01314  -0.15525  -0.01331   0.13404   0.13001   0.11038
   VAR144     0.32198   0.18509  -0.03101   0.03366  -0.05212   0.00947   0.09403
   VAR145     0.04347   0.10167   0.03812   0.47987  -0.03380   0.15368   0.10225

                            ORTHOGONAL TRANSFORMATION MATRIX

                    1         2         3         4         5         6         7         8

      1       0.30802   0.51419   0.20903   0.11011   0.18490   0.28772   0.28783   0.21930
      2       0.78109  -0.01071   0.12204   0.02008   0.18003   0.16339   0.03752  -0.04121
      3      -0.33788  -0.11725   0.46217   0.22425   0.22678  -0.00479   0.00029  -0.09527
      4      -0.20326  -0.00042  -0.42193   0.31154   0.20139   0.15075   0.55154  -0.00892
      5      -0.23856   0.05803   0.19903   0.37509  -0.35693   0.17127   0.07056  -0.39130
      6       0.07447  -0.02361  -0.12455   0.45157  -0.00209  -0.73849  -0.00085   0.09388
      7      -0.11347   0.06954   0.30305   0.35929   0.05407   0.22555  -0.55593   0.20143
      8       0.19074  -0.15270  -0.10901   0.28899  -0.40665   0.34645   0.06709   0.36694
      9       0.10573  -0.04134   0.24903   0.19562  -0.16917  -0.15043   0.20639   0.24743
     10       0.02451   0.05424  -0.06954   0.40303   0.30681  -0.02176  -0.05977  -0.04137
     11       0.43106   0.00769   0.00409   0.10476  -0.28137  -0.03129   0.02541  -0.64225
     12      -0.11953   0.00400  -0.02529  -0.11319  -0.39895   0.02334   0.09954   0.20143
     13       0.15117   0.01563  -0.10133   0.11530   0.14993  -0.02186  -0.13444   0.13078
     14      -0.04303  -0.00627  -0.22665   0.00256  -0.15802  -0.00231  -0.32595   0.15212
     15      -0.01150   0.05559  -0.50438   0.19149   0.05508   0.29635  -0.25710  -0.21836

                    9        10        11        12        13        14        15

      1       0.17613   0.18705   0.12611   0.09646   0.16453   0.31816   0.27513
      2       0.34117   0.22071   0.12152  -0.01720   0.23132   0.23955   0.09082
      3       0.33356  -0.09891   0.07600   0.00708  -0.31350  -0.25985   0.43949
      4      -0.02323   0.14783   0.30798   0.13361  -0.19040  -0.03251  -0.33093
      5      -0.35051   0.30742  -0.34557  -0.06992  -0.02470   0.32009   0.06440
      6       0.22305   0.13966  -0.08365   0.28480   0.19932   0.09025   0.07974
      7      -0.01378   0.14125   0.25124   0.21354   0.14022  -0.11556  -0.43680
      8       0.24349  -0.39944  -0.25612   0.13419  -0.19635  -0.02861   0.00600
      9      -0.57853  -0.08736   0.24492  -0.19475   0.14479  -0.43599   0.13454
     10       0.03044  -0.44220  -0.13249  -0.60540   0.18004   0.18539  -0.14196
     11       0.27222  -0.16762   0.37518  -0.07840  -0.08868  -0.13707  -0.18303
     12       0.41741   0.29701   0.16139  -0.50754   0.34995  -0.06394  -0.03047
     13       0.35025   0.54037  -0.28257  -0.33175  -0.46542  -0.29764  -0.05462
     14      -0.16189  -0.01717   0.52444  -0.19321  -0.40213   0.41693   0.32276
     15      -0.03953   0.06980   0.00655   0.08527   0.34755  -0.36982   0.40131

                              VARIANCE EXPLAINED BY EACH FACTOR

        FACTOR1   FACTOR2   FACTOR3   FACTOR4   FACTOR5   FACTOR6   FACTOR7   FACTOR8
       6.551975 11.415716  4.031670  3.039044  3.472461  4.985268  4.940441  3.632792

        FACTOR9  FACTOR10  FACTOR11  FACTOR12  FACTOR13  FACTOR14  FACTOR15
       3.421456  3.353310  2.917615  2.405904  3.155640  5.268080  4.739811
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Appendix G.
Revised Questionnaire

Appendix G. (continued)

Health Workers Attitude Inventory

H W A I

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
My amount of sick leave is fair.	1	2	3	4	5
The procedures to get vacation and sick time are unfair.	1	2	3	4	5
My Medical Insurance benefits are fair.	1	2	3	4	5
Management asks workers what types of benefits they want.	1	2	3	4	5
It is hard to use sick time in this hospital.	1	2	3	4	5
It is easy to understand the sick leave policy of this hospital.	1	2	3	4	5
Workers in this hospital know what benefits they have.	1	2	3	4	5
This hospital good maternity leave benefits.	1	2	3	4	5
My job makes me feel bad about myself.	1	2	3	4	5
I feel good about my job.	1	2	3	4	5
I have a chance to learn things about other jobs in this hospital.	1	2	3	4	5
I feel bad about my future at this hospital.	1	2	3	4	5
The administration of this hospital is fair to employees.	1	2	3	4	5
The administration of this hospital is consistent in the way they treat employees.	1	2	3	4	5
Changes are explained to workers.	1	2	3	4	5

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Meetings of employees are held during work hours.	1	2	3	4	5
My performance appraisals are fair.	1	2	3	4	5
My performance appraisals are done on a regular basis.	1	2	3	4	5
Performance appraisals give me a chance to speak up.	1	2	3	4	5
Performance appraisals are related to my pay.	1	2	3	4	5
Performance appraisals mean nothing.	1	2	3	4	5
Performance appraisals help everyone do their jobs better.	1	2	3	4	5
Performance appraisals are based on job descriptions.	1	2	3	4	5
I am satisfied with my performance appraisals.	1	2	3	4	5
Employee discipline in this hospital is inconsistent.	1	2	3	4	5
Employee discipline procedures in this hospital hurt people.	1	2	3	4	5
The worker's side of problems is heard at this hospital.	1	2	3	4	5
The grievance procedure is fair to employees.	1	2	3	4	5
Problems are settled before going to the grievance procedure.	1	2	3	4	5
The grievance procedure is set-up to help management.	1	2	3	4	5
The grievance procedure is hard to understand.	1	2	3	4	5

Appendix G. (continued)

3

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
This hospital is dirty.	1	2	3	4	5
This hospital provides enough space for "employees only."	1	2	3	4	5
This hospital is warm during the winter.	1	2	3	4	5
The lighting is good enough for me to do my job.	1	2	3	4	5
My supervisor cares about my comfort on-the-job.	1	2	3	4	5
My supervisor understands my work conditions.	1	2	3	4	5
This hospital has a clean place for workers to eat.	1	2	3	4	5
I am overworked.	1	2	3	4	5
The equipment workers use is not kept-up.	1	2	3	4	5
I have the equipment I need to do my job.	1	2	3	4	5
My work area is dangerous.	1	2	3	4	5
This hospital is a safe place to work.	1	2	3	4	5
My supervisor knows the safety rules.	1	2	3	4	5
We have poor security for personal property at this hospital.	1	2	3	4	5
My supervisor does not understand how I can get hurt on my job.	1	2	3	4	5
There are good inspections of equipment and work areas in this hospital.	1	2	3	4	5
Wage plans are picked that benefit the hospital more than the workers.	1	2	3	4	5

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
The grievance procedure is hard for workers to use.	1	2	3	4	5
My job description is accurate.	1	2	3	4	5
My supervisor knows what is in my job description.	1	2	3	4	5
I have input into changing my job description.	1	2	3	4	5
I have a copy of my job description.	1	2	3	4	5
All workers in this hospital are treated equally.	1	2	3	4	5
There is sex discrimination in this hospital.	1	2	3	4	5
There is racial discrimination in this hospital.	1	2	3	4	5
Black workers and white workers with the same qualifications have the same chance of getting promoted.	1	2	3	4	5
Female workers and male workers with the same qualifications have the same chance of getting promoted.	1	2	3	4	5
If two people are up for a promotion, one black and one white, the best qualified person would get the job.	1	2	3	4	5
If two people are up for a promotion, one male and one female, the best qualified person would get the job.	1	2	3	4	5
I like my job.	1	2	3	4	5

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	5 Strongly Agree
Supervisors in this hospital care about workers.	1	2	3	4	5
The administration of this hospital cares about workers.	1	2	3	4	5
The administration of this hospital cares about patients.	1	2	3	4	5
Changes are considered if workers feel they are important.	1	2	3	4	5
Workers at this hospital feel trusted.	1	2	3	4	5
This hospital is run poorly.	1	2	3	4	5
Workers are the lowest priority at this hospital.	1	2	3	4	5
The way overtime is given in this hospital is unfair.	1	2	3	4	5
My lunchtime is long enough.	1	2	3	4	5
Workers understand hospital policy.	1	2	3	4	5
Supervisors understand hospital policy.	1	2	3	4	5
New policies and policy changes are explained well.	1	2	3	4	5
Supervisors "practice what they preach" in policy.	1	2	3	4	5
My breaks are long enough.	1	2	3	4	5
I get enough breaks.	1	2	3	4	5
My pay is fair.	1	2	3	4	5
My benefits are unfair.	1	2	3	4	5
My amount of vacation time is fair.	1	2	3	4	5

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Decisions are made about the hospital after workers have a chance to speak up.	1	2	3	4	5
My supervisor ignores my problems on-the-job.	1	2	3	4	5
I feel that this hospital pays as well as other hospitals.	1	2	3	4	5
This hospital gives less benefits than other hospitals.	1	2	3	4	5
There is little status for working at this hospital.	1	2	3	4	5
Decisions are made about pay after seeing what other hospitals pay.	1	2	3	4	5
I would work at another hospital for less money.	1	2	3	4	5
My supervisor wants my opinion about my job.	1	2	3	4	5
Administration wants my opinion about my job.	1	2	3	4	5
Administration ignores what I think is important.	1	2	3	4	5
I get a chance to suggest changes in my job description.	1	2	3	4	5
There are enough ways for me to speak up to management.	1	2	3	4	5
There are many informal ways for me to speak up to management.	1	2	3	4	5
I am active in running my work area.	1	2	3	4	5
I am active in running this hospital.	1	2	3	4	5
Administration ignores the "real" leaders among the workers.	1	2	3	4	5
This hospital is a safe place to work.	1	2	3	4	5

Appendix G. (continued)

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
My supervisor handles problems by-the-book.	1	2	3	4	5
My supervisor handles problems poorly.	1	2	3	4	5
The grievance procedure in this hospital is unfair.	1	2	3	4	5
My supervisor makes me feel comfortable on-the-job.	1	2	3	4	5
Supervisors are unfair with workers in this hospital.	1	2	3	4	5
My supervisor helps workers.	1	2	3	4	5
My supervisor listens to me.	1	2	3	4	5
My supervisor talks down to me.	1	2	3	4	5
My supervisor understands my job.	1	2	3	4	5
My supervisor is a good leader.	1	2	3	4	5
Workers and supervisors in this hospital respect each other.	1	2	3	4	5
My superviso dislikes me.	1	2	3	4	5
My supervisor ignores me.	1	2	3	4	5
My supervisor understands me.	1	2	3	4	5
My supervisor is unfair.	1	2	3	4	5
My supervisor and I can discuss things like two adults.	1	2	3	4	5
My supervisor likes his/her job.	1	2	3	4	5
You can speak your mind in this hospital and supervisors will listen.	1	2	3	4	5
Decisions are made about workers after workers have a chance to speak up.	1	2	3	4	5

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Chairman

Director of Graduate Program

Dean, UAB Graduate School

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