

**DEVELOPMENT OF A SURVEY INSTRUMENT ASSESSING STAFF
AND PATIENT PERCEPTIONS OF COMPREHENSIVE
REHABILITATION PROGRAMS**

**A Dissertation
Presented to
the Faculty of the Department of Psychology
University of Houston**

**In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy**

**By
Dennis G. Stuart**

May, 1977

PREFACE

The following was written by the Director of Volunteers at TIRR for use in orienting new volunteers.

PHILOSOPHY AND ATTITUDE OF T. I. R. R.

Most medical advances prolong life, but do not necessarily improve the quality of the life remaining. Recovery of useful strength may be tediously slow, or not at all, even after every measure of treatment has been used.

The subject of this paper is attitude! Your attitude, and the patient's attitude. When someone is sick, self-confidence is undermined, and one feels insecure and anxious ...justifiably. After the acute stage is over, our patients here are not really sick in the usual sense. They are, however, severely impaired physically, and have a tremendous emotional adjustment to face. Coming to grips with what has and is happening to them, and the hundreds of restrictions this imposes, takes great emotional strength and stability.

What happens around the patient at this time is MOST IMPORTANT. They need people who are knowledgeable (well-trained), cheerful, good-natured, supportive, willing to help, thoughtful, and if possible, perceptive. This is the ideal. Understanding is perhaps the anchor that holds everything together, along with acceptance of the patient as a viable human being, with rights, desires, and goals of his or her own.

When one is physically helpless, and virtually at the mercy of others for even the simplest need, it is easy to lose one's sense of dignity, self-confidence, and courage. You who work with the patients, who minister to the many needs each day, are the key people in his or her life. Your attitude, manner, and disposition affect him directly, because you deal with him directly. Atmosphere and environment play a major role in forming the patient's new personality and attitude. Like a child, if it is treated with love and a feeling of acceptance, it responds and blossoms. If the environment is cold and indifferent, the child becomes insecure and antisocial. In which of these settings would you like to find yourself? Consider for a minute...how would you feel, if all of a sudden you couldn't walk? If you had to be lifted off the floor, where you were standing, and put into a bed or wheelchair? What would your thoughts be then?

What am I going to do! How can I work like this! Who will take care of the house, the children...how will my husband (wife) get along! Pursue these thoughts for awhile in relationship to yourself, and "try on" a few other disabilities, and see how you would react. How would you feel if you were being taken care of by people who looked grumpy, resentful, and uncaring? People who helped you, but never really talked to you? Think this over for awhile. Suppose that the patient were your child, or relative?

The people who care for our patients must be very special. ~~They must understand the physical and emotional~~ turmoil and act in a manner that will be conducive to the patient's sense of well-being and worth. Mutual respect and courtesy must be the guiding force.

Remember the Indian Prayer which says..."Great Spirit, Grant that I may not criticize my neighbor until I have walked a mile in his moccasins..."

Nita Weil, Director of Volunteers
August 29, 1972

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ABSTRACT

A survey instrument was developed and administered to two rehabilitation hospitals. The instrument assesses staff and patient perceptions of the quality of services, the environmental quality, psychosocial climate and the perceptions of what is important in the rehabilitation process. The responses of the various staff groups, patients, and non-treatment groups were analyzed separately.

The study consisted of the following phases:

1. Development of the instrument through consultation with hospital personnel and ex-patients.
2. Administration of the instrument to staff and patients at two hospitals, including a retest of a subsample one month later.
3. Factor analysis of the results to create factor scales and scoring of the data on these scales.
4. Analysis of variance of the scale scores between response groups (nursing, physical therapy, patients, etc.), between supervisory and treatment personnel and on the basis of respondent age and length of time employed at the hospital.
5. Cluster analysis of respondents using factor scores from a second-level factor analysis of the scale scores. Comparison of cluster composition with response groups.

6. Test/retest analysis of factor scale scores.
7. Feedback of results to the hospital community through a series of departmental presentations.
8. Recommendations for a more efficient second generation instrument.

The results indicate adequate levels of reliability and validity. The instrument discriminated between the two hospitals, between staff and patients, and between treatment staff and nontreatment personnel. Staff employed less than a year differed from those employed more than a year. Few differences were found between supervisory and treatment personnel or between staff of different ages.

Recommendations are made for the use of the instrument in monitoring hospital operation and assessing program changes. A model of clinical program evaluation is presented to provide a framework within which the results might be used to improve communication within the hospital community or stimulate discussion of program goals and policies.

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CHAPTER I

INTRODUCTION

The process of adjustment to a severe physical disability involves physical, psychological and social factors. As Lerner (1973) states: "Health is more than just a biomedical phenomenon; it involves a social human being functioning in a social environment with social roles to fulfill." Neff (1971) notes: "... the essential characteristic of a handicap is that it is a social disadvantage." and concludes that therefore rehabilitation is not simply a medical specialty.

Many writers in the field of rehabilitation support the idea that the adjustment process is physically, psychologically and socially complex (Barker, Wright, Myerson and Gonick, 1953; Goffman, 1963; Neff, 1971; Safilios-Rothschild, 1970; Sussman, 1965; Wright, 1960). The social role of the sick person in our society has been defined by Parsons (1951) as one in which the person is exempted from normal obligations so long as he places himself in the hands of competent medical authority. In the case of a severe disability the "sick role" could conceivably be extended indefinitely because the person never returns to premorbid levels of functioning. It has been pointed out that this alters the nature of patient and professional roles and some have called for treatment models where the patient takes more responsibility for planning and decision-making (Szasz and Hollander, 1956;

Keith, 1968, 1969; Kutner, 1968, 1969; Davis, 1968).

The Rehabilitation Hospital

The process of rehabilitation begins in a hospital setting where sophisticated medical services are delivered. The technology involved is expensive and requires the services of many different professional, semi-professional and nonprofessional groups. For instance, at the hospital studied in this research the direct treatment team consisted of physicians, social workers, occupational and physical therapists, respiratory therapists and several levels of nursing personnel. In addition to these core groups there was a psychologist, an orthotics department; pharmacy, X-ray and laboratory technicians; dietician and food service personnel; maintenance and housekeeping people, volunteer workers, business and administrative departments; recreation, educational, and vocational programs; various researchers, medical photography, and transportation services. Add to this patients of differing ages, sexes and backgrounds, their families and visitors, inspectors from various government agencies, consulting professionals, students in the various disciplines, salesmen of supplies and equipment and you have a very busy environment.

Not all of the groups mentioned above interact directly with one another, but even so a considerable amount of coordination is necessary to keep the hospital operational. One writer goes so far as to state that: "For hospitals, organizational effectiveness depends upon social efficiency more

than it does upon technical-economic efficiency..."

(Georgopolous, 1972, p. 24). He goes on to say:

A great deal depends upon the extent to which the various groups and members understand each other's work problems and needs; the degree to which the work-relevant expectations, attitudes, motivations and values of members in related jobs are congruent or complementary; the degree to which interacting groups and individuals are guided by informal norms of reciprocity, trust, and mutual helpfulness... (Georgopolous, 1972, p. 25).

This social coordination is dependent on communication of the needs, expectations and attitudes of each group to the others. The organizational structure of the hospital may facilitate or hinder the flow of information and there will also be an unknown effect from the informal network of communication that exists between friends in different departments.

Vineberg (1972) has studied the network of perceptions about roles in a rehabilitation hospital and found that some groups perceive their roles differently from the way other hospital groups see them. The patients in a rehabilitation hospital occupy a more complex social position than do patients in general hospitals because of the longer stay in the former. Rehabilitation patients, in the later part of their stay, are expected to actively participate in their program rather than simply act as passive recipients of services. Staff and patient expectations about the patient role may differ and lead to conflict with unknown results on rehabilitation outcomes. Kalb (1971) studied staff perceptions of patients as taken from chart notes and their relation to

post-hospital adjustment and found that middle class patients who were seen as troublesome did better post-hospital while lower class patients showed no correlation between in-hospital ratings and post-hospital performance. The lower class patients showed a negative correlation between depression and post-hospital adjustment while the middle class patients showed no relationship between these variables. The social interactions between staff and patients in rehabilitation settings may thus have implications similar to those observed in psychiatric or psychosocial programs. In fact, many of the discussions about rehabilitation program structures, the role of the patient, and independence-dependence issues echo those found in the psychosocial literature (Jones, 1953; Schwartz and Schwartz, 1964). These issues are complicated by the fact that rehabilitation patients are somewhat physically dependent and are not classified as "mentally ill," that is, there is no immediate presumption that they require professional help in making a psychosocial adjustment to their new condition. The precise role of psychosocial services in adjustment to a physical disability remains problematical both within the hospital and in the community.

The services delivered by a rehabilitation hospital reflect, to a certain extent, what rehabilitation professionals believe is important in the adjustment process. The philosophy of rehabilitation takes concrete form in the hospital structure and the activities of the staff. The

correspondence between philosophy and structure is not perfect of course, because the values of the general community also come into play, expressed by the support they provide or withhold. The process of rehabilitation may thus be thought of as jointly defined by patients (and their families), the community, and by rehabilitation professionals and theoreticians.

Describing the Rehabilitation Process. The rehabilitation process may be thought of as existing on four inter-related levels: (1) It exists as an organizational structure with rules or guidelines describing what is to be done. (2) It exists as a physical environment with buildings and equipment. (3) It exists as a set of behaviors and activities which are related to, but not identical with the organizational structure. And (4) It exists as a set of attitudes and perceptions held by participants in the process.

Each of the four levels of existence effect all the others, and each level is sufficiently complex to have generated a set of techniques and literature of its own. The literature on organizational structure has been reviewed by Lichtman and Hunt (1971), Pugh (1966), and Porter and Lawler (1965). Physical or environmental characteristics and their effects on human behavior and attitudes have received increasing attention recently. Reviews and discussions of this area will be found in Sommer (1969), Sheperd and McKinley (1969), Proshansky, Ittleson and Rivlin (1970), Klausner (1971), and Willems and Raush (1969).

Behavioral systems have been conceptualized from several viewpoints. Behavior modification and social learning theories for instance, focus on the ways in which behavior is modified through interactions with the environment (Bandura, 1971; Endler and Hunt, 1968; Rotter, 1954; Skinner, 1953). Behavioral and environmental characteristics were combined into the concept of behavior settings (Barker and Wright, 1955; Barker, 1968). The concept of studying the distribution of human behavior in natural settings, much as the ecologist studies the distribution of organisms in nature was further developed and refined by Willems (1973, 1974). This work has particular relevance to the present study because it has been applied in a long term study of patient behavior in a rehabilitation hospital (Vineberg and Willems, 1971; Willems, 1972). Specific technologies for in-hospital observation have been developed by Alexander (1976) and Crowley (1975). Techniques of behavioral observation in the community have been developed by Pablant (1972), Schmitt (1971), Stuart (1973) and Widmer (1976). An environmental survey technique which includes the behavior of disabled individuals has been developed by Baker (1976).

The attitudes and perceptions inhabitants have of their environment is the domain of what Moos and Insel (1974) call social ecology. The area derives from the work of Murray (1938) and Lewin (1954) who attempted to reconcile environmental and psychological representations of the same events.

Katz and Kahn (1966) have discussed social organizations from this perspective. A large number of instruments have been developed for measuring the attitudes people have about their environment. Moos (1974) developed the Ward Assessment Scale (WAS) to describe psychiatric treatment programs from the perspective of staff and patients, and went on to develop parallel forms for community treatment programs, educational settings, military companies, and general organizational settings. These instruments assess three general areas: (1) personal development (or treatment program characteristics where the program is oriented towards personal development); (2) relationship dimensions; and (3) system maintenance dimensions. A closely related instrument for assessing therapy groups called the Group Atmosphere Scale (GAS) was developed by Silbergeld, Koenig, Manderscheid, Meeker and Hornung (1975). Jackson (1969) developed the characteristics of the Treatment Environment Scale (CTE) to assess psychotherapeutic treatment milieus and it has been refactored by Allon, Graham, Lilly and Friedman (1971) who found separate staff and patient factor structures and by King and Smith (1972) who shortened it and found that it predicted several measures of hospital effectiveness.

The Ward Evaluation Scale (WES) was developed by Rice, Klett, Berger, Sewall and Lemkau (1963) to describe perceptions of the physical environment of psychiatric wards, the quality of services, and patient management or discipline

characteristics. Stern (1970) used the Murray (1938) needs/press system to study universities by comparing perceptions of the college environment from the College Characteristics Index (CCI) with student interests from the Activities Index (AI); related instruments were developed for high schools and general organizations. Astin and Holland (1961) studied educational systems using the Environmental Assessment Technique (EAT).

These approaches attempt to get a description of the environment from the point of view of its inhabitants. They seem particularly appropriate for service organizations such as universities, psychosocial treatment programs and rehabilitation facilities because other measures of organizational functioning do not adequately cover all that is going on in such settings. A factory that is turning out bottlecaps can rely on fairly simple outcome parameters and can measure the outcome immediately and cheaply. Furthermore, the bottlecaps do not care what happens to them during the process so that the quality of the environment, aside from its impact on outcome, is irrelevant.

Service organizations, such as rehabilitation hospitals, do not resemble manufacturing organizations. First, the outcome criteria are usually not well defined or agreed upon; such organizations are likely to undergo almost continual self-examination about goals and methods (Weiss, 1972). Second, it is not easy to measure outcomes even when defined

because of the long time intervals involved and the multiple influences acting to produce the outcome measures. For instance, Cogswell (1968) believes there is a one to two year adjustment period after the disabled person leaves a rehabilitation program. During this period many influences will be acting on the person which are likely to be as strong as any of the treatments received in the formal program. Separating these effects can be difficult or impossible since experimental procedures for controlling variance are not usually available. Output parameters for social programs, such as employment, a specified level of income, participation in some desired number of community organizations, or achievement of some proportion of pre-disability activity level do provide important insights into program effectiveness, but it will almost always be impossible to say what aspect of a program was important in producing the outcome. If success is achieved (by whatever criteria) in a rehabilitation program, is this success to be attributed to physical therapy, occupational therapy, the medical care, etc., or, if it is a package of services that is effective, what is the proper mixture and emphasis for such a package? Such questions are very difficult to answer. [See Cronbach (1975) for a discussion of what strong interaction effects imply for the social sciences.]

Service organizations operate on human beings, not bottlecaps, and people care about what is done to them and about

the quality of their environment. Consider two hospitals which produce identical measures of patient performance. The inhabitants of one rate it as a pleasant, exciting place while inhabitants of the other find it dull and depressing despite the fact that the work gets done. Certainly the first program would be preferable.

Many interesting issues are raised by considering the quality of the environment as an important characteristic of a service program. The most obvious issue is how much people are willing to pay for a given level of comfort. In a hospital, for instance, what is the cost differential between a single occupancy room, a double occupancy room, or a ward and what other effects and influences do the various arrangements have? It is also interesting to know what effect satisfaction with the environment has on other measures of system performance such as output or efficiency.

These issues have been extensively studied in the area of job satisfaction, with the conclusion that job satisfaction is not related to production (outcome), but is related to staff turn-over, recruitment problems, and absenteeism (Patchen, 1960; Atchinson and Lefferts, 1972; Friedlander, 1964; Schneider and Snyder, 1975; Vroom, 1964). Smith, Kendall and Hulin (1969) say: "Job satisfaction may legitimately be considered an output variable..." (p. 39). That is, producing satisfaction is one of the important functions of an organization that hopes to survive for any length of time.

This concept fits with the systems theory approach to organizational study which assumes that organizations have many other goals and functions than those formally set down (Caro, 1971; Vroom, 1967; Shepard and Blake, 1962). Georgopolous and Massy (1962) found that job satisfaction was more important to health care professionals than money (given an adequate salary). Alutto, Hrebiniak and Alonso (1971) found that the greatest difficulty in hiring and retaining nurses occurred in programs where there was perceived interference with the concept of a professional-client relationship between nurses and patients.

Many organizational changes are made because of system demands rather than to improve the quality of the output, that is, they are designed to increase efficiency or to enhance the nature of the work. Changes in staff assignments, supervisory practices, work rules, or physical structure are likely to have little direct impact on the multiply-determined outcomes of a rehabilitation program, but they may have important influences on the way staff and patients view their environment.

Changes in the environment may affect productivity and employee morale, not because the changes make any great difference in themselves but because they demonstrate a concern for the employees on the part of management. Campbell (1963) stated that viable organizations must continually be making small, "insignificant" changes and must continually attempt

to evaluate what they do. Programs which cease to perform these innovative and evaluative activities go into a decline. The frustrating thing about this process is that no single change can be demonstrated to have had much effect--it is the cumulative effect of many small changes over time, and the attitude of responsiveness to problems that maintains the system.

As Barnes (1967) puts it: "Industrial managers are fond of noting that change is the only thing that remains constant in their work" (p. 58). Assessment of change is important if the system is to maintain homeostasis; feedback about the effects of changes must be accurate and relatively rapid if destructive reactions are not to take over and dominate the system. This is true even when the most effective action in response to a changed situation is not obvious. In this case homeostasis is maintained through a series of small approximations to the correct response each of which is corrected by further feedback. Constant assessment of effects is thus necessary. In most organizations these homeostatic functions are performed through informal assessment channels such as the perceptions of supervisors and managers. Formal evaluation efforts--given their expense and disruptive influences--act as a check on the informal judgments.

A survey study, such as that developed here, goes beyond simple confirmation or disconfirmation of administrative perceptions however, in that it can provide information to the

hospital community about itself--it describes the distribution of perceptions or attitudes so that the extent of consensus is available. Moos (1974) found that programs which received feedback from the Ward Assessment Scale (WAS) made more program changes and decreased the discrepancy between real and ideal ratings of their program more than did programs not receiving feedback. In an excellent study, Bowers (1973) compared five organizational development techniques on their effectiveness in improving organizational functioning. He found that survey feedback was the most effective change technique followed by "interpersonal process consultation" in which the consultant acts as mediator between individuals having work-related problems with one another. Task process consultation, in which the consultant focuses on better ways to do the job showed no effects while laboratory training, i.e., NTL groups, and the control or no treatment condition showed negative changes.

It is presumed that the feedback approach is effective in changing organizational characteristics because it provides information to the inhabitants of a system about how others feel, allowing discrepancies in perceptions and attitudes to appear so they can be dealt with in a rational manner. This process of gaining self-knowledge goes somewhat beyond simply gathering facts about the characteristics of an organization since it may generate discussion of alternatives that go far beyond the information contained in the study.

A survey must not then, be seen as an isolated technique for gathering data but as part of an overall process that includes the way in which the information will be used. This process itself contains a feedback loop since the design of the instrument should be influenced by the expected use to which it will be put.

A "Clinical" Approach to Program Evaluation

Weiss (1972) notes that organizations show a remarkable resistance to unwanted information and feels that much organizational research is therefore wasted. This resistance is similar to that encountered by the clinical psychologist who attempts to force change on a client who is not ready for it. This suggests that a clinical model of program evaluation might be more effective than a "scientific" model which simply gathers and distributes facts without becoming involved with the impact of the data on the client. This analogy can be further spun out by listing goals that might be held by a consultant using the clinical approach to program evaluation:

1. Determine organizational goals and concerns--this is an interactive process. Research done solely for the interest of the researcher is likely to have little impact on the organization.
2. Form a relationship with various levels of the organization so that the goals and concerns reflect the total organization rather than just those of top management. If management is uncomfortable with this process then a clinical evaluation is difficult or impossible.
3. Conceptualize the issues and gather accurate data.

4. Interpret the findings in terms meaningful to the organization. Again, this is an interactive process.
5. Use the results to help the organization become aware of its goals and needs; point out areas of agreement and conflict; suggest alternatives that might be explored.
6. Encourage discussion and working through of the findings. Do not count on this occurring automatically; remain visible and available to individuals interested in applying the findings to their particular situations.

This approach to evaluation requires that the investigator become part of the system--to take an active interest in, and responsibility for, the way the results of a study are used. His actual control over the use of the findings is, of course, minimal and should be so, but the influence exerted depends, in part, on the effort expended.

This approach can be effective only for those organizations that want a period of self-examination. Studies done to meet the requirements of a funding agency or for some other reason extraneous to the concerns of the institution would not fall under this model. It is an expensive process and will be most effective in organizations already open to change. On the other hand, it is not a hard-and-fast system that must be applied as a unit, but a philosophy that may be adapted to the characteristics of the institution and investigator.

The clinical model of program evaluation is presented because it logically leads to a certain type of instrument. The requirements for this instrument are that it gather data

from a large proportion of the inhabitants of a system, that it describe the system from the perspective of the inhabitants, and that it be sufficiently complex or open-ended to allow the concerns of the inhabitants to emerge. The data from such an instrument has several uses as outlined below:

A. Describe:

1. Compare--compare programs or treatments.
2. Evaluate--assess the effectiveness of changes.
3. Investigate--study the relationships between perceptions of a program and other variables such as behaviors or outcomes.
4. Monitor--provide warning of unplanned changes.

B. Influence:

1. Inform--provide information on which to base decisions.
2. Communicate--distribute to the community information about itself.
3. Focus--highlight issues and bring them into awareness.
4. Explore--open discussion of alternatives.

These categories are neither discrete nor exhaustive but describe different emphases that might be applied to use of the data. Theoretical use would lie in comparisons with other levels of measurement or with other instruments. Organizations would use the monitoring or evaluative functions or attempt to influence the system in some way. The innovative or systems-change functions lead into the clinical model of evaluation.

A Little Philosophy

Whether one uses descriptions of behavior, environmental conditions, measures of attitudes or perceptions, depends on the purpose of the investigator (Mischel, 1973). The use of behavioral or environmental data may be most effective in controlling or producing certain types of behavior--assuming that what is wanted is known. The use of "soft" data on feelings, attitudes or expectations lies in the realm of creativity--in discovering what people value and expect so that the conditions which will fulfill these expectations or desires can be designed.

Much has been discovered of the ways people are influenced by the physical and social environments which surround them. But it should not be forgotten that human environments are created by people, they are maintained by people and they are changed when people decide that they should be changed. Conversely, human environments, as with natural environments, have a certain life of their own--an inertia or resistance to change, which produces interesting interactions and complexity when alterations are attempted. There is, in fact, a constant interactive process between the environment and the individuals within it. So close is this interaction that they must be considered as one thing, part of one unbroken process. Attempts to decide which controls which lead ultimately to the realization that what is being examined is a process with multiple feedback loops. The boundaries of

this process are arbitrarily set by the interests of the investigator.

In this study the realm of investigation is the perceptions people have of their environment. This realm was chosen because the interest was not so much in how the environment controls the inhabitants but in how they control it. One aspect of this issue however, is the influence the environment has on people since it is in reaction to this influence (in part) that they decide to alter or retain environmental characteristics.

Techniques of environmental control were not the issue in this study, that is, the interest was not in describing the organizational or decision-making structure of the hospital. Instead the interest was in going one step further back to examine the satisfaction people have with their environment and to find a way to communicate this information so the inhabitants might use it in making decisions about whether or not to modify the environment. It was of interest to learn what types of information they would consider valuable for this purpose. It would also have been interesting to learn what use is actually made of the information but unfortunately following that process exceeded the resources of this study.

The information gathered on perceptions of a rehabilitation hospital is also interesting in and of itself because it illuminates what one group of professionals and patients

think about the rehabilitation process. This data is of limited generality, but still provides an interesting starting point for speculation about the purposes and processes of rehabilitation.

Finally, of course, there is the potential practical use for an instrument of this type. Administrators interested in evaluating or monitoring their systems have not had a survey instrument designed for rehabilitation settings. The usefulness of this particular instrument will not be demonstrated until a number of settings have applied it, but given the fact that it was developed with the close cooperation of rehabilitation personnel there is some hope that it will be found useful.

Direct Background

The immediate starting point for this study was the Ward Assessment Scale developed by Moos (1974). At first it seemed possible to simply apply the WAS directly (or with few modifications) to a rehabilitation facility. This procedure would have had the advantage of allowing comparisons with studies using the WAS in other settings. On closer examination however, it became apparent that the items of the WAS were not suitable to a rehabilitation setting; there was a strong presumption of interpersonal difficulties on the part of the patients and a strong emphasis on describing a psychosocial treatment program. Furthermore, there seemed to be no recognition of the possibility that the staff might not

respond as a unit or that the patient group might not think of the staff as a unit. The large, complex staff of a rehabilitation hospital seemed to require a somewhat more detailed appraisal and there also seemed to be a need to include assessment of the medical, nursing and therapy functions as well as the psychosocial climate of the hospital.

These judgments were strengthened after examining the factor structure obtained from a WAS administration to nine Veterans Administration spinal cord units (Maroney, 1975). A group of 483 staff and 537 patients responded to the instrument and separate Principal Components factor analyses with varimax rotations were performed for staff and patients. Three factors were extracted which were common to both groups (although they accounted for different proportions of the variance for each group). These were: (1) active treatment program, (2) interpersonal guardedness, and (3) satisfaction with ward milieu. "Satisfaction with ward milieu" accounted for the largest amount of staff variance while "active treatment program" was the largest factor for the patients. A fourth factor emerged when the staff and patient groups were factored together which rated the degree of cooperation between patients.

The factor structure obtained was unlike Moos' ten scales and unlike the three areas he felt were tapped by the WAS: Relationships, Personal Development and System Maintenance. Furthermore, only 80 of the 130 WAS items had factor

loadings above 0.3 on any of the four factors, suggesting that the items were not tapping dimensions meaningful to the spinal cord populations. The four factors accounted for only about 24% of the total variance in the correlation matrices.

The dimensions extracted from the VA study suggested that the people on the spinal cord units were concerned with the quality of the environment, the quality of services delivered, and the nature of the interpersonal atmosphere. These three areas became the core of the investigation developed here. Rather than attempt to adapt the WAS or any of its variants it was decided to design an instrument which would assess in detail each of the dimensions just discussed. It seemed clear, for instance, that the quality of service could not be assessed as a whole but would have to be broken down into medical, physical and psychosocial components. Similarly, evaluation of the interpersonal atmosphere in a rehabilitation hospital seemed to require looking at staff/staff interactions as well as staff/patient ones because of the great diversity of staff groups. The characteristics of the physical environment seemed to be of lesser importance, but when the concept was expanded to include a description of the organizational efficiency with which the day-to-day activities of the hospital went on, this area assumed a complexity and interest equivalent to the other two areas.

A fourth area of concern was added to the study from other sources. This was the attempt to delineate what staff

and patients think is important in the process of rehabilitation. This interest developed because of: (1) discussion in the rehabilitation literature concerning the proper role of patients and professionals (Szasz and Hollander, 1956; Keith, 1969; Kutner, 1969); (2) discussions with hospital personnel which suggested that different departments had different goals and concerns and (3) a large survey of all veterans administration spinal cord units (Morgan, Hohmann and Davis, 1974) which consisted of structured and open-ended interviews with 225 staff and 350 patients. The interesting thing about this study was not so much in the results, although these were interesting, but in the questions the investigators chose to ask. In particular, there seemed to be a strong interest in staff attitudes towards patients and in the extent to which psychosocial services were utilized, with a corresponding deemphasis in assessing the quality of medical and nursing services. Patient expectations about what they would be doing in the next ten years were obtained as were patients' ideas about what services were wanted. In short, there seemed to be considerable emphasis on learning what rehabilitation is all about, and an unstated assumption that the physical aspects do not constitute the whole process.

It was intriguing that a large and expensive hospital system, with many professionals working to provide services, had such questions about what it should be doing. The concern with psychosocial goals and services emerged in

contrast to the resources spent on this area. There seemed to be a question whether or not those who were doing the surveys and writing in the literature, were generating an unnecessary problem. It would be expected that psychologists and social workers would be interested in psychological and social adjustment and not in medical care, but it was not clear how patients or other workers in rehabilitation felt about this. Anecdotal accounts which emerged from interviews with staff and ex-patients suggested that psychosocial services in rehabilitation settings are seen as ineffective and not particularly necessary. Some patients reported that they resented being viewed as having a "mental" problem and staff seemed more concerned with finding ways of controlling problem patients than with a programmatic effort directed at social adjustment outside the hospital. In short, it seemed worthwhile to investigate the attitudes of staff and patients on these issues.

As a result of the above arguments it was decided to create a survey instrument specifically designed to meet the needs of comprehensive rehabilitation systems; which would take account of the multiple activities that occur and the many different groups which work together. Involvement of hospital personnel and patients was seen as essential to this process since the purpose was to design an instrument that would provide relevant information to rehabilitation workers, and which would reflect the concerns of both staff and patients.

CHAPTER II

METHOD

Settings

Participants in this study were drawn from the staff and patients at the Texas Institute for Rehabilitation and Research (TIRR) and the Spinal Cord Injury Unit of the Veterans Administration Hospital, Houston, Texas. TIRR is an 80 bed regional rehabilitation hospital dealing with spinal cord injury, stroke, multiple handicapping conditions and pulmonary problems. It offers a variety of services from intensive medical care through various therapies to vocational and community adjustment programs. The VA Spinal Cord Unit is a 24 bed treatment and rehabilitation center within a large general hospital. It shares the facilities of the Occupational Therapy, Physical Therapy and Corrective Therapy departments with other units of the hospital but has staff members from these departments assigned specifically to SCI patients. Other services and programs are delivered on the ward. A psychologist, social worker and physician are assigned to the unit along with nursing personnel.

Subjects

Appendix A defines the response groups and lists the abbreviations used. The TIRR staff are divided into various treatment and nontreatment groups based on their professional

or institutional labels. The VA staff are presented as a single group because it was too small to subdivide.

Patients and staff groups with high patient contact were the priority groups for data collection since the instrument was designed primarily for treatment staff and patients. Low patient contact groups such as research and secretarial personnel were included to help in assessing validity by comparing responses across "core" or centrally involved groups and more peripheral groups.

Patients. All adult, mentally competent, spinal cord injured or stroke patients at TIRR and all patients on the VA Spinal Cord Unit were initially included in the design. It was found however, that newly admitted patients, particularly those with severe impairments, had great difficulty with the task because of fatigue, lack of information about the hospital and difficulty in concentrating on the questions and response format. It was felt that the strain on these patients and on the researchers was too great and further effort was concentrated on patients who were further along in the rehabilitation program. Seventeen TIRR patients returned completed questionnaires which is about half of those meeting the revised criteria for inclusion. Eleven of the 24 VA patients returned questionnaires.

Staff. The questionnaire return rate for TIRR staff was between 75% and 100% for all groups except medical and nursing. Two of the five physicians and five of the approximately

20 respiratory, surgical and genito-urinary team members returned forms. At the time of the study there were about 120 aides and LVNs and about 55 registered nurses at TIRR. Special efforts were made to meet with all nursing shifts on the five stations and 150 questionnaires were distributed to nursing personnel (some of the difficulties encountered will be discussed in a later section). Twenty-two aides or LVNs returned complete forms and 16 registered nurses returned forms.

The VA staff group consists of a physical therapist, corrective therapist, social worker, chaplain, physician, aide and three registered nurses. One physical therapist, five RNs and 17 aides assigned to the unit did not respond. The survey thus samples all the staff groups but is not representative of the majority of personnel who are aides.

Table 1 presents the age distribution for the response groups ranked by the mean age for the group. The management group has the oldest members while the nursing students are the youngest.

Table 2 shows the average length of time members of each response group have been employed. The vocational and management groups have the most members with long tenure while physical therapy has the largest proportion of new staff.

TABLE 1

Classification of Subjects by
Age and Response Group

Response Group	AGE			Total
	20-24	25-34	35+	
Management	0	1	6	7
Vocational	0	3	4	7
VA Staff	1	2	6	9
Medical	2	3	6	11*
Social Work	0	5	2	7
Occupational Therapy	4	2	7	13
Aides and LVNs	7	5	10	22
VA Patients	1	8	2	11
Naive	3	4	4	11*
Physical Therapy	5	14	4	24 ¹
Registered Nurses	6	5	5	16
TIRR Patients	6	7	4	17
Research	3	6	1	10
Nursing Students	7	0	0	7
Total	45	65	62	172

* one subject unclassified

Classification of Subjects by
Time Employed and Response Group

Response Group	Time Employed			total
	1 year or less	1-3 years	more than 3 years	
Vocational	0	2	5	7
Management	1	1	5	7
VA Staff	0	6	3	9
Medical	3	4	5	12
Social Work	2	2	3	7
Occupational Therapy	7	1	5	13
Aides and LVNs	10	8	4	22
Registered Nurses	8	5	3	16
Physical Therapy	14	4	6	24
Total	45	33	39	117

Procedure

The study consisted of the following phases:

1. Instrument Development

In this phase a variety of environmental and organizational assessment instruments were studied and the general approach developed (see Introduction). Interviews were then arranged with the following TIRR individuals or groups: the directors of Physical Therapy, Occupational Therapy, Nursing, Social Work, the Vocational Unit, and the Volunteer Service; a staff physician, a psychologist, three ex-patients, a professor of Nursing from University of Texas School of Nursing, who supervises the nursing students assigned to TIRR; members of a research team studying patient behavior at the hospital, and the Director of Research at TIRR. The study was explained in these interviews and suggestions were solicited as to what areas should be included in such a survey. Individuals were asked about their current concerns at TIRR and their expectations about the future direction of the program.

The responses from the interviews were combined with the approaches suggested in the literature to produce a tentative list of 335 items assessing various aspects of hospital functioning. The list was given to 12 of those interviewed earlier with the request that they rate each item for its relevance and clarity. The results were collated and another round of interviews held. A prototype instrument was then

created and piloted on ten of the individuals previously interviewed and on two students not familiar with the hospital. These subjects recorded the time required to complete the task and commented on items or sections they felt needed further work. From their responses the form used in the study was developed.

Because this was an exploratory study the instrument was purposely made longer than optimum and included sections of debatable value. Each area of interest was assessed by multiple items and scales to aid in interpreting the results, with the intention of using the responses from this administration to eliminate redundant or unreliable items and scales with poor characteristics or low usefulness. At this point it was accepted that the task would be somewhat aversive due to its length and complexity.

2. Instrument Administration

Treatment Staff: The heads of the treatment departments at TIRR were again contacted and arrangements made for distributing the instrument. Details were worked out with each department separately and varied considerably. The Physical Therapy Department decided that the survey represented an important departmental activity and required staff members to participate. The entire department filled out the questionnaire at one time during working hours. In Occupational Therapy the staff met with the researcher as a group but participation was voluntary and the forms were completed

during the lunch hour or over the weekend. In Social Work, the forms were distributed by the director and the researcher never met with the staff.

Nursing presented the greatest difficulty because of its large size, multiple shifts and spread-out geographical locations. Each of the five nursing stations were contacted individually and each was allowed to decide individually on its participation. On some stations the supervisor was actively in favor of the research and gave considerable assistance while on others there seemed to be less enthusiasm and help forthcoming. Arrangements were made with each supervisor to meet at least once with each shift. The rotation of days-off, shift assignments, sick leave, etc. made it impossible to meet with every member of the nursing staff. Arrangements were made for getting forms to absent staff but these were of dubious effectiveness.

Each station was revisited several times to collect forms. Again, it was necessary to make multiple arrangements. Some staff were content to leave the completed forms in the nursing station, others wanted to give them directly to the researcher. Arrangements were made for staff to mail the forms directly to the research office but few were received in this manner. On no station was it possible for the staff to take hospital time off as a group to complete the forms since the staff workload was considered to be too heavy.

Patients: Each patient was contacted individually. The

project was explained in detail and the voluntary nature of the participation was stressed. Arrangements were made for university students to assist those patients physically unable to complete the forms by themselves. Most patients however, preferred to have family members assist them.

About a third of those contacted refused participation on the grounds: (a) that it was too much trouble, (b) they did not know enough, or had no opinions, or (c) they did not feel well enough. About a quarter of those contacted accepted a questionnaire but never completed it.

Nontreatment Staff and Naive Respondents: The research, vocational, secretarial, management and volunteer groups were approached through the heads of the various departments as with the treatment staff. The research team and the management group met with the investigator but the Director of Volunteers and the supervisor of the office personnel asked to distribute the forms to their groups themselves because of difficulty in assembling people at one time. The Vocational Unit Director distributed the forms to his department because many of the personnel worked outside the hospital building.

Except for the research team members, there was considerable difficulty in making clear to these groups why their responses were wanted since the instrument was clearly directed towards patients and treatment staff. It was explained that the responses of those not directly involved in day-to-day patient care were interesting in themselves and

also provide an important control for the responses of the treatment staff. They were asked to respond to the questions on the basis of whatever information they had about the hospital: direct experience, rumor, intuition or guess. The importance of comparing the responses of groups with varying degrees of contact with patients was stressed. It was difficult to get this message across however, particularly in the case of the secretarial workers and volunteers where the explanation had to be made through another person. Several people complained that the survey did not apply to them and they did not see why they should spend time on it. Resistance was sufficiently high among the volunteers and secretaries that plans to analyze their responses separately were dropped and the responses obtained were combined into one category.

A similar problem developed with the naive group, which was to consist of university students. Three undergraduate psychology classes were visited, the project explained and participation requested. It was explained that the responses of those without knowledge of rehabilitation were needed as a check on the presence of stereotyped responses by the staff members. Participation in the project was presented as purely voluntary without effect on their class grades. A number of forms were distributed but the rate of return was extremely poor and it was decided that the effort required to obtain an adequate sample exceeded the benefits at this time

and further efforts were dropped. The result was that the secretarial, volunteer and university responses were combined into one category, labeled the "naive" group although there were varying amounts of knowledge about the hospital. The common characteristic of the respondents was lack of formal training in a rehabilitation or medical area.

VA Staff and Patients: The Veterans Administration Spinal Cord Unit was contacted through the ward psychologist. He arranged for a volunteer to contact the patients, explain the study and assist those who needed help in completing the forms. The psychologist contacted the staff and distributed forms to them. Due to a complex set of circumstances involving a new Head Nurse just hired from TIRR, a misunderstanding arose about the purpose of the research and several staff members refused cooperation. Communication became so confused that at one point the volunteer was asked to leave the ward due to a difference of opinion about the nature of her duties. Several months were required to resolve the situation and it was decided not to disturb it further with continued requests for participants.

The difficulties encountered in the instrument administration phase will not be new to those who do field research. The absence of standardized testing conditions is obvious as is the influence of institutional politics. Respondents were not randomly selected but were, by and large, self-selected and this has an unknown biasing effect. Some respondents

might have worried about confidentiality and skewed their answers, and so on.

It might have been possible to do a more experimentally controlled study, but the cost would have been high. The administration of the hospital would have had to invest in it heavily by requiring participation and by allotting time and space for a standardized testing. Such an effort might well have been counterproductive however, by creating resentments. It seemed far more desirable to maintain good relations with all areas of the hospital than to insist on experimental elegance. It became clear during the initial interviews that the staff at TIRR are called upon to participate in many, many research studies. Often they never see the results of their participation and this has led to a feeling that research can be more disruptive than helpful. Those who do field research need to be sensitive to these issues if they are to remain welcome in field settings.

These experiences also show the importance of the relationship between the investigator and respondents in field settings. The majority of difficulties encountered occurred when the investigator did not have direct access to the respondents or had little opportunity to develop a relationship with them.

3. Test/retest Administration

The temporal stability of responses was assessed by retesting a small subsample of the original respondents.

This retesting took place from four to six weeks after the respondent completed the first pass. The identical form was used, there being no parallel form. The danger of memory raising the reliability figure seemed minimal over that time period and for an instrument of this length.

It had been intended to obtain a reliability sample consisting of two subjects from each response group, selected at random, which would have produced 28 comparisons. In the original testing subjects were informed that some would be asked for a second protocol and were asked to write a coded identification on their protocol which they would be able to remember over the four to six week interval between the two tests. This symbol would then be used to match the two protocols without compromising the anonymity of the respondents.

Unfortunately, it proved difficult to find respondents willing to complete the questionnaire a second time. Several forms were distributed but were not returned, and as the time between the two administrations lengthened it was decided to accept a restricted retest sample consisting of nine respondents: two occupational therapists, two physical therapists, two registered nurses, two nursing aides and one hospital research team member. Although this sample is fairly representative of the groups in the study they are clearly not typical of the hospital population if only because they agreed to the retesting while many others did not. Obtaining an adequate retest sample however, would have required

putting considerable pressure on the staff and at this point it was decided that the effort would be too costly both in time and in its effect on maintaining good relations. It must be kept in mind that both staff and patients at TIRR are called upon to participate in many studies and there is some feeling that they have about been "studied out." The test/retest correlations are given in Table 8.

4. Feedback of Results

After the data analysis phase the participating hospitals were again contacted and arrangements made to present the findings of the study to the hospital community, this was done by beginning at the top of the supervisory ladder and working downwards. The Director of Treatment Personnel at TIRR and the Assistant Hospital Director participated in a discussion of the results, then the heads of the various departments were contacted and arrangements made to present the results to their departments. In Nursing, the Director of Nursing first discussed the results with the investigator, then a presentation was made to the nursing supervisors, and finally each individual nursing station received a presentation.

At the VA the staff psychologist was again contacted and he discussed arrangements for a staff meeting with the Head Nurse. There seemed to be some reluctance on her part and to date, they have not responded to several requests by the investigator for a meeting time.

The delay between administration of the instrument and feedback of results was about six months. This was longer than anticipated and much longer than had been desired. Staff turnover during this time was not high, but the patients in both hospitals who had participated in the study were no longer there. Arrangements were made with those patients who expressed an interest to mail them a synopsis of the findings and this was done.

In addition, presentations were made to the nontreatment groups except for the naive group. The nursing students who participated were no longer available but the current nursing class (under the same director as when the test was administered) viewed the results.

Although it was considered desirable to assess the reaction of the hospitals to the results this was not done in a formal fashion. The effort required to produce even a moderately reliable and useful measure seemed too high. In addition, it seemed likely that the effects, if any, were more likely to become visible only in the long run, as planners and decision-makers integrated the results with their day-to-day perceptions and problems. To assess this process would be a complete research project in itself. Instead, only anecdotal reactions to the study were collected. This was done during, and after the presentations and again several weeks after the presentations were completed.

Description of Instrument

The general format of the instrument is a series of rating scales with seven response points. The end points are labeled appropriately depending on the characteristic being rated (there is also one 3-point, one 4-point and one 6-point scale). The 7-point scale was selected as providing the maximum number of useful discriminations. The possibility of large response variance on individual items was considered desirable to assist in the factor analysis of the results. A 5-point scale would probably have been adequate but it was decided to err on the side of having too many distinctions rather than not enough.

In general, this instrument was constructed with the philosophy of over-inclusion of items and multiple, overlapping assessment of areas of interest, even at the expense of making a somewhat bulky, hard to administer form. In a sense this instrument was considered a pilot even though it was itself the result of several previous forms. The overlapping, redundant structure was designed to insure that no areas of potential interest would be ignored because of poor sampling and to assist in interpreting the results of the study. Since only two hospitals were included in the study it was even more important than usual that there be multiple, converging sources of information to assist in interpreting the results. It was hoped that out of this mass of conceptually related material would emerge a set of correlated items and

scales which could then be sorted out through the rational-mechanical procedures of factor analysis.

Subsections of Instrument

Appendix B presents the instrument administered to the response groups. The staff form and patient form of the instrument are identical except for the demographic data sheet and the wording of the instructions for the scale dealing with satisfaction with patients' control of the environment and the section on important aspects of rehabilitation. Both forms of these sections are included in Appendix B.

1. Informed consent signature sheet:

This consent form was approved by the human subjects committees of TIRR and Baylor College of Medicine. Respondents were not asked to identify themselves beyond providing their staff position.

2. Demographic data--staff and patient forms:

These forms were designed to gather data on subject characteristics which might have an effect on their responses. Socioeconomic level, education, time at the institution, and position within the institution were considered to be likely sources of variance.

3. Target group scales:

(a) CONTACT: This scale assesses the amount of contact that occurs between the respondent and various other hospital groups. The results from this scale help in interpreting responses on the other scales since familiarity with other

groups is expected to affect the responses about them.

(b) SIZE: This scale asks respondents to judge which hospital groups should have their staff expanded, reduced, or held the same. The judgement of the respondent is assumed to be based on both the existing hospital situation and on his perception of what the hospital should be doing.

(c) STRAIN: This scale asks for a rating of the interpersonal strain or tension existing between the respondent and various hospital groups. Discussions with hospital residents frequently elicited a belief that some hospital groups do not get along. This scale attempts to assess this belief.

(d) MONEY: This scale asks the respondent to distribute a hypothetical \$100,000 grant to improve patient care. The money may be divided among the hospital groups and functions in any way the respondent desires. Several bases for the distribution may be operating: the respondent may wish to reward a service he feels is doing a good job or he may wish to provide more money for a service that is under-represented. Alternatively, the money might be distributed on the basis of how important the respondent feels that function is regardless of how well or poorly it is done. A mild attempt to untangle these motivations was made by asking the respondent to declare whether they had distributed the money to improve inadequate service or to enlarge the role of an already well-functioning service. Several respondents mentioned however, that they had different reasons for different services and

others marked both responses so this rating was not analyzed.

4. Adjective rating scales:

(a) Staff Description and Patient Description: These two scales are identical except that one asks the respondent to rate the staff and the other asks for a rating of patients. The items on these scales are drawn from the Leary (1957) system of interpersonal diagnosis, which categorizes responses in a circular arrangement consisting of eight octants, each octant represents an interpersonal style. The list of adjectives used here consists of three items from each octant.

(b) Hospital Experience: The respondent is asked to rate the degree to which each adjective represents his experience at the hospital. These words were drawn from a list of 434 words referring to affective reactions (Barrington, 1963) and were selected on the following bases: that they be common and easily understood; relevant to rehabilitation programs; and not extreme, bizarre or representative of unusual emotional states. An equal number of positive and negative words were included.

The purpose of this scale was to provide an overall, nonspecific rating of respondents' reactions to the hospital environment against which to compare ratings of specific activities and functions.

5. Service Quality:

This scale asks in a straightforward fashion for a rating of how well the hospital performs its various functions.

When this rating had been completed the respondent was asked to select the five most important service functions. However, the instructions for this task were evidently unclear because a large number of respondents made incorrect importance ratings. The importance assignment was therefore dropped.

6. Hospital Assessment:

This section of the instrument consists of 52 statements about hospital functioning. The respondent was asked to rate his degree of agreement with each statement. These items were selected from a variety of sources (see Introduction section), or created to represent concerns and interests voiced during the interviews with staff and patients. The actual scoring of responses was based on the results of a factor analysis, but selection of the items was guided by the following a priori categories:

(a) Staff/Patient Relationships - The nature of the interpersonal relationships between staff and patients, i.e., friendly, supportive, threatening, hostile.

(b) Patient Information - The degree to which patients are informed about their disability and about the way the hospital functions. Also, the degree to which patients are included in decision-making and planning.

(c) Hospital Organization - The day-to-day organization of the system, i.e., scheduling, availability of equipment, effectiveness of services.

(d) Staff/Hospital Relationships - The degree to which

staff feel they are treated fairly by the administration, have adequate access to supervisors and the decision-making process, and receive adequate training and information about the hospital system.

7. Interpersonal Events:

This section asks for a rating of the actual behavioral frequency of various positive and negative interpersonal events such as arguments, complaints, friendly conversations or compliments.

8. Staff and Patient Satisfaction with Patients' Control of Environment:

This section assesses the degree of satisfaction respondents have with the patients' control over planning, decision-making, scheduling, and elements of the environment such as noise, equipment or personal items. The issue assessed here is not how much control patients actually have but whether the respondent feels they have the right amount.

9. Important Aspects of Rehabilitation:

This section asks respondents to list the 10 most important aspects or characteristics of rehabilitation without restriction to hospital functions. The free response format allows respondents to express concerns or interests not previously covered and aids in interpreting the importance of scales or items assessing program performance. This scale deals directly with issues of rehabilitation philosophy by asking respondents what rehabilitation is and how it happens.

This scale was presented at the end of the instrument and there was therefore some danger that the previous items would affect the free responses. This was accepted however because in the pilot testing several subjects reported this section was a difficult and time-consuming task. Complete data from the rating scales had a high priority and it was decided to insure collection of that data before requesting the additional, difficult effort represented by the free response section.

Although it would have been desirable to randomly order the sections of the instrument to control for fatigue effects, the practical difficulties in assembling, and later coding the forms prevented this. Everyone received the sections in the same order, as follows:

1. Demographic Data
2. Contact
3. Size
4. Hospital Assessment
5. Patient Description
6. Service Quality
7. Staff Description
8. Satisfaction with Patient Control
9. Interpersonal Events
10. Hospital Experience
11. Strain
12. Money
13. Important Aspects of Rehabilitation

Data Coding

The data were transferred by a single coder onto machine readable scanner forms. The transfer was direct, i.e., required no coding judgements, for all sections except the demographic data and the free response section which was not input to the computer at all. The coder simply read off the response level for each item and recorded it on the scanner form. The demographic section required the coder to classify respondents into appropriate categories of staff, but to a large extent the other responses were directly codable, i.e., they were directly translated into months or years rather than category labels.

Errors in the data were checked at several points in the analysis process. A 10% random check of the listing from the scanner produced an error rate of 0.3%. The data were further scanned by computer programs during recoding of data and during the rescoring of the data using the categories created by the factor analysis. These scanning programs could detect systematic errors in the recoding and rescoring programs but were not capable of detecting raw data errors except those producing values outside the specified coding ranges. No errors of that type were discovered.

The free response section of the instrument presented special difficulties. Each respondent was to provide 10 or more statements describing important aspects of rehabilitation. The data were coded in the following manner:

Thirty protocols were selected at random and the approximately 300 responses obtained were written on small cards. These cards were then sorted into categories by the investigator using the conceptual set which generated the rest of the instrument, i.e., maintaining a distinction between the various disciplines represented in the hospital, and focusing heavily on categories developed by other workers such as patient involvement and information, program organization and clarity, staff and patient interpersonal relationships and so on. New categories were created freely even if they contained only a few responses. The strategy at this stage was to be overgenerous with category labels. Eventually, 28 categories with more than one item in them were created with a number of items left over.

At this point the rest of the protocols were coded using the categories just developed. Several new categories were created although the bulk of the items did fit into the previous set. When this process was completed there were 35 categories and a sizable group of unclassified items.

The categories were then scrutinized and some decisions made about combining categories or reclassifying items; this produced the 12 shown in Appendix C.

The list of 12 categories and the raw responses were then given to a second coder with instructions that she code all responses into the 12 categories. Agreement was computed by counting the number of items assigned to the same category

by both raters and dividing by the total responses. The agreement figure was only 0.67. Several problem areas in category definition were noted but it was decided not to further refine the category system at this time. Instead, the percentage of responses in each category was calculated for each response group, and the values for each coder were then averaged together. For the most part this produced a difference between the averaged value, and the value of either of the coders of only 1 to 4 percentage points.

Missing Data

Missing data was not a large problem in this study. Less than 10% of the returned forms were discarded because of extensive missing data or failure to follow instructions. The 174 protocols retained had an overall missing data rate of 1.4% or about four items out of 288. The two scales with the highest rate of missing data were SIZE with a rate of 4.3% and Satisfaction with Patients' Environmental Control with 3.1% missing data. These sections were simply omitted by a few subjects thereby raising the missing rate.

Missing data were replaced by a value indicating a neutral response for that section of the test. In bipolar scales this was the middle response point. On the satisfaction scale the replacement value was "1" or "satisfied" and for the strain scale it was "0" or "no strain," the assumption being that dissatisfaction or perceived strain would produce a response rather than an omission.

CHAPTER III

DATA ANALYSIS

Overview

The primary tools for data reduction were factor analysis and cluster analysis. The factoring procedure took place in two steps: subsets of the data were factored to produce first level factors. The data were rescored on these factors and the resulting scores were then refactored to produce second level factors. The cluster analysis used the factor scores from the second level analysis to produce clusters of respondents. The clusters obtained were then compared to the response groups to indicate which groups were alike and which unlike in their overall responses to the instrument.

One-way and two-way analyses of variance were performed on the first level factors. The independent variables in these analyses were response groups, time employed, age, and type of assignment. Two-way analyses were done between staff and patients and the VA and TIRR samples.

Test/retest stability was assessed using Pearson product moment correlations for both individual items and for scores on the first level factors. Various subsidiary analyses such as chi-square and t-tests were performed to bring out specific aspects of the data.

Hardware and Software

Analyses were performed on a Univac 1108 system. The

factor analyses were processed by FACTOR3, a program in the STATJOB, Version 10(1976) library. One-way analyses of variance were performed using the subprogram ONEWAY in the SPSS library (Nie, Hull, Jenkins, Steinbrenner and Bent, 1970). Subprograms CROSSTABS and BREAKDOWN from this library were also used to generate descriptive statistics. The two-way analyses of variance were performed on a hand calculator using reduced data supplied by the computer runs. The test/retest correlation routine was written by the investigator (Appendix D). The logic and flow chart for the cluster analysis was created by the investigator¹ (see Appendix D).

Factor Analysis

The factor analyses consisted of principal components solutions with varimax rotations. Principal components was selected over principal factors because of the exploratory nature of the research and because the FACTOR3 routine would provide factor scores only for the principal components solution. Principal components assumes no error variance and therefore places ones in the matrix diagonal. This results in a rapid solution and produces higher factor loadings than does principal factors. Gorsuch (1974) states that principal

¹Programming into Fortran IV of an earlier form from the flow chart was completed by Glenn Duval, implementation and debugging was performed by James Alexander, both members of the Behavioral Ecology Research Team at Texas Institute for Rehabilitation and Research. Modification of the routine to handle a larger number of variables was performed by the author.

components is acceptable in exploratory research because it keeps track of more of the variance. After the instrument is more stabilized and sources and amounts of error identified a principal factors solution provides a more realistic factor loading.

Gorsuch (1974) also notes that as the number of variables in a matrix increases the difference between principal factors and principal components decreases because the diagonal elements represent decreasing proportions of the total matrix (it is only the diagonal elements that distinguish between principal components and principal factors). With 20 to 30 variables the differences between the two techniques is small. Most of the factor runs in this study included large numbers of variables. Three runs were performed using both approaches and the differences were negligible.

The principal components approach requires as many factors as variables to reproduce the correlation matrix. In practice however the first few factors account for a large proportion of the variance and the rest can be dropped producing a truncated principal components solution. This was the approach used here. The remaining variance may be thought of as error, or as measuring concepts with little practical utility.

Second Level Factors

A second level factor analysis is methodologically the same as a first level analysis except that the starting point

is a matrix of correlations based on the scores derived from a previous factor analysis. The investigator may either use the actual first level factor scores or may rescore the data in some fashion based on the first level results. In the present case the data were rescored by assigning each item to the factor with the highest loading above 0.3 and then replacing the actual loading with a unit loading. A scale score was then obtained by adding up individual item scores. These scores were then correlated with one another across subjects and the resulting matrix factored to produce second level factors.

Analysis of Variance

One-way analyses of variance were performed with scores on first and second level factors as the dependent measures and with response groups, respondent's age, length of time employed, and type of assignment as the independent measures. Two-way analyses of variance were performed between TIRR and the VA staff and patients. The nontreatment groups were not included in this analysis. The RANGES option of ONEWAY produced subsets of the independent variables which did not differ based on the selected significance level of .05; this is equivalent to multiple t-tests between all pairs of levels of the independent measure.

Test/Retest Correlations

Test/retest correlations were performed based on nine

subjects. Appendix D contains the program for computing the correlations and the t-transformation test of significance. Table 8 contains the correlations obtained when the data were scored on the first level factors. Test/retest correlations were also performed for each individual item and these correlations, although not reported, were used in deciding which items to retain or drop in the restructuring of the instrument.

Cluster Analysis

Cluster analysis and factor analysis are closely related in that each attempts to reduce the complexity of a set of observations by taking advantage of regularities within the data. They differ in the way this is done and in the purposes to which the results are put.

Consider a hypothetical set of 17 measurements. If the measurements are all the same we can display them in a point--a space of zero dimensions. If they differ linearly we can display them as a line--a one dimensional space. At the limit it would require 17 dimensions to show the interrelationships among the 17 measurements. Factor analysis takes a set of relationships expressed as either a correlation or covariance matrix and finds the smallest set of dimensions which will display the interdependencies in the data. Usually this process includes some decision as to the amount of variance that can be "lost" or attributed to "error" so

that the number of required dimensions is kept low even though it will not then be possible to perfectly reproduce the correlation or covariance matrix from the factor structure. The power of factor analysis then, is in reducing the dimensionality of a data set. The rotation of axes to "simple solution" helps the investigator interpret the "meaning" of the dimensions if that is his interest. Consider Figure 1. Here are 17 observations displayed in two dimensions. The distance of a data point from the origin represents the variance accounted for in this two-dimensional space. In this figure about 76% of the variance is accounted for with 24% attributed to error or simply ignored. The orientation of the axes in the space is purely arbitrary, and there is no requirement that they be orthogonal. The solid lines labeled "I" and "II" show a possible varimax rotation for orthogonal factors; the dashed lines "1" and "2" show a possible oblique rotation, with factors correlated +0.64. The rotation chosen would depend on the purposes of the researcher. Note that whatever rotation is chosen the three clusters of observations: "A," "B" and "C" would retain their positions relative to one another. Cluster analysis operates on these invariant relationships.

The measure of association in a cluster analysis may be a correlation matrix, a covariance matrix, or a matrix of euclidian distances. In the first two cases the dimensionality is equal to the number of variables and the procedure

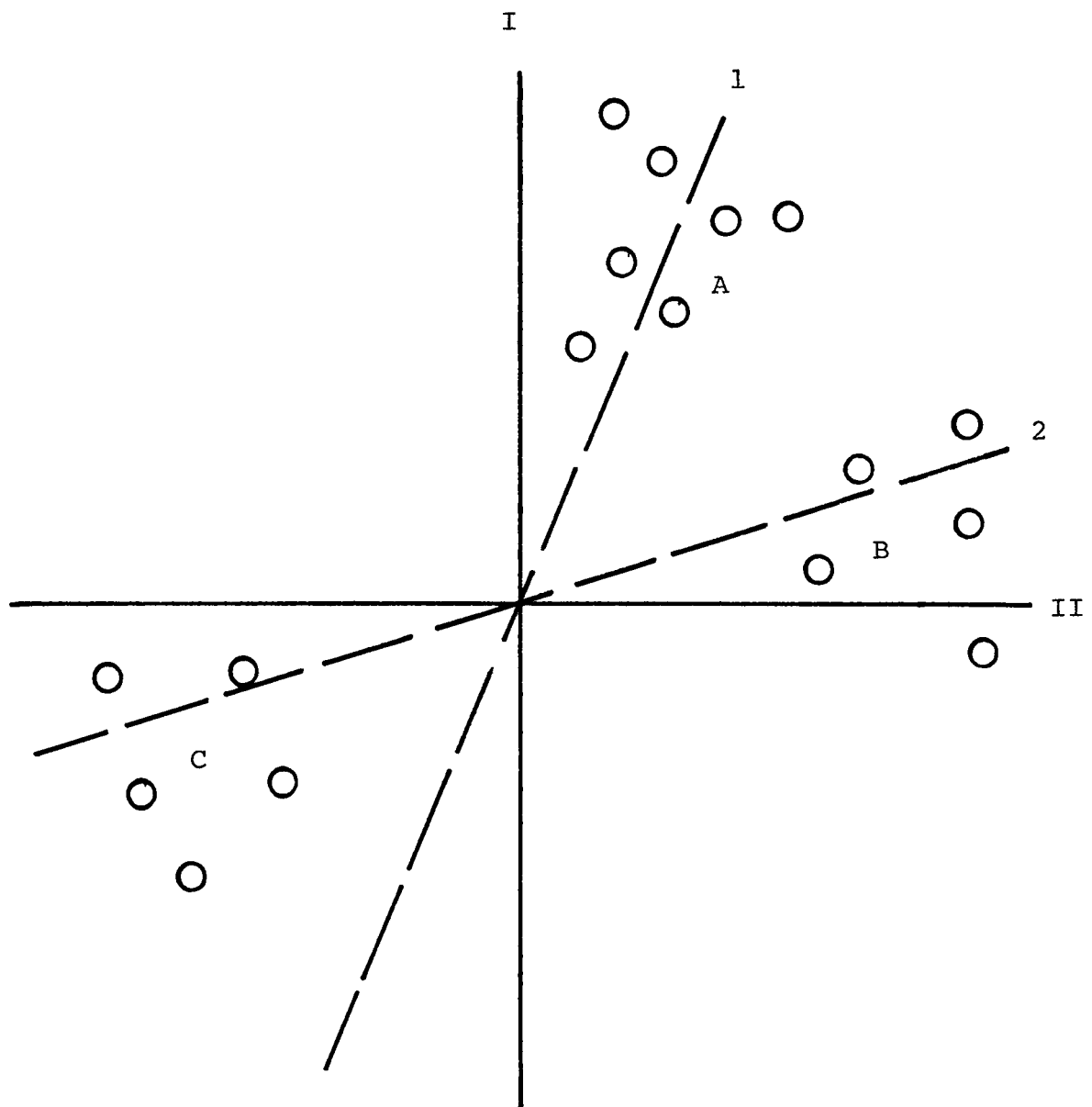


FIGURE 1

Hypothetical Data Set with
Orthogonal and Oblique Factors

uses the cross-products to find those points that are close together. In the third case the dimensionality may be anything the investigator decides upon, but two things must be kept in mind in that decision. First, the number of dimensions must be adequate to represent the variance, and second, the scaling of the dimensions must be comparable. For example, an investigator might have a set of observations of the color and size of certain flowers. He might then score the data on these two dimensions simply assuming that they are orthogonal. The problem is to make the scoring on the two dimensions comparable. Figure 2 shows how two clusters of nine observations might become six clusters of three observations if one dimension is stretched in relation to the other. Usually the solution is to standardize the scores on each dimension to make them comparable.

Once the dimensionality of the space is decided upon the procedure is to simply measure the straight-line, Euclidian distance between all pairs of points. The points that are closest together are then considered to be part of the same cluster. The number of clusters could be as large as the number of variables or as small as unity depending on the cluster decision rules adopted. The dimensionality of the space has no direct effect on this except that spaces with larger numbers of dimensions have more "room" so that the average distance between variables can be larger.

Before going on to the mechanics of cluster analysis

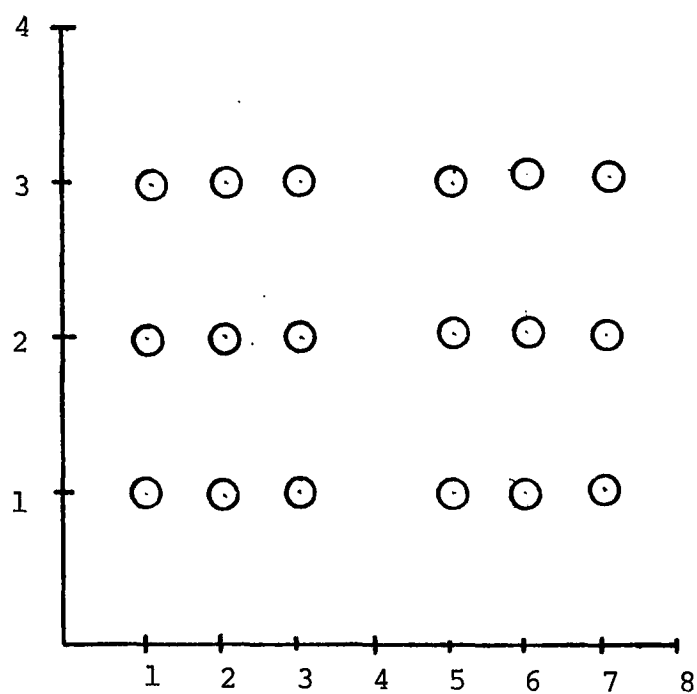
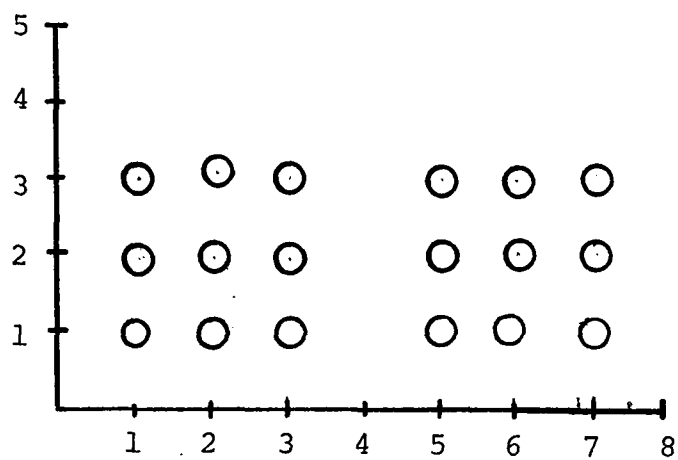


FIGURE 2
Effect of Scaling on Clusters

used in this research, the differences between factor and cluster approaches should now be made clear. In factor analysis the purpose is to find the smallest number of dimensions which will contain some specified proportion of the variance in a data set. Secondly, rotation of the dimension axes may be useful in interpreting or naming these "underlying" dimensions. Cluster analysis on the other hand, is concerned with finding which observations are alike and which different (on the basis of some specified clustering criterion). The purpose may be to discriminate respondents (as in this study), to identify response strategies, or to group different measurement techniques together (Anderberg, 1973). Cluster "B" and "C" in Figure 1 are different in that they are far apart and the measurements in "C" are negatively correlated with those in "B"; but it is not necessary to interpret these measurements as opposites. Cluster analysis is not suited to the generation of "underlying dimensions" or "hypothetical constructs" as is factor analysis. It is more nearly a taxonomic tool, with the primary function of providing classifications of data. Cluster analysis typically provides a hierarchical set of clusters so that a taxonomic classification system can be created at whatever level seems best to the investigator.

Anderberg (1973) points out that cluster analysis has the advantage of being sensitive to differences in response level when raw scores rather than correlations or standardized

scores are used. He argues that differences in response level may be as important in discriminating groups as are differences in response pattern. The use of raw scores does demand close consideration of scaling issues however.

CSTUART Cluster Routine

The function of the cluster analysis in this study was to provide clusters of respondents based on the pattern of responses to a large section of the questionnaire. These clusters were then compared to the response group categories as defined in Appendix A. The response groups might have been compared on the basis of some kind of index score but a pattern analysis seemed to provide a more meaningful and sensitive indicator of group similarity.

The cluster analysis procedure was designed to take advantage of the STATJOB factor analysis routines already available. These routines were used to generate the correlation matrices and to reduce the dimensionality of the data set. The cluster analysis routine then used the factor scores from FACTOR3 which are orthogonal, standardized measures to compute a euclidian distance matrix from which the clustering was accomplished.

Appendix D contains the FORTRAN IV program for clustering data called CSTUART. In essence the program works like this:

1. Read the number of objects to be clustered. (NV)
2. Read the number of dimensions used. (NF or number of factors)

3. Read the data: NF factor scores for each of NV objects.
4. Compute the euclidian distance between all pairs of objects and store them. The formula for distance using FORTRAN notation is:

$$D = \text{SQRT}((X(I) - Y(I))**2) + (X(I+1) - Y(I+1))**2 + \dots \\ + (X(NF) - Y(NF))**2)$$

where D = euclidian distance.

$X(I)$ = the ith factor score for object or cluster x.

$Y(I)$ = the ith factor score for object or cluster y.

NF = the number of factor dimensions.

5. Find the smallest "D" in the distance matrix--call this cluster "1" (actually the cluster numbers begin one higher than the number of objects).
6. Assign a weight (W) to the cluster equal to the number of objects in it. Initial objects are clusters with weight = 1.
7. Find the coordinates of the centroid of the new cluster:

$$C(I) = (W(X) * X(I) + W(Y) * Y(I)) / (W(X) + W(Y))$$

where $C(I)$ = the ith coordinate (or score) for cluster C

$W(X)$ = the weight of object (or cluster) x

$W(Y)$ = the weight of object (or cluster) y

Printout the components of the new cluster, its identification, weight, and the distance between its elements.

8. Delete the components of the new cluster from the distance matrix and then compute the distances between the new cluster and all the remaining objects or clusters.
9. Again, find the smallest "D" and repeat the procedure until all objects are in one cluster.

This program is not sophisticated in that the investigator must now complete the cluster process by hand. This is best illustrated by example:

Assume six objects to be clustered. The output might look like this:

CLUSTER 7 = ELM 1 + ELM 3 AT DIST = .3042
WEIGHT = 2 CLUSTER STORED AS ELM 1

CLUSTER 8 = ELM 1 + ELM 4 AT DIST = .3651
WEIGHT = 3 CLUSTER STORED AS ELM 1

CLUSTER 9 = ELM 2 + ELM 5 AT DIST = .5172
WEIGHT = 2 CLUSTER STORED AS ELM 2

CLUSTER 10 = ELM 2 + ELM 6 AT DIST = .6746
WEIGHT = 3 CLUSTER STORED AS ELM 2

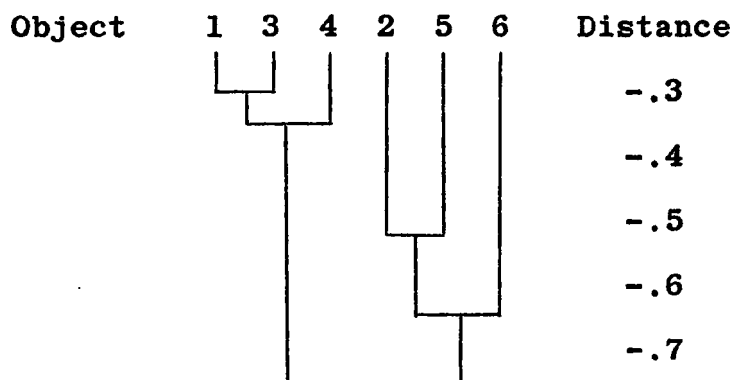
CLUSTER 11 = ELM 1 + ELM 2 AT DIST = .7482
WEIGHT = 6 CLUSTER STORED AS ELM 1

EXIT

The researcher now prepares a reduction form that looks like this:

$$\begin{array}{r} \frac{1+3}{\frac{1+4}{1}} \quad \frac{2+5}{\frac{2+6}{2}} \\ \hline 1 \end{array}$$

This leads to the cluster tree form:



The researcher must now examine the cluster tree and decide at what distance he wishes to stop the clustering. In the example, if he accepts the 0.5 distance then there will be four clusters: 1-3-4, 2, 5, and 6. At 0.52 there will be three clusters: 1-3-4, 2-5, and 6. The use of standardized scores (factor scores are standardized) provides an aid in deciding when to stop clustering because they have a normal distribution. For instance, two measurements separated by a distance of 2.0 represent scores that are two standard deviations apart. The probability of their belonging to the same set could then be interpreted as approximately .02 based on the normal distribution.

The researcher may then pick a suitable level of z-score beyond which he will not accept clusters. However, there may still be a problem in deciding where to stop clustering below this level.

A decision as to the proper cluster distance may be illustrated by examination of Figure 3 which shows cluster characteristics obtained in this study. First, assume that no clusters will be accepted at a distance greater than $z=2.0$ since this represents a distance at which measurements might reasonably be considered distinctly different. Next, we note that the number of clusters drops rapidly until $z=1.6$. At the same time the number of elements in clusters size two or greater becomes level at $z=1.6$ and increases only gradually from 1.8 to 2.0. Further, the size of the largest cluster is

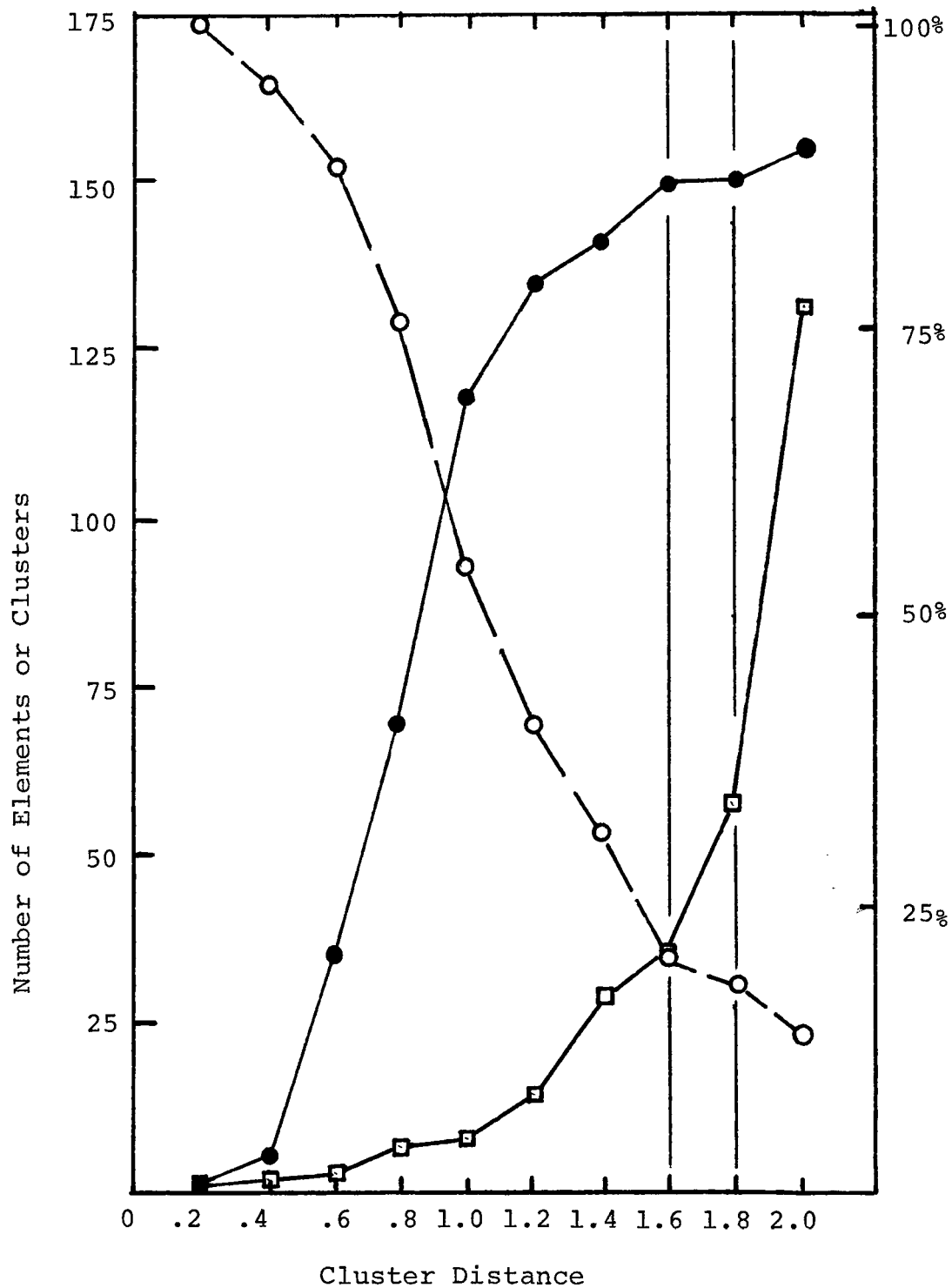


FIGURE 3
Cluster Characteristics at
Different Cluster Distances

- Number of clusters.
- Elements in clusters size 2 or larger.
- Size of largest cluster.

increasing rapidly in this range and from 1.8 to 2.0 it jumps from size 58 to size 132. Considering these facts together it appears that either 1.6 or 1.8 would be acceptable cluster distances. Each includes most of the elements that are going to cluster within the specified distance and the size of the largest cluster is not overpowering. The difference in number of clusters at the two distances is insignificant. The decision then, can be based on the size of the largest cluster. At $z=1.6$ it includes 35 elements and at $z=1.8$ it includes 58 or exactly one-third of the total. There seemed no reason to choose one over the other at this point so the decision was made to carry out the next steps in the solution for both distances.

Cluster/Response Group Comparison

In some research the identification of clusters ends the cluster analysis. In this study the issue was to establish whether the response groups defined by the investigator on the basis of position in the hospital bore any relation to the clusters established on the basis of responses to the instrument. A glance at Appendix E (Composition of Response Clusters) shows that this question does not simply answer itself. The first and largest cluster, at $z=1.6$ contains all the TIRR staff groups except VOC and SW. At $z=1.8$ it contains representatives of all staff groups and patients. The only response groups not included are NAV, NS, and R. The VA groups slip in with only four respondents. However, these

response groups are represented in different strengths and it will be remembered that the groups were of unequal size to begin with. It is necessary then, to devise a way to take into account the group sizes and the distribution of respondents into clusters that might occur on a chance basis. If a cluster is made large enough almost everyone will be in it but this will not demonstrate a relationship in response patterns.

The solution rests on the fact that we are considering a joint classification of individual respondents into two categories: response group and cluster. Secondly, we are considering relationships between pairs of respondents, that is, who goes with who on the basis of both response group and cluster. The procedure is as follows:

1. Compute the maximum number of pairs for the given sample size:

$$TP = TN(TN-1)/2$$

TP = total possible pairs

TN = total number of respondents

2. Create a matrix of response groups. For each pair of response groups compute the possible number of respondent pairs:

for different response groups

$$RP = N(1) \times N(2)$$

within a response group

$$RP = N(N-1)/2$$

where

RP = number of possible respondent pairs

N(1) = number of respondents in group 1

N(2) = number of respondents in group 2

N = number of respondents within any given group.

3. Select a cluster distance, thereby determining cluster composition.

4. Compute the maximum number of respondent pairs that can occur in each cluster (disregarding response group labels).

$$CP = NC(NC-1)/2$$
 where
 CP = number of respondent pairs in cluster
 NC = number of respondents in cluster.
5. Compute the sum of respondent pairs (TP) for all clusters at the selected distance (disregarding response group labels).
6. Compute the expected number of respondent pairs for each set of response groups based on the number possible for the given clusters, i.e., return to the matrix of response groups and for each cell compute the number of response pairs that would be expected by chance given the obtained clusters:

$$EP = RP \times CP/TP$$
 where
 EP = number of expected pairs
7. For each cluster--count the number of respondents in each response group. Create a matrix of response groups with the number of observed pairs of respondents in each cell. Sum the results from each cluster. The computation form is the same as in step 4.
8. Compute chi-square for each cell of the response group matrix using the observed and expected values just calculated. Retain the sign of the difference between observed and expected to indicate whether the observed value is significantly less than or greater than expected by chance. Select significance level and create response group matrix showing those cells with significant relationships.

Example

For 20 subjects the maximum possible pairs (TP) is 190. Assume two response groups "A" and "B." The size of "A" is 12, the size of "B" is 8. The response group matrix of possible pairs (RP) is

	A	B	
A	66	96	= 190
B	-	28	

Assume three clusters with the following composition:

Cluster	Response Group		Cluster total	Possible pairs (CP)
	A	B		
I	2	3	5	10
II	8	3	11	55
III	2	2	4	6
	<u>12</u>	<u>8</u>	<u>20</u>	<u>71</u>

Ratio of possible pairs based on clusters to total possible pairs is

$$71/190 = .374$$

The response group matrix of expected pairs (EP) = (RP) X (CP)/(TP) is:

	A	B	
A	24.7	35.9	= 71.1
B	-	10.5	

Observed pairs:

	AA	BB	AB	
I	1	3	6	= 71
II	28	3	24	
III	1	1	4	
	<u>30</u>	<u>7</u>	<u>34</u>	

The chi-square matrix for response groups is:

	A	B
A	1.14	-0.10
B		-1.17

with one degree of freedom for each cell there are no relationships significantly different from chance.

Figure 4 shows the relationships obtained when clusters at distance $z=1.8$ are used and Figure 5 shows the chi-square results for $z=1.6$. The empty circles indicate relationships that were significant in the analysis at $z=1.8$ but not when $z=1.6$ while the circles with a sign in them indicate

Chi-Square Analysis of Response
Group Clusters Based on Second
Level Factor Scores at $z = 1.8$

	OT	PT	SW	MAN	RN	MED	A	P	NAV	R	VOC	NS	VAP	VAS
OT														
PT	++	++												
SW	++	++	+											
MAN	+	++												
RN		+	--		+									
MED			-		++									
A		+	--		++									
P	-	--	-		-	--								
NAV					+		++							
R		--					--			++				
VOC					-	--				--				
NS		--	-	-								++		
VAP	-	-	--			-				--				
VAS			-					-	--					

++ Similar groups - p less than .01
 + Similar groups - p less than .05
 -- Dissimilar groups - p less than .01
 - Dissimilar groups - p less than .05

FIGURE 4
Response Group Clusters
at $z = 1.8$

Chi-Square Analysis of Response
Group Clusters Based on Second
Level Factor Scores at $z = 1.6$

	OT	PT	SW	MAN	RN	MED	A	P	NAV	R	VOC	NS	VAP	VAS
OT														
PT	++													
SW	○	○												
MAN	+	++												
RN		++	-		++									
MED			○		++									
A		++	--		++		+							
P	-	-	--		-	--								
NAV		+	-		○		++							
R		--			○		--	○	○	++				
VOC					-	-				-				
NS		○	○	-							○	○		
VAP	-	○	--			○				--				
VAS			-	++		○		○		--				

++ Similar groups - p less than .01

+ Similar groups - p less than .05

-- Dissimilar groups - p less than .01

- Dissimilar groups - p less than .05

○ Result different from that obtained at $z=1.8$

FIGURE 5
Response Group Clusters
at $z = 1.6$

relationships that were not significant in the more inclusive analysis but were when $z=1.6$. Twenty cells changed in this manner when the cluster distance was increased from 1.6 to 1.8--11 became significant while nine lost significance in the larger groupings. The SW group in particular, took on an identity as part of the OT-PT-MAN group at the higher cluster level. The research group (R), originally discriminated from RN, P and NAV lost this distinctiveness in the more inclusive clusters. The clustering at $z=1.8$ appears slightly preferable as a solution because of the clearer group identities and discriminations. There are, for instance, five significant within-group relationships at the 1.8 distance and four at the 1.6 distance. On the other hand, the aide group is better defined at the 1.6 level.

The differences in results at the two cluster distances require no major change in interpretation of the overall pattern of results. The fact that some relationships disappeared at the larger cluster distance should warn the investigator however, that this type of analysis is somewhat sensitive to small changes in cluster distance. It is wise then, to perform an analysis at several cluster distances to judge the stability of findings.

One other point should be made about the meaning of the results obtained from this type of analysis. The fact that two groups have a significant positive relationship does not necessarily mean that the members of the two groups are all

to be found in the same cluster. A significant relationship will be found if the distribution of the members across clusters is similar. Thus, if OT and PT show a positive chi-square that does not mean that there exists a unique OT-PT cluster of responses but that the distribution of OT responses is like the distribution of PT responses. A significant within-group similarity measure, on the other hand, does give some indication of unanimity of response within a group.

Scale Definition

The data set generated by the survey instrument consisted of 288 responses for each subject, not counting demographic data and the free-response section. These 288 responses fell into 12 categories defined by the a priori structure of the instrument (see Appendix B). The first issue in the data analysis was to determine if the response structure generated by the subjects matches the a priori structure and if not, what the exact nature of the differences were.

It was not considered desirable to simply factor the entire set of 288 responses together in one matrix because different sections of the instrument have different structures and purposes. For instance, the four scales asking for assessments of staff groups might be factored together but would produce only confusion if placed in a matrix with the adjective ratings or the service quality section. In

addition, there was a practical difficulty in factoring any matrix with more than 100 variables due to program and hardware restrictions. Finally, an overall factoring procedure would be likely to produce a few very large, confused factors and a great many small, confused factors.

The scales were factored with the following groupings:

1. CONTACT, SIZE, STRAIN and MONEY (the Target Group scales)
2. HOSPITAL ASSESSMENT (HAS) and SERVICE QUALITY (SER)
3. PATIENT DESCRIPTION and STAFF DESCRIPTION

The remaining scales were each factored separately.

Target Group Scales

Table 3 shows the factor loadings above 0.40 for the four Target Group scales after rotation by varimax. The six factors account for 39.5% of the total variance with the first three factors accounting for 27% of the total variance. The STRAIN and MONEY scales appear as well-defined factors while the SIZE scale is very poorly defined with its high loadings spread over many factors (eight factors were extracted but the last two were dropped). The CONTACT scale appears as two factors. Factor 3 includes most of the hospital groups while factor 4 consists of contact with housekeeping, maintenance, laboratory personnel, respiratory therapy, and transportation aides. These are groups contacted most often by nursing personnel.

The results of this analysis suggested that the scales

TABLE 3
Factor Loadings for Four
Target Group Scales

Factor							Factor						
1 2 3 4 5 6							1 2 3 4 5 6						
Variable							Variable						
STRAIN							CONTACT						
1	57						1		48	43			
2	45						2		52				
3	44						3		66				
4	72						4				-64		
5	57				43		5		78				
6	68						6		58				
7	65						7		43	66			
8	66						8			66			
9	65						9						
10	41						10		56				
11	59						11		59				
12	55						12			57			
13	66						13		79				
14	58						14		53		53		
15	69						15		50				
16	49						16		45	42			
17	60						17		66				
18	76						18		47				
19	70												
20	51												
MONEY							SIZE						
1		45					1						
2							2						
3		80					3						
4							4					44	
5		70					5						
6		45					6					42	
7		95					7					61	
8		56					8					58	
9		41					9						
10		94					10			42			
11		49					11						
12		63					12					58	
13		67					13						
14		75					14						
15		62					15						
16							16					53	
17		55					17			54			
							18						

NOTE: Only loadings above 0.40 shown.
Decimal points omitted in table.

should be scored separately rather than combined into some sort of index. The low proportion of variance accounted for is a sign that the within-scale correlations are not very high; in fact they are in the range of .1 to .4, but they are consistently higher than the zero correlations attained when comparing items across scales. There is, of course, no reason why the items within a scale rating different staff groups should be highly correlated. The observed correlations are probably best described as a result of method variance, i.e., as a result of the type of question asked and the scale format. No particular interpretation is therefore attached to the results other than the fact that the scales should, at this point, retain their separate identities.

The factors defined by the responses to the four Target Group scales are orthogonal or uncorrelated. However, when the Target Groups are rank-ordered on each scale, the following relationships appear: STRAIN and CONTACT correlate +0.89 (Spearman rank-order correlation coefficient); SIZE and MONEY correlate +0.88. Those groups with high contact experience more mutual strain than those with low contact and groups that are judged to need more personnel are given money to improve service. The other relationships between scales are essentially zero, for instance, the correlation between SIZE and STRAIN is -.09. Rated strain or amount of contact therefore did not affect judgments about need for expansion or money.

HAS and SER Sections

The HOSPITAL ASSESSMENT scale (HAS) and the SERVICE QUALITY scale (SER) were factored together and separately. The HAS scale consisted of 52 items dealing with several aspects of hospital functioning and the SER section consisted of 23 items rating specific services provided by the hospital for patients. Twelve factors were rotated by varimax from the matrix combining HAS and SER items. The first factor consisted of all but five SER items with six HAS items. The second factor had four SER items and four HAS items and the remaining factors consisted of HAS items. Since the SER section emerged almost intact it was decided that a better solution would be obtained if the SER section were factored separately from the HAS section. The SER section was designed to assess several conceptually separate areas of service, i.e., physical rehabilitation, psychosocial rehabilitation, patient information and environmental characteristics. It was felt that too much detail was being lost in the large matrix.

The separate factorings of HAS and SER produced nine HAS factors and three SER factors with eigenvalues greater than one. A fourth SER factor consisting of two "critical care" items was retained although its eigenvalue was 0.8. Six HAS factors scales were retained although the sixth is not really a factor but consists of uncorrelated items loading on six different factors (this peculiar scale will be discussed more fully later).

The six HAS factors scales are listed below. See Appendix F for composition of scales.

Hospital Organization (ORGN)

Threatening Environment (THRT)

Supportive Staff (SUPP)

Patient Information (INFO)

Effective Use of Staff (STFA)

Uncorrelated Staff/Hospital Relationship Items (STFB)

The four SER scales are:

Rehabilitation Quality (REHAB)

Understands and Involves Patients (INVLV)

Hospital Operation (OPERT)

Critical Care (CRIT)

Items were assigned to the factor scale on which they had the highest loading. The first five HAS factors accounted for 37.8% of the total variance. The four SER factors accounted for 64.2% of the total variance in their matrix.

Seven HAS items did not have their high loading on any of the first five factors. Six of these dealt with staff/hospital relationships, but they all loaded on different factors. The fifth factor could also be considered a staff/hospital relationship factor defined by four items dealing with staff training issues. The choice at this point seemed to be to either discard the staff/hospital items or to create a scale from them even though they did not emerge as a unit from the factor analysis. It was decided to retain the items

combining them with the four items in the fifth factor as a conceptually defined scale, keeping in mind its difference from the factor-defined scales. After this was done only one item remained unclassified: "Patients here are unfriendly towards staff." This item was simply dropped from further analysis.

Table 4 shows the HAS items classified according to both the a priori factors and the factors generated by FACTOR3. There is a close match in the two systems indicating that the respondents interpreted the items in a fashion similar to that intended by the researcher. One interesting difference was the split of the assumed Staff/patient dimension into two orthogonal dimensions, one dealing with positive staff/patient relationships and the other dealing with negative events. This would indicate that both positive and negative staff/patient interactions may occur at the same institution, they do not simply cancel one another out.

The SER factors did not match the a priori assumptions used in creating the scale. The most interesting difference was the combination of psychosocial and physical rehabilitation items into one factor. These two sets of activities were seen as being of the same quality at TIRR so that when one was judged good or bad the other was as well. The Hospital Operation factor (OPERT) seems to be strongly related to nursing care and included two items that also have high loadings on the INVLV factor: "Treats patients as adults" and

TABLE 4
Distribution of Hospital Assessment
Subtest Items on Assumed and Derived
Factors

ASSUMED FACTORS					
DERIVED FACTORS	Staff / Patient Relation.		Patient Information	Hospital Organization	Staff / Hospital Relation.
Supportive Staff	1	31	39		
	12	47			
	15				
	17				
	20				
	28				
Threatening Environment	3	50	23	8	
	6		41		
	13				
	33				
	43				
	45				
Patient Information	26		2	42	
			5	44	
			7		
			18		
			22		
			24		
Hospital Organization			35	9	51
				36	
				10	37
				14	38
				30	46
				32	48
				34	
Staff / Hospital Relationship				4	11
					40
					16
					49
					19
					52
					21
					25
					27
Not Classified	29				

"Cares about patients needs." These particular interpersonal items are thus seen as important to the quality of day-to-day hospital operation. The INVLV factor consists of items dealing with how well the hospital understands patients and their families, involves them in the program and provides information about disability.

Patient Description and Staff Description

These two scales were factored together because they consist of ratings of staff and patients using the same list of 24 adjectives. Eleven factors with eigenvalues greater than one emerged from the analysis. The ratings of staff loaded almost exclusively on the first two rotated factors with the patient ratings spread out over the remaining nine factors. However, 2/3 of the patient ratings had their high loading on factors 3, 4 or 5 so it was decided to retain only factors 1 through 5. These five factors accounted for 47.7% of the total variance and 68.1% of the factor variance.

Table 5 shows the five factors with all loadings above 0.3. Recall that the list of adjectives was actually responded to twice, once for patients and once for staff although the list is shown only once in Table 5. The staff factors can best be described as "good" and "bad." Intuitively these would seem to be opposites but these respondents suggest that both characterizations can exist at the same time at TIRR.

There was considerably less agreement on how to

TABLE 5
STAFF AND PATIENT DESCRIPTION

Adjective	Leary Octant	STAFF		PATIENT		
		Good	Bad	Angry	Quiet	Admired
Bossy	1		.63			
Respected	1	.79				.58
Admired	1	.68				.68
Selfish	2		.70	.44		
Impersonal	2		.57			
Independent	2	.31				.42
Angry	3		.71	.66		
Impatient	3		.61	.65		
Firm	3	.34				
Touchy	4		.70	.73		
Gloomy	4		.80	.53		
Bitter	4		.60	.70		
Obedient	5	.74			.47	
Passive	5		.53			
Quiet	5	.39			.73	
Trusting	6	.61			.20	
Grateful	6	.72				.51
Respectful	6	.85			.78	
Friendly	7	.78			.29	
Warm	7	.75				.49
Cooperative	7	.84			.77	
Helpful	8	.61			.46	
Considerate	8	.77				.50
Reassuring	8	.82				.63

characterize patients with the result that many of the adjectives loaded on unique factors. Three dimensions of patient description emerged. These might be characterized as the angry patient, the quiet patient and the admired patient.

Although this analysis was interesting it does not allow for a common scoring for staff and patients and in addition, the test/retest correlations were low. The items for these scales were drawn to represent the Leary Interpersonal Diagnosis System which scores responses on eight correlated dimensions and then combines them to produce a two-dimensional rating. It was decided that using the original Leary (1957) scoring system would be more useful in that direct comparisons could be made between ratings of staff and patients. In addition, the Leary system has an intrinsic interest of its own. The test/retest reliabilities for the Leary scoring were also marginally better (although still not as good as might be desired).

The scoring system produces a circular plot with eight octants representing different interpersonal styles. The eight octant scores are transformed into two orthogonal scores which allows a set of responses to be plotted onto the circular graph. The two orthogonal dimensions are labeled DOM and LOV. Moving upwards from the center of the circle on the DOM dimension indicates increasing amounts of activity, aggressiveness or domineering behavior; moving downward indicates increasing ratings of passivity. On the LOV dimension,

moving to the right indicates increasing interpersonal warmth or friendliness while moving to the left indicates ratings of hostility.

Table 5 includes the octant designations for each of the items used in this study. The DOM and LOV scores are derived from these octant scores by the following formulae:

$$\text{DOM} = \text{I} - \text{IV} + .7(\text{II} + \text{VIII} - \text{VI} - \text{IV})$$

$$\text{LOV} = \text{VII} - \text{III} + .7(\text{VI} + \text{VII} - \text{II} - \text{IV})$$

These formulae simply convert the octant score-vectors into two orthogonal vectors. In this study each octant score could range from 1 to 7, therefore the maximum DOM or LOV score could be plus or minus 14.4.

This scoring seems to offer features of interest for a rehabilitation setting even though the actual response factor structure did not match this system. This discrepancy will be discussed further in the section discussing implications for a future version of the instrument.

Satisfaction with Patient Control. Both staff and patients were asked how satisfied they were with the amount of control exercised by patients over the operation of the hospital. The 28 items produced six factors with eigenvalues greater than one. The last two factors were each defined by only two high loading items however. Factor 5 consisted of items concerned with control of "who visits" and "when people visit," and factor 6 consisted of "TV" and "radio." The first four factors could be described as concerned with

control of: (1) Hospital routine and scheduling; (2) Planning and decision making, (3 and 4) environmental characteristics such as control of lights, noise, ward rules and clothing. No intuitive explanation could be derived for the separation of items in factors 3 and 4 since both seem to be concerned with similar aspects of the environment, therefore they were simply labeled environmental characteristics "A" (ECA) and environmental characteristics "B" (ECB).

It was decided not to further analyze the last two factors because they consisted of only two items. This decision was arbitrary, but the need for simplifying this very complex data set was constantly felt. The "TV" item was retained as part of the ECA factor since it had a moderate loading on that factor. Appendix F shows the factors and the items which had their high loadings on them. The four factors retained accounted for 55.3% of the total variance and 79.5% of the factor variance.

Interpersonal Events. This scale asked about the frequency of occurrence of both positive and negative interpersonal events in the hospital. Four factors with eigenvalues above one emerged: Friendly Staff (SFRND), Friendly Patients (PFRND), Complaints about the Respondent (COMPL) and Arguments (ARGU). Each of these were extremely well defined, i.e., each item has a high loading on only one factor. The four factors accounted for 75.3% of the total variance and all of the factor variance. It later became clear however that the PFRND

and SFRND scales and to a lesser extent the COMPL scale were influenced not only by the perceived frequency of positive and negative events but also by the amount of contact the respondent had with staff and patients. An analysis of the results controlling for amount of contact could have been performed but it was decided that the payoff would not be worth the effort since there were other measures of interpersonal climate. These scales were therefore dropped.

Hospital Description. This scale consisted of 25 adjectives describing the respondent's reaction to his hospital experiences. Six factors with eigenvalues greater than one emerged but the last two factors accounting for 23% of the factor variance were dropped. The remaining factors are described in Appendix F and account for 51.6% of the total variance. One item "easy" did not have a loading above 0.3 on any of the retained factors and was dropped.

Level Two Factors

The data set was scored using the first level factors just presented. Each item was assigned to the scale where it had its highest loading and was given a weight of one. The scale score was computed by simply adding up the rating score for each item on the scale. These first level scale scores were then correlated across respondents and a second level factor analysis performed. It should be noted that using unit weights rather than the actual factor loadings changes the relationships between items, but this was accepted

because a simple scoring system was desired.

The second level factor analysis consisted of 26 scores for each respondent (the Target Group scales were not included in this analysis). Five factors with eigenvalues greater than one were extracted accounting for 65.2% of the total variance. Table 6 presents the loadings for the 26 first level and five second level factors. Factor A is loaded primarily by scales from the HAS and SER sections of the instrument; factor B has high loadings from the Satisfaction with Patient Control section; factor C deals with the Hospital Description section; factor D represents the Interpersonal Events scales and factor E trails off with high loadings from only the PDOM and SDOM sections of the Leary scoring. It can be seen that the original sections of the instrument reemerge at this level of analysis.

Two decisions were made at this point: First, it was decided to accept these five factors as the basis for the cluster analysis even though the fifth factor is very poorly defined. This was acceptable because the purpose of the cluster analysis was to create a response-based grouping of respondents to compare with the a priori groupings based on staff label. The definition of the clusters was not based on the factor scores, that is, the second-level factors did not need to be interpreted or given names for the purposes of the cluster analysis.

Second, it was decided that some modification of these

TABLE 6
Second Level Factors Loadings*

Level 1 Factors	Level 2 Factors				
	A	B	C	D	E
ORGN	-610	492	148	-151	.081
THRT	-585	534	125	-054	-094
SUPP	.804	-145	-289	-076	.091
INFO	-759	287	208	-025	.077
STFA	-748	235	203	-049	.279
STFB	629	-154	-300	.157	-.208
REHAB	735	-333	-025	-079	.208
INVLV	781	-262	-173	-041	.286
OPERT	733	-354	-180	-039	.308
CRIT	361	142	-138	.205	.183
SCHED	-352	829	.019	-068	-.036
PLAN	-316	750	.108	-022	-.047
ECA	-279	768	.082	-074	-.068
ECB	-105	846	.107	-071	-.125
USEFUL	.464	.084	-.551	-.086	.213
ENJOY	.397	.198	-.623	-.110	.263
HOPLSS	-.213	.262	.814	-.040	.085
SCARY	-.091	.163	.838	-.016	.151
SFRND	-.106	.066	.292	.773	-.012
PFRND	-.075	.061	.036	.819	-.046
COMPL	.109	-.211	-.220	.802	.057
ARGU	.233	-.312	-.157	.603	-.032
PDOM	.196	-.128	-.063	-.014	.681
PLOV	.367	-.020	-.433	.118	.179
SDOM	.232	.414	-.129	.005	-.464
SLOV	.534	-.313	-.432	.063	-.005

* Principle components solution,
Varimax rotation

Decimal points omitted

factors would be required to produce meaningful second-level factor scales to be used in describing the responses of the various groups since there the meaning or name of the scale is important. This was done by adopting a kind of "eyeball" cluster approach. The grouping of level one factor scales shown in Table 6 was achieved by putting together those scales with similar factor loading patterns across the five level two factors. For instance, ORGN and THRT go together because they each have high to moderate loadings on both factors A and B, while the next seven first level scales (beginning with SUPP) have high loadings only on factor A. The four Leary scored scales at the bottom of the list are retained as a unit solely on the basis of their conceptual origin not on the basis of their loadings. If the factor loadings were used then the dominance ratings for staff and patients (SDOM and PDOM) would form a scale while the interpersonal affiliation or love ratings (SLOV and PLOV) would join the Hospital Description factors. It is possible that a warm, friendly staff and patients are seen as creating an interpersonal climate characteristic of the hospital as a whole, while ratings of the dominance or passivity of staff and patients are seen as being characteristics of the person rather than of the place. Whatever the interpretation it was nevertheless decided to retain the Leary scoring as a unit for the present analysis.

The second level factor scales may now be defined as follows:

Environmental Quality--consisting of the first level factors ORGN and THRT which have high loadings on factors A and B. This scale contains HAS items dealing with hospital organization, the day-to-day functioning of the hospital, the safety of patients, and the openness of staff/patient communication.

Rehabilitation Quality--consisting of the first level scales SUPP and INFO, from the HAS section and REHAB, INVLV, and OPERT from the SER section. These scales assess how well the hospital provides psychosocial, medical, nursing and physical care. The INFO and INVLV scales assess the degree to which patients are informed about the program and their disability and the degree to which they are included in decision making. It is interesting that so many different rehabilitation services received similar ratings from the respondents. It had been expected that the ratings of different aspects of care would vary across response groups, but for this sample if one thing was rated well everything was or if anything was rated poorly then every aspect of care received negative ratings. It is not clear if this pattern would hold true in other institutions. It may well be that at TIRR the various departments are equally strong in what they do. It is also quite possible that a strong halo effect is operating, so that once an overall judgment of quality of care is made, all aspects of care receive similar ratings. This issue will be discussed further at another point.

Staff/Hospital Relationship--consisting of the first level scales STFA and STFB from the HAS section. Although these two first level factors had the same pattern of loading on the second level factors as did the preceding scales, they were kept separate because of the problems with their construction discussed earlier. The items on these scales deal exclusively with the relationship between staff members and the administration or their supervisors.

The high correlations between the quality of care items and the staff/hospital items may be a result of the halo effect mentioned earlier or it may be that they covary because good patient care is unlikely without good staff/hospital relations. The restricted number of hospitals surveyed makes it difficult, at this point, to decide whether the results are due to TIRR's particular structure, to instrument characteristics, or to halo effects.

Critical Care--consisting of two items assessing critical nursing and medical care from the SER section. These two items were included as a scale because they were uncorrelated with everything else and cover an important area of hospital functioning.

Environmental Satisfaction--consisting of SCHED, PLAN, ECA and ECB scales from the satisfaction with patient control section. The satisfaction section reemerges as a unit after the second level factor analysis. The respondents' ratings of all aspects of patients' control were highly correlated.

Again, a halo effect may be operating. A respondent is either satisfied or dissatisfied with patients' control in the hospital, and breaking this judgment down into particulars adds little information.

The Hospital Description, Interpersonal Events, and Staff and Patient Description sections reemerged as units at the second factor level. Each of these scales will be presented in terms of its component first level factors.

CHAPTER IV

RESULTS

One-way analyses of variance were performed as follows:

Independent Variables--response group, respondent's age, time employed, staff assignment (supervision or treatment).

Dependent Variables--scores for each target group from the CONTACT, SIZE, STRAIN, and MONEY scales, scores for the 26 first level factor scales and scores from the second level factor scales.

Target Group Scales

Table 7 presents the F-ratios between response groups for each target group on each of the four scales. The critical level of F for 13 and 160 degrees of freedom is 1.7 for p less than .05 and 2.1 for p less than .01. All of the CONTACT comparisons and all but three of the MONEY comparisons are significant with p less than .05. Eight of the 19 STRAIN comparisons and nine of the 18 SIZE comparisons did not reach significance at the criterion level. In general, the significant differences were obtained because of a strong difference between the core TIRR treatment groups as compared to the more peripheral TIRR groups or the VA groups. The distribution of scores for each response group will be presented later. At the moment it should simply be noted that the scales did discriminate at least some response groups from one another on the great majority of targets.

TABLE 7
F-Ratios Between Response Groups
for Each Target Group on the Four
Target Group Scales

Target Group	Scale			
	CONTACT	STRAIN	SIZE	MONEY
OT	4.6	2.2	1.8	5.1
PT	6.8	2.5	1.2	5.1
SW	3.8	1.3	.9	1.5
RN	9.8	2.5	2.4	[4.1]
A	7.6	2.5	1.0	
MD	4.7	2.3	1.9	3.3
REC	6.6	1.2	2.8	5.0
VOC	8.8	5.1	1.6	15.6
PSY	11.5	1.9	1.6	2.3
RESP	6.9	4.1	2.8	3.9
TA	6.7	2.4	1.3	3.5
HSKP	3.9	1.9	1.3	5.7
MAIN	9.1	1.4	2.1	4.8
LAB	7.4	2.1	1.6	[3.0]
ORTH	10.0	1.1	1.9	
R	-	1.6	2.0	3.6
VOL	2.1	.8	1.6	-
P	5.2	1.0	3.8	-
FAM	3.9	1.1	-	-
FAC	-	-	-	1.6
FOOD	-	-	-	4.2
MISC	-	-	-	1.2

Age, Stay and Assignment

Comparisons of respondents' age, length of stay, and assignment were generally not significant at the .05 level. Only 10 of the 165 comparisons made on the MONEY, SIZE, and STRAIN scales reached significance, a result close to the eight that would be expected by chance. Nine of the 10 significant differences were between supervisors and treatment personnel: supervisors gave larger amounts to facilities on the MONEY scale while treatment personnel gave larger amounts to PT, SW and LABS. Relatively more supervisors wanted an increase in RNs while more treatment personnel wanted an increase in aides. On the STRAIN scale the supervisors rated more strain with transportation aides and volunteers than did the treatment personnel, who rated higher strain with physical therapy.

The CONTACT scale had six significant differences on the basis of assignment, six on the basis of age and three on the basis of length of stay. The age differences, however, are best explained by differences between response groups because the groups had differing age and stay compositions. For instance, there were age differences in scores on the house-keeping, maintenance, laboratory, volunteer and transportation aide target groups: those under 25 and over 35 reported more contact with these groups than did the 25-34 age range. The under 25 group is dominated by aides and RNs while the over 35 group is made up of people from the groups A, OT, MED,

and MAN. The 25-34 group is mostly from PT, P and R. A, RN and MED are the nursing unit groups who reported high contact with the target groups under discussion. The respiratory group was contacted most often by the under 25 age group, which is mostly aides and RNs.

Patients and RNs were contacted more frequently by those employed less than a year while Social Work was contacted more often by those employed more than a year. Most of those employed less than a year are from the PT, A and RN groups although there are equal numbers from these groups who have been employed more than a year. The VOC, MAN, MED and SW groups are almost exclusively composed of those employed more than a year. It is interesting to note that the patients receive the majority of their contact with the hospital system through individuals who are themselves relatively new to the system.

Table 8 shows the F-ratio probability values obtained for the 26 first level factor scales and the four independent variables. VA/TIRR comparisons are also shown. Only those ratios equal to or greater than 0.10 are shown. Age and assignment do not differentiate the respondents while response group classification and hospital setting do show differences. Length of stay differentiates respondents on about half of the HAS and SER scales (the first 10 factor scales) but show few differences on other sections of the instrument.

The age, stay and assignment analyses were included

TABLE 8

F-Ratio Probabilities and
Test/Retest Correlations
for First Level Factors

Factor Scale	F-Probabilities					
	Age	Stay	Assign- ment	Response Group	VA / TIRR	Test / Retest
ORGN	-	021	-	014	068	858
SUPP	-	-	-	005	012	306
INFO	-	003	-	000	001	926
THRT	-	008	098	000	365	761
STFA	-	089	-	001	006	834
STFB	-	006	-	002	134	720
REHAB	-	077	-	000	040	928
INVLV	-	-	-	000	000	522
OPERT	-	-	-	004	-	728
CRIT	-	-	-	024	098	784
SCHED	-	-	-	000	002	889
PLAN	083	-	-	000	016	940
ECA	-	091	-	004	004	933
ECB	-	-	-	001	060	923
SDOM	087	-	-	004	086	845
SLOV	-	-	-	010	-	394
PDOM	-	-	-	010	-	681
PLOV	-	002	-	-	-	438
SFRND	026	-	-	002	008	620
PFRND	-	043	-	000	009	943
COMPL	-	-	-	000	001	768
ARGU	-	-	-	020	022	777
USEFUL	-	-	-	031	002	693
ENJOY	-	-	-	000	000	802
HOPLSS	-	-	-	005	-	905
SCARY	002	-	-	014	010	466

Decimal points omitted

because they seemed to offer a reasonable expectation of producing differential responses. New staff have not had time to learn about the system and supervisors could be expected to differ on the basis of their different duties. The age comparisons were based on the possibility that cultural, educational and training differences might occur over time and produce different perceptions of rehabilitation. By and large these factors had little influence on the responses of the participants in the study, although there were some differences between those employed less than a year and those employed more than a year. This will be discussed further in following sections. The response group and setting differences were significant, but it should be kept in mind that they are very closely related since the two VA response groups were included in the ANOVA for response groups. The exact nature of the differences will be discussed in the following sections.

Test/Retest Correlations

Table 8 includes the test/retest correlations for the first level factors. These correlations are acceptable except for SUPP, INVLV, SLOV, PLOV and SCARY. The SCARY scale consists of very negative adjectives which may have little relevance for TIRR personnel. The first four factors deal with the relationship between staff and patients: the SUPP scale asks about staff support for patients; INVLV assesses the degree to which staff provide necessary

information and include patients and family in the decision making process, and the PLOV and SLOV factors rate the friendliness or interpersonal warmth of staff and patients. It may be that ratings of the interpersonal environment change more rapidly than do assessments of hospital functioning so that the scores are not as stable. It may also be that these measures are more influenced by the respondent's transitory personal states. Finally, it may be that these types of ratings bear little relevance to the respondents or lack sufficient referents to allow the respondent to make a consistent judgement. Given the overall stability of the rest of the instrument, it may be that these results simply represent statistical variation in the small test/retest sample. The PLOV and SLOV scores are partly affected by the lack of distribution in the scores which lowers the correlations, i.e., very small changes in score have large effects on the correlation because the scores are all so close together. It will also be recalled that the PLOV and SLOV scoring does not follow the obtained factor structure.

These scales must be interpreted with caution, but given the overall pattern of correlations the instrument as a whole can be accepted as reasonably stable.

The CONTACT, SIZE, STRAIN and MONEY scales were not structured in such a way that a summary scale score could be used to assess stability. The sum of the ratings for different target groups has no meaning. It was therefore necessary

to compute the test/retest correlation for each target group separately. A rating on a single item is less stable than that for a scale because small variations in response to the items of a scale cancel each other while this is not true for a single rating. Consequently, there was more variation in the correlations for these sections. The CONTACT scale had correlations ranging from 0.35 to 1.00 with a mean of 0.77. SIZE ranged from 0.10 to 1.00 with a mean of 0.70; STRAIN from 0.10 to 0.95 with a mean of 0.69 and MONEY from -0.16 to 0.97 with a mean of 0.46. The low and negative correlations were for low contact target groups such as maintenance or psychology (which is not active at TIRR), where it was reasonable to expect that the responses were not expressing any strongly held opinion. The MONEY scale targets with the low correlations were for research, food, maintenance, psychology and miscellaneous. The STRAIN correlations for recreation and volunteers were low and the SIZE correlation for research was low. When the low contact groups are eliminated the following test/retest correlations were found:

	Range	Mean
CONTACT	.35 - 1.00	0.77
SIZE	.50 - 1.00	0.74
STRAIN	.37 - 0.95	0.75
MONEY	.10 - 0.97	0.65

These correlations are generally acceptable given that they result from comparisons of single scores. The MONEY

scale shows the poorest stability which indicates extreme sensitivity to changing conditions or lack of a strong basis for the responses. Respondents were asked to distribute the \$100,000 grant whether or not there was any perceived need for the money--it was a "windfall"--and under conditions of low perceived need it might be expected that personal idiosyncrasies would play a large part in determining where the money was to go (see Mischel, 1973, for a discussion of the relative influence of personal and environmental variables under differing situational characteristics). Test/retest stability will be discussed further in the section dealing with creation of a second-generation instrument.

CONTACT

Table 9 shows the frequency of contact each response group reported with each target group. The meaning of the code numbers is indicated at the bottom of the table. The Target Groups are ranked by decreasing amounts of reported contact across response groups. For clarity only the main TIRR response groups are shown.

The target groups most frequently contacted are nursing and patients. Patients are of course contacted by all treatment personnel, but nursing also occupies a very central position because anyone dealing with the patients almost always deals with nursing as well. In addition, auxiliary groups such as housekeeping, laboratory personnel and so on may deal with nursing but seldom see patients. Nursing is

TABLE 9
Frequency of Contact
Between Groups

Target Group/	Response Group								TOTAL
	OT	PT	SW	RN	A	MED	P	MAN	
RN	2	2	2	-	2	2	2	1	13
P	2	2	2	2	2	2	-	1	13
A	2	1	2	2	-	2	2	1	12
PT	2	-	1	1	1	2	2	1	10
FAM	1	1	2	1	1	2	1	1	10
OT	-	1	1	1	1	2	2	1	9
MD	1	1	2	1	1	-	1	1	8
VOL	1	1	1	1	1	1	1	1	8
RESP	1	1	0	1	2	1	0	1	7
SW	1	1	-	1	1	0	1	1	6
HSKP	1	0	0	1	1	1	1	1	6
REC	2	0	0	0	0	0	1	1	4
LAB	0	0	0	1	1	1	0	1	4
MAIN	0	0	0	2	1	0	0	1	4
ORTH	1	0	0	0	0	0	0	1	2
VOC	0	0	1	0	0	0	0	1	2
PSY	0	0	0	0	0	0	0	1	1
SUM	17	11	14	15	15	16	14	17	

0 = less than one day / week
 1 = 1 - 2 days / week
 2 = 3 - 5 days / week

also the largest group in the hospital, accounting for almost half the staff.

Patients' families occupy a surprisingly high contact position. Every group reports an average of at least a day per week of contact with family members. This suggests that families are not just visitors at TIRR since the contact rates by OT and PT which operate 9-5, and which discourage sight-seers would then be low. The nature of the contact is, of course, not indicated. The groups reporting the most contact with families are Social Work and the medical group. Both nurse clinicians and physicians have responsibilities in dealing with family members, as do the social workers.

Of the core treatment groups Social Work is contacted the least by other groups. Social workers themselves report fairly high contacts with nursing and physicians however. The asymmetry in reported contact may be explained by different group sizes in the case of nursing. Each social worker might contact someone in Nursing every day, but these nurses are only a fraction of the total nursing staff. Many nurses might never contact or be contacted by a social worker, thus bringing down the average for the group. The asymmetry between physicians and social workers is more confused because the MED response group also includes nurse clinicians, and respiratory therapists. The MED group reports less than one day of contact per week with social workers who, on the other hand, report everyday contact with physicians and

nursing although infrequent contact with respiratory therapists. These asymmetries may result from a perceptual difference about the nature of a "contact." If a social worker needs a decision or a signature from a physician the contact is likely to be noted while the physician might not recall the contact because its outcome does not affect his other activities so much.

Finally, note that at TIRR the presence of the vocational unit and psychology is not strongly felt by other staff groups.

STRAIN

The ratings of strain or tension between respondents and the target groups are shown in Table 10 which shows the response group by target group matrix with ratings rounded to the nearest integer. A blank indicates a rating close to zero. The high contact, core treatment groups (including patients) received the highest strain ratings. The Nursing and Medical groups both gave and received the highest ratings. Both VA staff and patients made high strain ratings with the highest going to Nursing, Medical and patient groups. Target groups with strain ratings of two or above showed statistically significant differences between response groups.

The Spearman rank-order correlation coefficient between CONTACT and STRAIN for the target groups is +0.89, using the rankings made by the core TIRR response groups, i.e., groups that contact each other report mutual strain. Nevertheless,

TABLE 10

Interdepartmental Tension
(low = 0, high = 6)

		Response Groups															
		A	RN	MED	PT	SW	OT	P	VOC	MAN	NS	R	NAV	VAP	VAS	TOTAL	
Target Groups	A	2	2	2	2	1	3	1		1	4	1	1	2	3	25	
	RN	2	2	3	1	2	2	1	1	1	3		1	2	2	23	
	MD	1	2	2	2	1	1	1	1	1	1	1	1	3	2	20	
	PT	1	1	3	1	2	1	1			1	1	1	1	1	15	
	SW	1	1	2	1	1	1	1	2				1	1	1	13	
	OT	1	1	2	1	1			1			1	1	1	1	11	
	P	2	1	2	1	1	1	1	1		2	1	1	2	2	18	
	FAM	1	1	2	1	1	1		1		1	1	1	1	1	13	
	REC	1	1	1	1		1	1			1	1	1	1	1	11	
	RESP	1	2	3	1	1	1										9
	PSY			1		1	1				1		1	1	2		9
	R	1		1			1	1	2		1	1	1				9
	VOL	1	1							1	1		1	1			6
	VOC					2	1		2				1				5
	HSKP	1	1	1							1		1	1	1		7
	MAIN	1	1	1	1		1	1					1				7
	LAB	1	1	1								1		2			6
	ORTH	1	1		1			1							1		5
	SUM	19	19	27	14	14	16	10	12	4	17	9	15	19	18		

the strain ratings are not high, the highest rating being the nursing students' rating of aides at level 4 (on a scale from 0 to 6). A rating of one appears to represent the minimum for groups that have anything at all to do with one another, while a rating of 3, (interpreted on the basis of the overall response level) suggests a fairly active level of problem awareness. A level of 2 may then represent an acceptable, but reducible level of strain that might be expected between groups working closely together.

Response groups A, RN, MED, and VOC reported strain within themselves at level 2 while OT, PT, SW, P, and R rate intra-group strain at 0 or 1. The former groups have the most complex organizational structure and contain individuals with disparate social and educational backgrounds while the latter are tightly knit both organizationally and in terms of the backgrounds of the group members.

The ANOVA differences between response groups occur mainly between the high-contact core treatment groups and the other TIRR response groups. Table 11 shows the differences between the core TIRR staff groups, TIRR patients and the two VA groups. There are TIRR/VA differences for Psychology and Physicians and patient/staff differences for Occupational Therapy. VA patients, in particular, reported high strain with physicians. It should be noted that at the time of the study TIRR had no active psychologist working on the ward while the VA did. The difference also seems trivial since it

TABLE 11

Rated Strain or Tension Between
Respondents and Target Groups
(Scale: 0 - low, 6 - high)

TARGET GROUP /	TIRR STAFF	TIRR PATIENTS	VA STAFF	VA PATIENTS	MEAN	F-ratio
A	2.07	1.35	2.67	2.09	2.05	
MD	1.55	1.18	1.56	3.36	1.91	7.27 ^b 7.15 ^c
RN	1.89	.88	1.89	1.82	1.62	
P	1.22	1.00	1.56	1.91	1.42	
PT	1.42	.82	.78	1.27	1.07	
SW	1.01	.71	.89	1.36	.99	
PSY	.59	.23	1.56	1.45	.96	12.37 ^b
FAM	1.08	.44	1.11	.95	.90	
OT	1.22	.35	1.11	.72	.85	4.00 ^a
AUX	.63	.40	.89	.86	.70	
VOL	.54	.35	.44	1.09	.60	
RESP	1.34	.17	.11	.36	.50	
VOC	.62	.41	.11	.00	.29	
MEAN	1.17	.63	1.13	1.33		

Comparisons significant beyond .05 level

a - staff/patient

b - TIRR/VA

c - interaction

is between levels 0 and 1. Similarly, the staff/patient discrepancy for OT, while statistically significant seems trivial.

The STRAIN scale was included in the instrument because of the number of comments about interdepartmental friction occurring in the interview phase of the study. At the time of test administration the hospital was just completing a large personnel shake-up and some individuals perceived some serious interdepartmental problems. The results from the STRAIN scale suggest this view was not widely held. Several explanations have been proposed for the discrepancy in discussions with hospital personnel: (1) The ratings are an accurate reflection of the average strain or tension perceived, that is, that while some individuals may perceive a problem the great majority of staff do not see many interdepartmental or intradepartmental problems. (2) The ratings are low because the actual feelings of strain or tension are associated with other individuals rather than departments. (3) The format of the instrument was such that "low" ratings actually indicate considerable tension, i.e., a level of 6 would not be obtained except in the most extreme circumstances and a rating of 4 must be taken as indicating a considerable problem. (4) Respondents might not report tension even when they felt some because this would reflect on them as a person--they do not want to appear as a "bad guy." (5) Some combination of the above. This issue will be covered

further in the discussion section. For the moment the position will be taken that a response level of 3 represents a problem that should be noted and a level of 4 or greater represents a serious level of interpersonal strain.

SIZE

Respondents rated the number of staff in each of the target groups. The response "not enough" was scored +1, "about right" was scored zero, and "too many" was scored -1. The scores were summed and the average computed for each response group rating each target. With this scoring, if half the respondents rate a group as too large and the other half rate it "not enough" the result is a neutral score. Low absolute scores therefore indicate either disagreement within the response group or a judgment that the target is about right in size. The interpretation of either of these conditions is the same--the target group should not have its size altered.

Table 12 presents a simplified summary of the ratings. The plus sign indicates a mean score of 0.5 or greater meaning that at least half the response group gave the target a positive score (if some respondents made negative ratings then more than half of the group would have to make positive ratings to reach a mean score of .5). No target group received a mean score of -0.5 or less although some targets did have mean scores in the minus range. Occupational Therapy for instance, received minus ratings from six response groups

TABLE 12

Groups Needing More Staff
as Judged by 50% or More of
Response Groups

	* REC		* VOL RN		A	Target Groups					* RSP SW		VOC	* AUX	* P
						PSY	MD	RES	OT	PT					
MED	+	+	+				+	+							
PT	+	+	+	+						+					
OT	+		+	+											
RN	+		+								+				
A		+		+	+										
SW	+	+							+						
MAN						+									
VOC						+									
P															
SUM	5	4	4	3	3	1	1	1	1	1	0	0	0	0	0
NAV		+	+	+											
NS			+			+									
R						+		+							
VAS		+		+			+								
VAP							+								
TOT	5	6	6	5	5	3	2	1	1	1	0	0	0	0	0

* Response groups differ with p less than .05

averaging -0.11 although its overall mean rating was $+0.12$. The plus signs in Table 12 therefore indicate a high level of agreement within response groups that a particular target does not have enough staff and, presumably, should be enlarged.

The 50% agreement level was arbitrarily selected as representing a reasonably high level for meaningful interpretation. Since it is an arbitrary cut-off however, it does not mesh exactly with the results of the ANOVA assessing the differences between response groups. Responses to the Volunteer, Aide and Psychology groups, for instance, do not differ significantly even though some response groups are on one side of the 50% agreement level and others are not. For the Auxiliary and Patient groups there are significant differences between response groups even though none are over the 50% agreement level.

The upper section of Table 12 contains the main TIRR response groups. The SUM row contains the count of plus ratings for each target group. The lower part of the table has the Control and VA groups with the TOT row indicating the total count of plus ratings for all response groups. The target groups are rank-ordered on the basis of the TIRR ratings. The response groups within each section of the table are rank-ordered.

There was general agreement among the TIRR treatment groups that the recreation program should be expanded, that

there should be more volunteers and a larger Nursing Service. The nontreatment groups MAN and VOC along with the Aide group, saw a need for a larger Psychology department. The Patient group appeared to be satisfied with the size of all target groups.

The treatment groups received few high ratings. This suggests that while the therapeutic and medical parts of rehabilitation are being well handled (or are at least well staffed), the day-to-day operation of the hospital, which depends on nursing, requires more personnel. In particular, there seems to be a need for more staff to assist in filling in the patients' idle or nontherapy time as shown by the ratings of Volunteers and Recreation. The perceived need for a larger psychology program is not general and is therefore hard to assess.

Three groups perceived a need to expand themselves: PT, RN and Aides. The composite medical group (MED) wanted more MDs--but this group included only two MDs, therefore several Nurse Clinicians and/or Respiratory Therapists must also have made positive ratings as well. It is interesting to note that the RNs wanted more RNs but not Aides, while the Aide group wanted more Aides but not RNs. The overlap in duties of these groups may be producing some competition.

Table 13 presents the results from the two-way comparison of staff and patients at TIRR and at the VA. The index values listed are simply the mean SIZE scores with the

TABLE 13
Index of Desired Size
Target Groups

TARGET GROUP		MEAN		F-RATIOS		
		TIRR	VA	TIRR/ VA	STAFF/ PATIENT	INTER- ACTION
Volunteers	S	51	78	--	6.40*	--
	P	35	27			
Registered Nurses	S	57	44	--	--	--
	P	29	36			
Aides and LVNs	S	40	56	--	--	--
	P	35	36			
Physicians	S	25	56	7.68*	--	--
	P	24	64			
Recreation	S	63	0	--	--	12.67**
	P	18	45			
Research	S	26	33	--	--	--
	P	29	18			
Physical Therapy	S	32	22	--	--	--
	P	29	18			
Vocational	S	24	33	--	--	--
	P	12	18			
Auxiliary Services	S	10	22	--	--	--
	P	4	22			
Psychology	S	30	-22	5.16*	--	--
	P	24	18			
Social Work	S	13	-11	--	--	--
	P	0	18			
Occupational Therapy	S	30	-11	--	--	5.01*
	P	- 6	0			
Patients	S	8	0	--	16.80**	--
	P	-29	-45			

Note: Index range is
-100 to 100

* p less than .05
** p less than .01

decimal point removed. Six of the thirteen comparisons were significant at or beyond the .05 level. Note that in this table the respiratory group (RSP) has been combined with the auxiliary services group (AUX).

The TIRR/VA differences occur for Physicians and Psychology. At the VA there is a desire for more physicians while at TIRR there is some demand for more psychologists (recall that there were VA/TIRR differences on the STRAIN scale for these same groups). The means for VA staff suggests that some, at least, think one psychologist is too many. The difficulties that surrounded administering the instrument may have had something to do with this rating.

There were staff/patient differences on the categories of Volunteers and Patients. The staff at both the VA and TIRR tended to agree that more volunteers would be desirable while the patients show a lower level of agreement on this. Staff at both institutions rated the patient population as about right while patients at both places thought there were too many patients. It is not clear however, whether this was due to a feeling that the places are crowded or because they do not like to think of anyone else needing the services of a rehabilitation hospital.

There were significant interactions for Recreation and Occupational Therapy. TIRR staff and VA patients expressed a desire for more recreation while TIRR patients and VA staff saw little or no need for expansion of this type of program.

The Occupational Therapy difference occurs because of a moderate desire for an increase among TIRR staff while the other groups either wanted no increase or expressed a slight preference for a decrease in the number of Occupational Therapists.

This scale may be contrasted with the one to be discussed next (MONEY). It differs in the important respect that the SIZE scale ratings are independent, i.e., a respondent could choose to expand every target group while on the MONEY scale there is a set amount to be distributed so that one target's gain is another's loss. SIZE ratings do not depend on judgments about other possible targets (except in the case where two groups are perceived as competing for the same functions, in which case the respondent might prefer one over the other).

MONEY

Respondents were asked to distribute a hypothetical \$100,000 grant among the target services with the goal of improving patient care. Table 14 presents the percentage each response group gave each target with the top three amounts for each response group underlined. The miscellaneous group (MISC) consists of the auxiliary groups house-keeping, maintenance and so on as well as including categories added by respondents--these are listed in Appendix G. The ANOVA between response groups was significant for every target except SW, FAC and MISC.

The largest amounts of money were given to facilities

TABLE 14
Percent of Money Distributed by
Response Groups to Improve
Patient Care

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	Target Groups													
	OT	PT	SW	NUR	MD	REC	PSY	VOC	RSP	TA	RES	MISC	FOOD	FAC
OT	<u>11</u>	2	0	5	1	<u>25</u>	0	3	0	4	7	4	4	<u>33</u>
PT	6	<u>22</u>	3	<u>10</u>	3	7	7	4	2	3	5	9	2	<u>19</u>
SW	4	4	<u>13</u>	8	0	<u>10</u>	1	9	0	1	5	4	5	<u>29</u>
RN	<u>3</u>	3	2	<u>21</u>	4	<u>10</u>	8	3	3	2	9	5	6	<u>22</u>
A	2	5	4	<u>27</u>	4	1	3	0	4	1	<u>11</u>	7	4	<u>22</u>
MED	1	2	2	13	3	<u>15</u>	2	3	<u>19</u>	2	3	8	5	<u>23</u>
P	7	<u>19</u>	0	6	<u>14</u>	7	2	4	1	5	7	6	4	<u>12</u>
MEAN	5	8	4	<u>13</u>	4	10	3	4	4	3	6	6	4	23
MAN	1	4	3	<u>9</u>	0	3	3	4	1	3	<u>18</u>	7	3	<u>39</u>
VOC	0	1	0	0	0	7	<u>9</u>	<u>56</u>	0	4	0	1	1	<u>20</u>
NS	8	<u>12</u>	5	<u>14</u>	1	8	7	2	6	2	6	3	<u>15</u>	10
R	<u>10</u>	7	3	8	1	9	6	3	0	2	<u>28</u>	3	3	<u>12</u>
NAV	3	7	2	6	<u>11</u>	3	10	5	3	1	<u>22</u>	3	2	<u>12</u>
VAP	4	4	3	4	<u>17</u>	3	4	2	0	0	<u>34</u>	<u>12</u>	0	3
VAS	5	4	11	<u>13</u>	<u>23</u>	4	2	4	0	0	6	7	2	<u>19</u>

and equipment (FAC)--almost twice as much as for the next highest categories. Only VA patients gave less than 10% to facilities. The next highest amount for each response group tended to be to itself. (Note that Recreation is part of OT at TIRR and the MED group had four Respiratory Therapists.) The most extreme example of this was the Vocational Unit which gave 56% of its money to itself. The mean amount of money distributed to each target by the core TIRR groups is shown in the row designated MEAN. This shows that after Facilities, Nursing and Recreation receive the largest amounts followed by PT and Miscellaneous. However, if the money each group gave itself is disregarded the distribution across targets is almost flat, not varying more than 3% from a mean of 5%. That is, every target group would receive \$5,000, more or less, of the \$100,000 grant, with the rest going to facilities and equipment.

The other TIRR response groups also give large amounts to facilities but each seemed to have its own favorite target groups without much agreement on any one. The only exception to this is the research category (RES) which received considerable amounts from the Management, Naive and Research groups (the Research group should be discounted perhaps, as were the treatment groups that gave money to themselves).

At TIRR then, there seems to be no clear agreement among the staff that some group needs or deserves large sums of money to improve patient care. If each individual at TIRR

were given a vote on how the money was to be divided then Nursing would get the large share since it is by far the largest group; they would then be followed by PT and OT--the next largest groups.

Figure 6 presents another view of the data. TIRR core treatment staff, TIRR patients and VA staff and patients are represented in the four circles. (In these figures the Miscellaneous category has been expanded to include the Respiratory Therapy and Transportation Aide groups.) Note that the distribution of funds by these four groups are quite different. TIRR treatment staff give a quarter of their money to Facilities and another quarter to Miscellaneous and Nursing. TIRR patients, on the other hand, favor Physical Therapy and Physicians, but also want better facilities. At the VA the staff gave more than half their money to Physicians, Facilities and Nursing. The VA patients provide the most extreme response, giving 34% of their money to Research, followed by Physicians.

Table 15 shows the two-way analysis of variance for these data. Six of the 14 target categories show differences significant at or beyond the .05 level. The difference for Physical Therapy is due primarily to the TIRR patients who gave from three to six times more money to PT than did the other groups. The Social Work difference was due to the VA staff. Nursing was given more money by staff than by patients at both institutions. Physicians received only one-sixth the

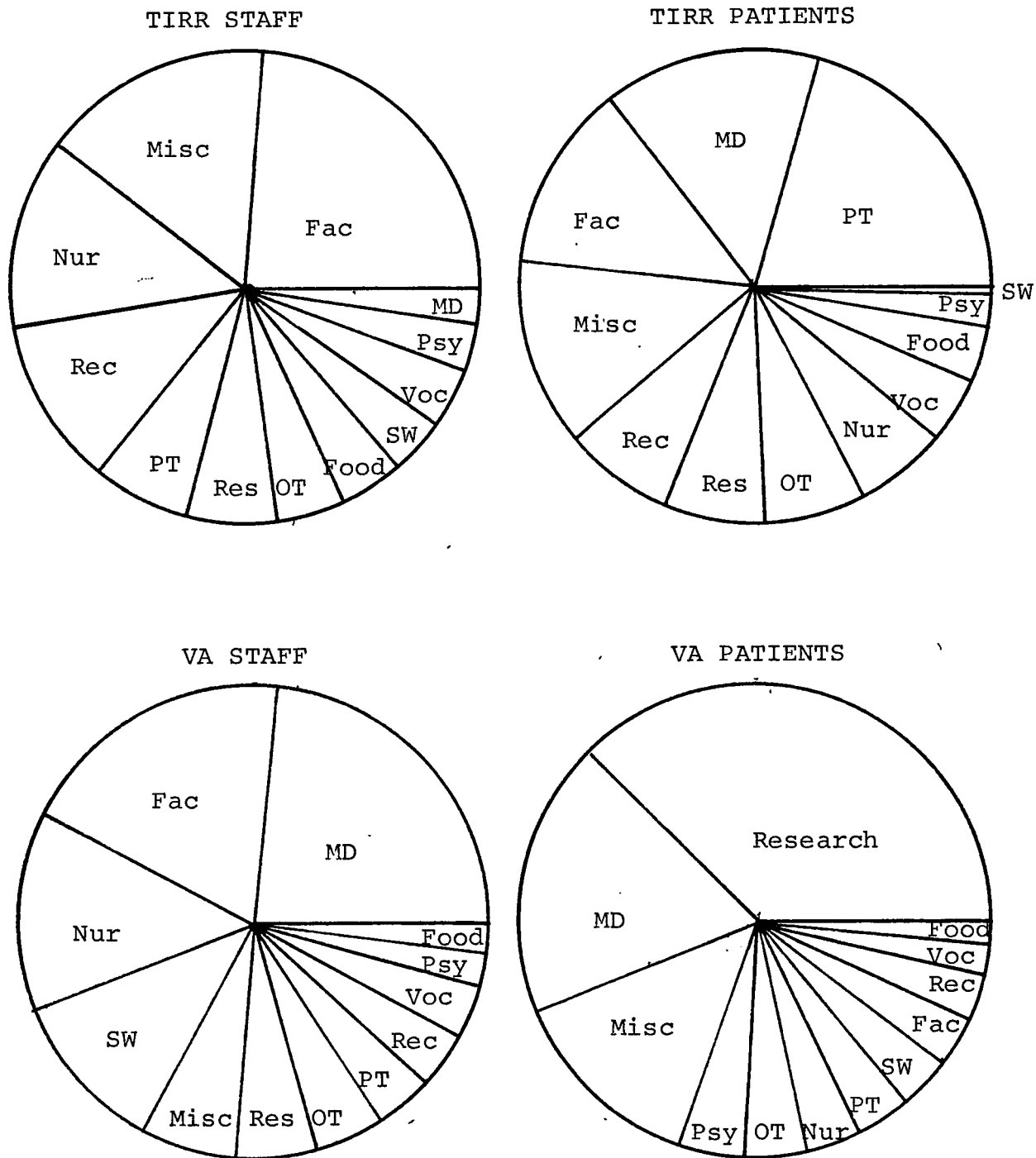


FIGURE 6

Distribution of Money
to Improve Patient Care

TABLE 15

Two-Way ANOVA on Distribution
of Money to Improve Patient Care

TARGET GROUP	MEANS			F - RATIO		
		TIRR	VA	TIRR/ VA	STAFF/ PATIENT	INTER- ACTION
Occupational Therapy	S	4.7	5.0	--	--	--
	P	6.7	4.0			
Physical Therapy	S	6.6	3.9	8.15**	3.78	4.06*
	P	19.2	3.7			
Social Work	S	4.2	11.1	3.86*	5.23*	--
	P	0.5	3.4			
Nursing	S	12.7	13.3	--	5.08*	--
	P	6.2	3.6			
Physicians	S	2.5	23.2	9.03**	--	5.92*
	P	13.8	16.8			
Recreation	S	11.1	3.9	--	--	--
	P	6.9	3.2			
Psychology	S	3.2	2.2	--	--	--
	P	2.0	4.2			
Vocational	S	3.9	3.9	--	--	--
	P	4.2	1.9			
Respiratory Therapy	S	4.9	0	--	--	--
	P	0.8	0			
Transport.	S	2.3	0	--	--	--
	P	5.2	0.1			
Research	S	6.2	5.6	7.17**	8.60**	9.36**
	P	6.8	33.9			
Miscellaneous	S	7.7	6.6	--	--	--
	P	5.7	12.1			
Food Service	S	4.4	2.2	--	--	--
	P	3.9	0.4			
Facilities	S	23.1	18.9	--	5.28*	--
	P	12.0	3.4			

amount from TIRR staff than from other groups--VA staff gave ten times more for physicians than did the TIRR staff. The Research difference is due solely to the large amount provided by the VA patients, and finally, there was a staff/patient difference in the amount allocated to facilities.

The following interpretations are suggested: The differences between TIRR and the VA on Physicians and Social Work are probably due to the relative strengths of the groups at the two institutions. The VA has had trouble attracting and retaining good physicians on its spinal cord units for some time, while TIRR has no such problem. TIRR has a large Social Work department while at the time of the study the Spinal Cord Unit of the VA was understaffed in that area. The physician issue is complicated however, by the tendency of patients to identify any activity taking place in a hospital with physicians so that the TIRR patients also gave a large sum to this group. Note that the Naive group also gave its third largest amount to physicians (Table 14).

The difference between staff and patients on the Nursing and Facilities categories may reflect their different awarenesses of the process of rehabilitation. The patients appear to be primarily concerned with the medical and therapeutic goals of physiological stability and increased muscle strength. They expect the hospital to provide the setting in which this can occur but they apparently do not think much about the setting unless something is wrong with it. The staff, on the

other hand, are concerned with how the hospital is to function day to day.

The large amount of money given to research by the VA patients might be for rehabilitation research but the investigator's experience during a one year internship on a VA spinal cord unit suggests otherwise. The impression gained at that time was that many VA patients strongly believe in the possibility of a medical cure for spinal cord injury either through surgery or by development of a regenerative technique for spinal cord tissue. Several patients went so far as to express resentment that there was not more research in these areas. If this attitude is common to other VA units then it seems likely that the large amount allocated to research in this study is for physiological research, not rehabilitation research. Patients at TIRR may or may not share the hope for a cure, but at TIRR this kind of attitude is discouraged by the staff and patients are quickly oriented toward the goal of maximizing whatever function is left. Patients are moved through the hospital system much more quickly at TIRR and are therefore more firmly enmeshed in a rehabilitation model of treatment than are the VA patients.

Hospital Climate--Adjective Ratings of Staff, Patients and Hospital Experiences

Staff and patients were separately rated using the same list of 24 adjectives. The results were scored using the Leary (1957) system of interpersonal diagnosis (discussed in

the Method section). Figure 7 presents the results of that analysis. The circles represent the ratings of staff by each of the 14 response groups; the rectangles show the ratings of patients by each of the response groups, i.e., the circle labeled "A" is the Aide groups' rating of staff while the rectangle labeled "A" is the Aides' rating of patients.

Only a section of the interpersonal circle is shown since the other portions were not used. This relatively tight clustering of responses indicates a high degree of agreement among the response groups. Note that only the nursing students' (NS) rating of staff fell on the non-affiliative or hostile side of the circle. The ratings of both staff and patients are high on the LOV dimension indicating a positive interpersonal atmosphere, that is, most response groups see both staff and patients as quite friendly. Patients however are seen as much more passive than staff by all response groups. Only the Aides' (A) rating of patients fell above the mid-point on the DOM scale. This might be expected based on the dependent position of patients in a hospital setting.

The mean rating of patients fell in the octant labeled "Cooperative-Overconventional" by Leary (1957), while the mean rating of staff fell in the octant "Responsible-Hyper-normal." The Research team rated staff as "Managerial-Autocratic" while the Nursing Students labeled them "Competitive-Narcissistic." The double label of each octant

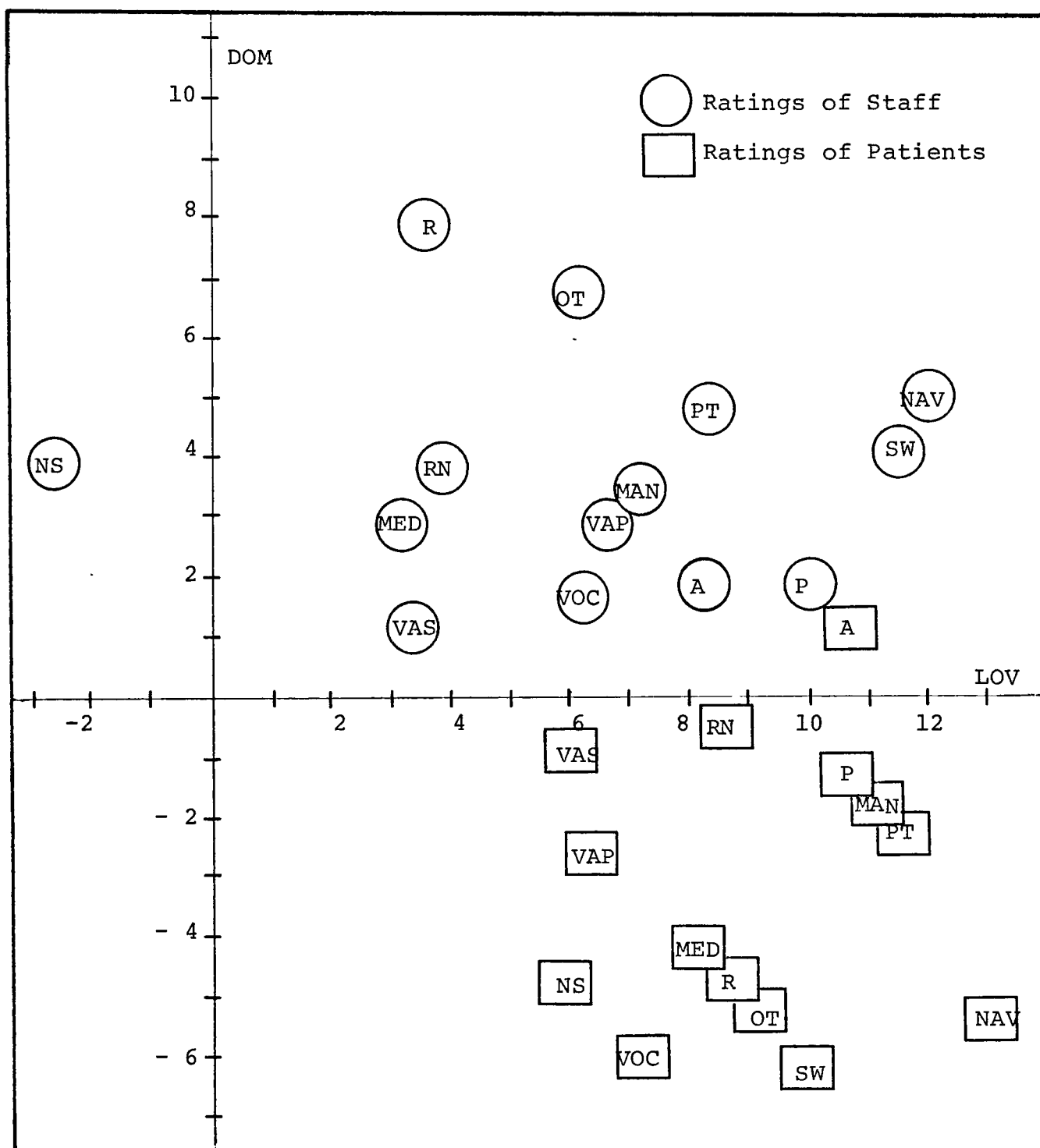


FIGURE 7

Interpersonal Ratings of
Staff and Patients

identifies the positive and negative aspects of each category. The "Responsible-Hypernormal" octant is frequently rated as the ideal by people in this culture.

The ratings of patients on the LOV dimension show no significant differences between response groups. The ratings of patients on the DOM dimension show the following differences with p less than .05:

1. SW-VOC-NAV-OT differ from A-RN.
2. A differs from the seven response groups below VAP.

The ratings of staff show response group differences for both DOM and LOV ratings:

LOV

1. The Nursing Students differ from all groups to the right of the RN group.
2. NS-MED-RN-VAS-R differ from NAV-SW-P.

DOM

1. R and OT differ from those groups below MAN.
2. VAS differs from those groups above SW.

The nursing groups (A and RN) see patients as less passive than do most other response groups. Note also that the difference between the ratings of patients and staff by the nursing groups is less than for most other groups. The Aides in particular rated staff and patients as almost alike on both DOM and LOV. Similarly, the patients rated staff and patients much alike although the ratings fall on opposite sides of the midpoint on the DOM dimension. Table 16 shows the discrepancy between ratings

TABLE 16

Discrepancy in Ratings of Staff
and Patients on the Interpersonal
Diagnosis Chart

Response Group	Discrepancy Score
A	2.3
P	3.3
VAS	3.3
VAP	5.5
RN	6.5
MAN	6.6
VOC	7.7
PT	7.7
MED	8.6
SW	10.3
NAV	10.6
NS	12.1
OT	12.3
R	13.5

of staff and patients for each response group. This score is simply the euclidean distance between ratings of staff and patients using the DOM and LOV scales as the yardstick.

The nursing groups, patients, and the VA groups see staff and patients as very similar while the therapy groups and the control groups see staff and patients as dissimilar, primarily on the DOM dimension. The two therapy groups with the greatest discrepancy scores are SW and OT.

The following interpretation is offered: The nursing groups deal with patients in a relatively unstructured situation where crises can occur at any time, where patients are making demands or requests for service, and where the relationship is not prescribed by professional roles to the same extent as in the therapies. The therapists see patients around some formal activity where the therapist is delivering a service for a relatively brief period of time, with certain rules or requirements defining what is to occur. The SW, VOC and OT groups, in particular, frequently deal with extra-hospital or post-hospital issues and have the job of helping the patient prepare for discharge, find a living situation, a job, and so on. They may meet resistance from a patient who is still attempting to cope with the purely physical aspects of his disability.

These differing patient relationships may cause nursing to see patients not as passive recipients of service but as demanding (or at least, requesting) things from the staff

and therefore as active. The therapists who feel they must motivate the patient will see him as passive and resisting attempts to help him. In addition, the therapies are likely to emphasize their professional skills and therefore emphasize the difference between staff and patients. Nursing, on the other hand, while requiring its own set of skills, tends to emphasize the personal relationship between staff and patients instead of a strong professional relationship. They are concerned with supporting and comforting the patient; caring for his emotional and physical needs in a less structured fashion. They may therefore see themselves as not too different from patients.

The Vocational Unit offers an interesting counterpoint to this analysis since they rate patients as very passive but also rate staff as more passive than any other TIRR group. The source of this rating is not clear, particularly since the Vocational Unit has very little contact with the rest of the hospital.

Hospital Description

Respondents described their reactions to their hospital experiences by rating a list of adjectives. Figure 8 shows the scores on three of the factors extracted from the list of adjectives. The factor "USEFUL" must be imagined as extending out of the page. The crosshatched circles represent scores that fell below the mean on the USEFUL factor while the open circles represent scores above the mean.

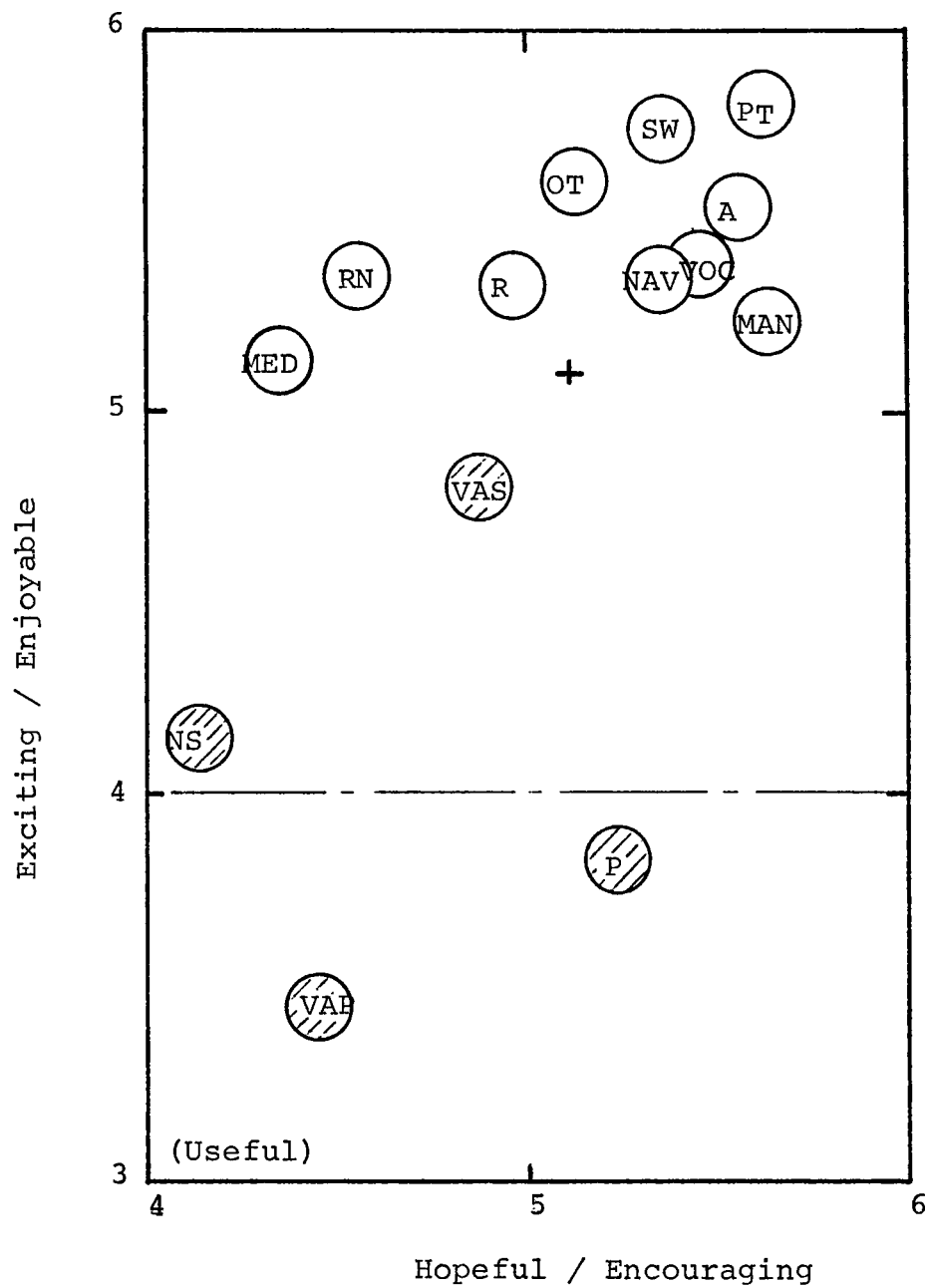


FIGURE 8

Adjective Description of
Hospital Experiences

The scale for all three factors were scored from 1 to 7 with 1 meaning that the adjective is seldom true of the respondents' experience and 7 indicating that it is usually true.

The groups which differed with p less than .05 were:

ENJOY

1. VAP and P differed from all but NS.
2. NS differed from those above MAN.

HOPEFUL

1. NS and MED differed from those to the right of R.
2. VAP and RN differed from MAN-PT-A.

USEFUL

1. NS-VAS-P differed from OT-PT-SW.

All the TIRR staff rated their hospital experience as very enjoyable, while the patient groups and the nursing students did not find it so. The nursing students, RNs, MED group members and VA patients found their hospital experience less hopeful or encouraging than did the other response groups. The nurse students, VA staff and TIRR patients found their experience less useful than did the TIRR therapy groups.

The TIRR staff rated their experiences as extremely positive on all three dimensions (with the exception noted for RNs and MED groups). It would appear that they like their jobs and find the work useful and important. The patients are less optimistic and happy, which might be expected.

The VA groups rated their hospital experiences more negatively than did the TIRR groups. Table 8 shows that TIRR rated the USEFUL and ENJOY scales significantly higher than did the VA. Staff/patient difference on the ENJOY dimension was significant for both institutions.

The overall perception of TIRR as a place to work is thus seen as highly positive, with the least satisfied staff groups being the RN and MED, and with the nursing students and patients being much less happy.

Interpersonal Events Scales: PFRND, SFRND, ARGU, and COMPL

The interpersonal events section of the instrument asked for ratings of the frequency with which certain kinds of events occur. This scale factored into four sections but it was immediately apparent that the PFRND and SFRND scales (frequency of friendly interactions between the respondent and either patients or staff) were poorly constructed. A person might have a friendly conversation with a single staff member or patient every day, talk to no one else, and yet have a high positive interpersonal events score. These two factor scales were therefore dropped. The ARGU and COMPL scales however contain ratings of the frequency of events which do not involve the direct participation of the respondent, i.e., the frequency with which arguments occur in the hospital and the frequency with which complaints are made about something the respondent has done. The latter is dependent on the activity level of a respondent since those people

who have many interactions with others are also likely to receive the most complaints (or praise). The frequency of positive or negative comments may be considered an important part of a respondent's environment.

Figure 9 presents each response groups' ARGU and COMPL scores plotted together. The scales ran from level 1 (none), to level 5 (every day). The lowest mean ratings obtained were near level 2 (seldom). The highest ARGU score was near level 4 (once a week).

The following differences between response groups were significant with p less than .05:

ARGU

1. VAS-RN differ from the eight groups to the left of VAP.
2. MED differs from A-P.

COMPL

1. RN differs from VAP and those below it.
2. R differs from all but P.
3. P differs from all those above VOC.

The TIRR groups reporting the highest frequency of both complaints and arguments are MED and RN. Only the VA staff reported more frequent arguments. The core TIRR treatment groups reported quite high levels of complaints, i.e., once a week, but arguments occurring less than once a month. As on the Staff and Patient Description ratings, the RN group (and to a lesser extent the MED group) differ from the rest of the treatment staff. The research team and patients reported few

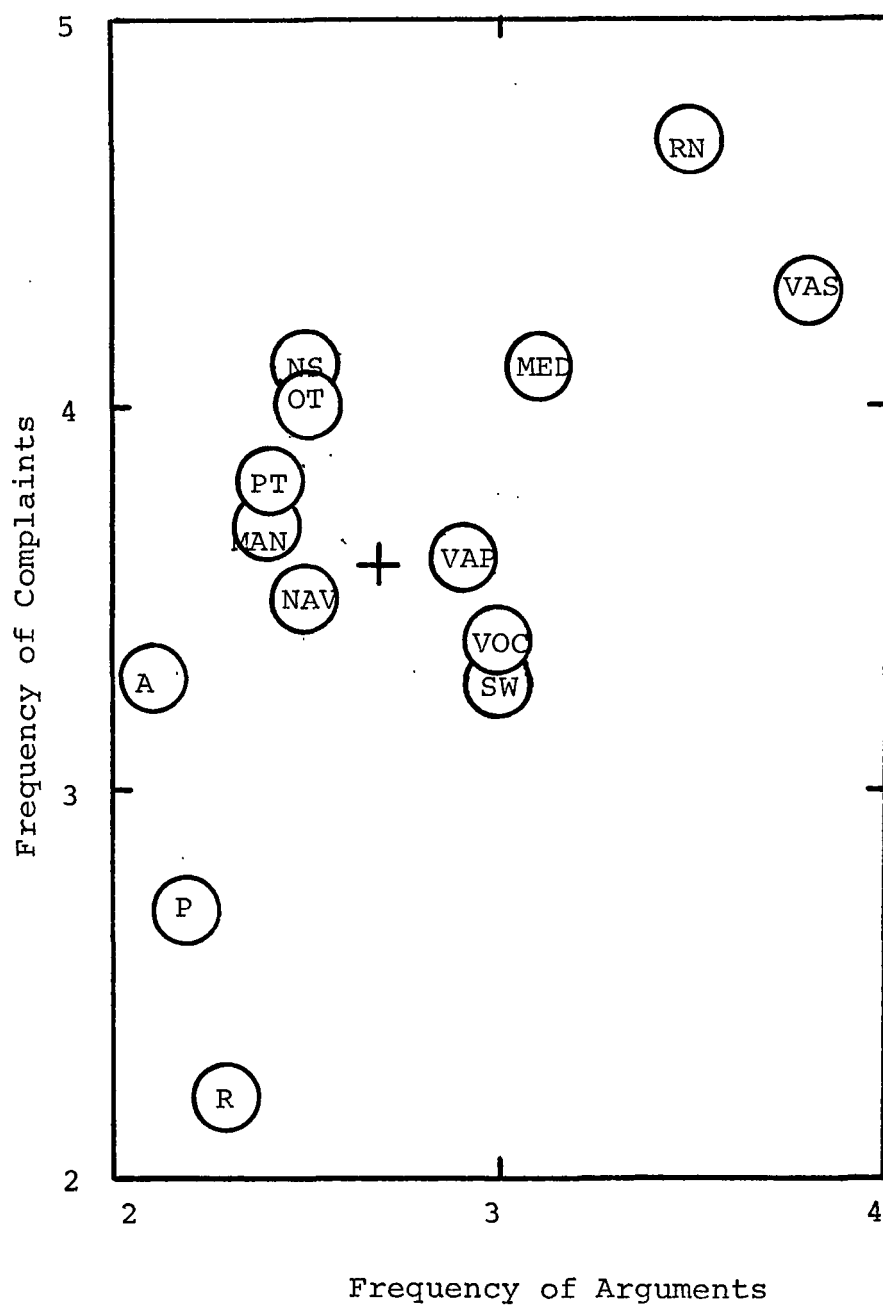


FIGURE 9

Frequency of Arguments
and Complaints

arguments or complaints. The VA reported a generally more negative interpersonal environment than did TIRR. Both VA staff and patients made more negative ratings than did their TIRR counterparts.

Note that the Aide groups' responses were not significantly different from those of the patients and were similar to those of the Naive group. This similarity will be noted in other sections of the instrument. It will also be seen that the Aide, Patient and Naive groups frequently anchor the positive end of the various scales while the Nursing Student, RN, VAS and R groups provide the most negative ratings.

This scale produces clusters of response group that are very similar to those obtained on the Staff and Patient Description analysis. The high frequency of complaints reported by the core treatment groups was unexpected, and when compared to the generally positive ratings obtained on other sections of the instrument the interpretation of this scale becomes difficult. If such a high level of complaints is common to a setting rated as having a good interpersonal climate and (as will be shown) is rated as doing a good job, then it is not clear what importance should be attached to the complaint ratings as a measure of the interpersonal environment. It may be that complaints are simply not taken very seriously on the average.

Interpersonal Climate--The THRT and SUPP Scales

Two of the first level factor scales derived from the HAS section deal with the hospital's interpersonal climate. The "Supportive Staff" (SUPP) scale assesses the degree to which staff provide emotional support for patients and treat them in a friendly and humanistic, rather than mechanical fashion. The "Threatening Environment" scale (THRT) contains three types of items (see Appendix F). The highest loadings are from three items dealing with patients' fear of staff members; two items deal with patient willingness to openly express their feelings, and the remaining three items ask if patients know how to get what they need, if treatments are explained to them, and if they are kept waiting. The THRT scale then, seems to measure both perceptions of actual physical threat and the openness of staff/patient communication. Communication would be expected to be low in a threatening situation, but it does not follow that a situation with no threat would necessarily lead to open communication. The THRT scale therefore does not have a simple interpretation.

Figure 10 shows the 14 response group scores plotted for the two scales. Recall that the scale values run from "1" (agree) to "7" (disagree). The THRT scale has been reversed and named "Nonthreatening Environment" so that low scores on both scales represent a more negative evaluation than do high scores.

The two scales are correlated 0.59 indicating that for

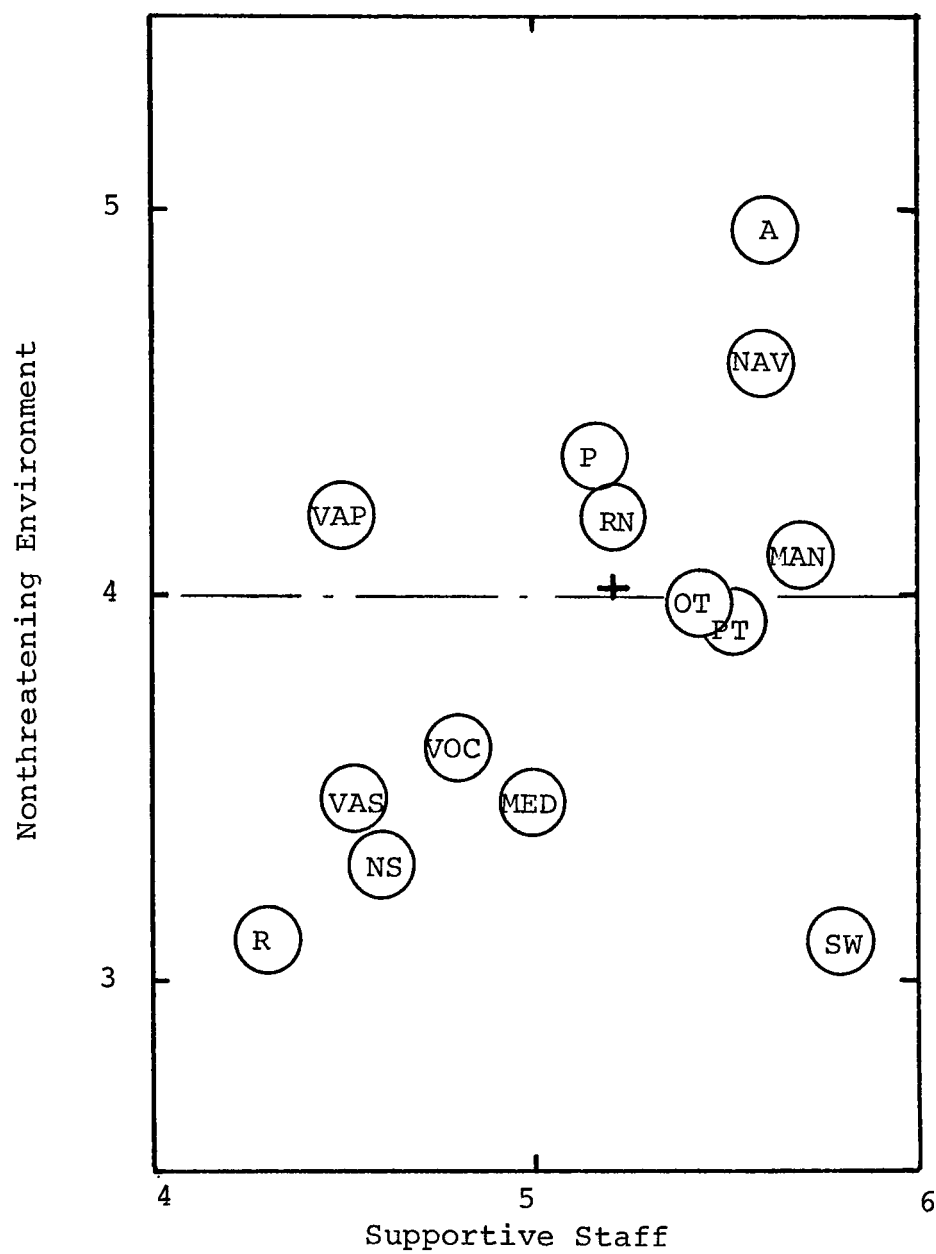


FIGURE 10
Interpersonal Climate

many respondents the two concepts go together. Social Work however, made both the highest rating for staff supportiveness and the lowest rating on threat indicating that both positive and negative conditions occur at the same time. This is not a contradictory position since it would be quite possible for the majority of staff to be very supportive while certain individuals were threatening. The THRT scale also deals with the openness of staff/patient communication and this could be low even though staff are supportive.

The groups which differ with p less than .05 are as follows:

SUPP

1. R-NS-VAS-VAP differ from the six groups to the right of RN.

THRT

1. SW-R-NS differ from A-NAV-P-VAP-RN.
2. A-NAV differ from the six groups below PT.

Note that once again the A-NAV-P groups are at the positive end of the ratings while the R-NS-VOC groups are at the negative end.

The ratings of staff supportiveness are generally high for all response groups (all above level 4) with the therapies, Management, Naive and Aide groups the most positive. VA staff and patients rate their institution significantly lower on support. The nurse students and research team, who tend to be more critical generally, rate TIRR lower than did the staff. The THRT dimension received somewhat more negative

ratings with a overall mean of 4 instead of the 5 obtained for SUPP. The Aide and Naive groups made the most positive ratings on this dimension while Social Work made the most negative rating. Except for Social Work, the core TIRR groups, including patients, rated the THRT scale at the mid-point, indicating some awareness of a problem, but no strong agreement that a serious situation exists.

The THRT scale is difficult to interpret both because of the diversity of items loading it and because of the emotionally loaded content. The basis for the different perceptions of SW and the other staff groups is not clear. The scale does appear useful however, as a warning indicator, particularly when considered together with scales indicating very positive evaluations of the hospital. In this light the rating of 4 can be tentatively considered as a warning sign.

These two factor scales loaded together on the second level factor, Environmental Quality, along with other first level scales dealing with patient information and hospital organization.

Second Level Factor Scales

The mean score for each response group on the five second level factor scales are presented in Figure 11. The scales are ordered by decreasing means, i.e., Critical Care received the most positive ratings while Environmental Quality received the least favorable ratings. The scale values are

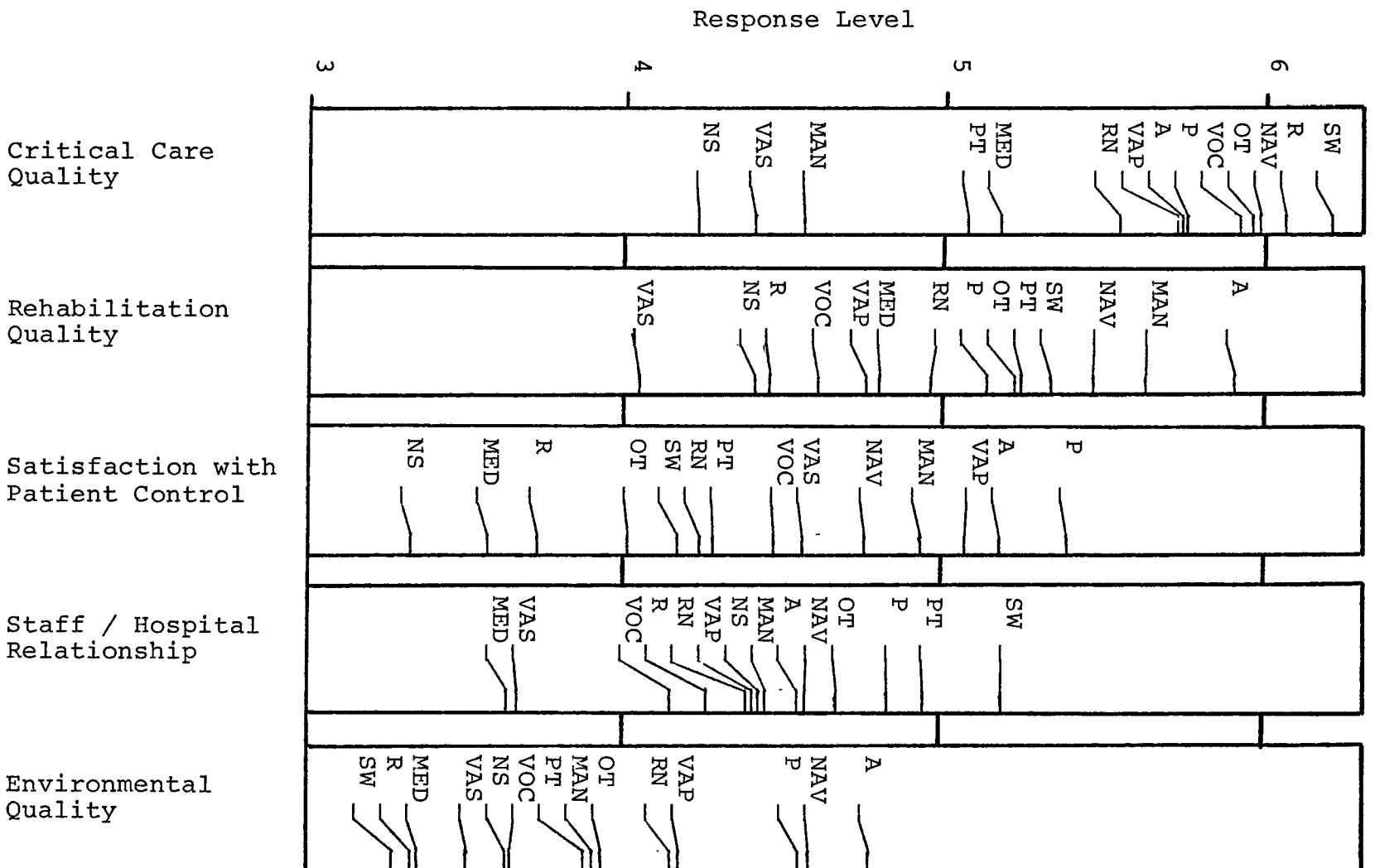


FIGURE 11
Second Level
Factor Scales

shown along the left edge of the chart. All of these scales are based on 7 response points with 7 representing a positive, or favorable judgment and 1 representing an unfavorable judgment. In general, these scales indicate high ratings of TIRR on the quality of care provided, with Critical Care rated as excellent. The day-to-day operation of the hospital is rated less highly, as shown by the Staff/hospital and Environmental Quality scales. Satisfaction with Patients' Control of the environment is moderate with a considerable distribution of scores. Each of these scales will be discussed in more detail.

Critical Care Quality

The Critical Care scale consists of only two items dealing with the quality of medical and nursing care in life threatening situations. This scale was retained because the ratings of these items were uncorrelated with the rest of the scales, and represent an important hospital function. The quality of critical care at TIRR is rated quite highly by most groups. The following comparisons were significant with p less than .05:

1. NS differed from all groups above MED.
2. VAS differed from all above VOC.
3. MAN differed from all above VOC.

It has been suggested by some staff that the MAN group, which typically provided very positive ratings on other scales made a negative rating on this scale because of their

sensitivity to the legal consequences of inadequate emergency care--their standards may then be higher than other groups. The basis of the nursing students' judgment is not clear, since they had no particular experiences with intensive care, surgery and so forth that would lead them to infer directly that the critical care was less adequate than judged by other hospital groups. The generally negative evaluations made by the student group suggest that they either had much higher standards than other groups or they had a negative set towards TIRR in general so that when rating aspects of care with which they were not familiar they rated down rather than up.

It is interesting to note that the eight groups with the most positive ratings have nothing to do with the delivery of critical care services. Only the RN, MED and portions of the VA staff actually are involved in providing these services. The stereotype or expectation at TIRR then, is highly positive towards critical care services. This scale is also one of the two where there was no significant difference in the ratings of those employed less than a year and those employed more than a year, indicating that the highly positive stereotype which new staff bring to their job does not dissipate for these items, probably because most staff are not in a position to actually judge from direct experience the quality of this care.

Table 17 shows that the TIRR/VA comparisons on this

TABLE 17
Second Level Factor Means and
F - ratios Between Staff and
Patients at VA and TIRR

FACTOR	Staff/ Patient	MEANS		F-ratios		
		TIRR	VA	TIRR/ VA	Staff/ Patient	Inter- action
Rehabilitation Quality	S P	5.30 5.15	4.07 4.78	7.38**	--	--
Environmental Quality	S P	4.03 4.54	3.50 4.15	12.51**	3.52*	--
Critical Care	S P	5.52 5.74	4.39 5.73	--	4.52*	--
Patient Control	S P	3.63 5.38	4.55 5.06	--	10.14**	--
Staff/Hospital Relationship	S P	4.33 4.82	3.66 4.27	4.35*	3.53*	--
Interpersonal Atmosphere	S P	3.24 4.08	2.42 3.26	6.52*	6.85*	--
Useful	S P	6.05 5.18	5.07 5.47	--	--	5.11*
Enjoy	S P	5.56 3.82	4.80 3.47	--	26.82**	--
Hopeful	S P	5.20 5.24	4.92 4.47	--	--	--

* p less than .05

** p less than .01

scale were not significant, primarily because the large PT group's rating brought the mean down for TIRR. The staff/patient comparison across the two hospitals was significant however, with patients rating the quality of critical care more highly than did the staff.

This scale is a good one for demonstrating the positive response bias that most people have towards medicine. As will be discussed, there seems to be a strong tendency for people to rate medical activity in a highly positive fashion in situations where they have little factual or direct knowledge on which to base a judgment.

Rehabilitation Quality

This scale deals with all aspects of service delivery including nursing, medical, psychosocial care and the therapies. TIRR rated itself well above the midpoint but there was a greater distribution of scores on this scale than for the Critical Care ratings. The following comparisons were significantly different with p less than .05:

1. Aides differed from all groups below OT.
2. MAN-NAV differed from R-NS-VAS.
3. VAS differed from all groups above RN.
4. Those employed less than a year ($\bar{X} = 5.44$) differed from those employed more than a year ($\bar{X} = 5.00$).

The main hospital groups, both staff and patients, agree that TIRR is doing a good job of providing rehabilitation services with a mean score above level 5. The significant

differences are between the highly positive Management, Naive and Aide groups and the negative ratings made by the R and NS groups. Table 17 shows that TIRR staff and patients rated their institution significantly better than the VA staff and patients rated their unit.

It was somewhat surprising that all aspects of service delivery were rated in the same way. It had been supposed that there would be fairly large perceived differences between ratings of psychosocial care, medical care, nursing and the therapies depending on who was doing the rating. These differences did not appear, indicating that TIRR is seen as doing everything equally well. It is not clear whether this same highly correlated response structure would be obtained at other institutions, but it does suggest the possibility that the business of rehabilitation is perceived as an integrated whole rather than as a series of unrelated activities.

Satisfaction with Patient Control

This scale was designed to assess satisfaction with patient control of the physical environment, hospital routine and organization, and control of rehabilitation planning and decision making. However, the ratings for these different areas were highly correlated, and could easily be described by an overall satisfaction score.

The following response group comparisons were significant

with p less than .05:

1. P and A differed from all groups below VOC.
2. VAP differed from R-MED-NS.
3. MAN and NAV differed from NS.

Patients and Aides reported the highest degree of satisfaction with patients' control of the environment. The core TIRR treatment groups, PT-RN-SW-OT, were significantly less satisfied. Presumably this means that they want more patient control and not less! Again, the student groups made the most negative ratings. This is also the only scale on which the VA staff ratings appear in the upper half of the distribution, indicating that they are relatively satisfied with the amount of control exercised by patients. Table 17 shows that the VA/TIRR differences are not significant while there is a strong difference between staff and patients at both institutions with patients more satisfied than staff. This result is interesting in light of the current interest in consumer input or control of service agencies in the community. The rehabilitation literature also frequently discusses the need for a different type of client-professional relationship in rehabilitation settings (see Introduction). These results suggest however, that patients do not necessarily agree with this point of view, but are satisfied with the current rehabilitation structure in which they receive treatment from the professionals in a more or less passive fashion.

This may be due to the fact that patients have never

been exposed to an alternate philosophy. They are essentially naive about the possibilities of alternate hospital or ward organizations and have never really considered different structures. This is especially true at TIRR where the length of stay is so short.

It appears that most staff would like to see a somewhat different role for patients. If this is true then an educational or organizational effort will have to be made to alter the perceptions of the patients about their role in the hospital.

Staff/Hospital Relationship

This scale deals with the relationship between staff members and their supervisors or the hospital administration. The following group comparisons were significant with p less than .05:

1. SW differed from the groups below VAP.
2. PT differed from VOC-VAS-MED.
3. P differed from VAS and MED.
4. OT-NAV differed from MED.
5. Those employed less than a year ($\bar{X} = 4.7$) differed from those employed more than a year ($\bar{X} = 4.2$).

The therapies rated staff/hospital relationship as good while nursing and the MED group rated it less good. The VA staff were also relatively unhappy about their situation. It will be recalled that Nursing has the most complex administrative structure of any of the response groups. Note that

the Aide group which typically made very positive ratings fell lower on this scale. New staff rated the relationship more positively than experienced staff, a result that was found on every scale (although not all the comparisons reached significance).

Table 17 shows that there were both VA/TIRR differences and staff/patient differences with the VA and staff making the more negative ratings.

The ratings of Staff/Hospital Relationship are not as positive as the ratings of Rehabilitation Quality and, as we shall see, the ratings of Environmental Quality are lower still. This suggests that the smoothness with which the hospital functions (at least at this level) has little effect on the quality of the product.

Environmental Quality

This scale deals with hospital organization, the safety of patients, and the openness of communication between staff and patients. The items ask about scheduling problems, availability of equipment, patient trust in staff and patient information about how the hospital system functions. In short, it deals with the day-to-day running of the hospital instead of how well the hospital meets its program goals.

The following response group comparisons were significant with p less than .05:

1. Aides differed from the groups below RN.
2. NAV-P differ from those below NS.

3. Those employed less than a year ($\bar{X} = 4.3$) differ from those employed more than a year ($\bar{X} = 3.8$).

The ratings by all groups were lower on this scale than on the other scales. The items on this scale deal more with direct experience and require less of a cognitive judgment than do the other second level factor scales. When a piece of equipment is missing or a patient is late for an appointment the respondent has a direct personal experience of the event whereas a request that he evaluate the quality of rehabilitation, for instance, requires a much more abstract judgment. For this reason, the ratings of Environmental Quality might be expected to have a smaller component of mental stereotyping and be less influenced by a positive response halo. Note however that the order of response groups is not too different from that found on other sections of the instrument, i.e., the Aides, Naive group and Patients were more positive and the VAS, R, NS and MED groups were more negative. Social Work however, takes an unusual position for them in rating Environmental Quality as quite low.

New staff tended to rate the environment favorably while more experienced staff were less favorable, again indicating a general positive response bias that is then modified by experience. Table 17 shows both TIRR/VA differences and staff/patient differences are significant with patients and TIRR more positive.

It is interesting to look at the scores for Environmental Quality plotted against those for Rehabilitation Quality.

This is done in Figure 12. The square with a "1" is the mean for those employed a year or less while the square with a "2" is the mean for those employed more than a year.

It is clear that the correlation between the two sets of ratings is quite low. As mentioned earlier, it appears that the efficiency or ease with which the hospital is perceived to function has little influence on the ratings of rehabilitation effectiveness. This result might not be obtained from a system where environmental quality had sunk to very low levels, since there must be some point at which the system ceases to function at all. At the level obtained here, which is near the midpoint of the scale, the influence of perceived inefficiencies is very slight.

Figure 13 shows Rehabilitation Quality plotted against Satisfaction with Patient Control. Here there is a strong linear trend among the TIRR staff groups. The trend does not apply however, to the ratings made by patients at both TIRR and the VA or to VAS and the VOC group. Note that the core TIRR treatment groups cluster together in a small area with the A, MAN and NAV groups at the positive end and the NS, MED and R groups at the negative end. Note also the position of the square marking new employees near the Naive group in both Figures 12 and 13 and the position of the more experienced employees near the core treatment groups. This is a strong indication that it is a specific set of learning experiences that differentiates the responses of the core treatment

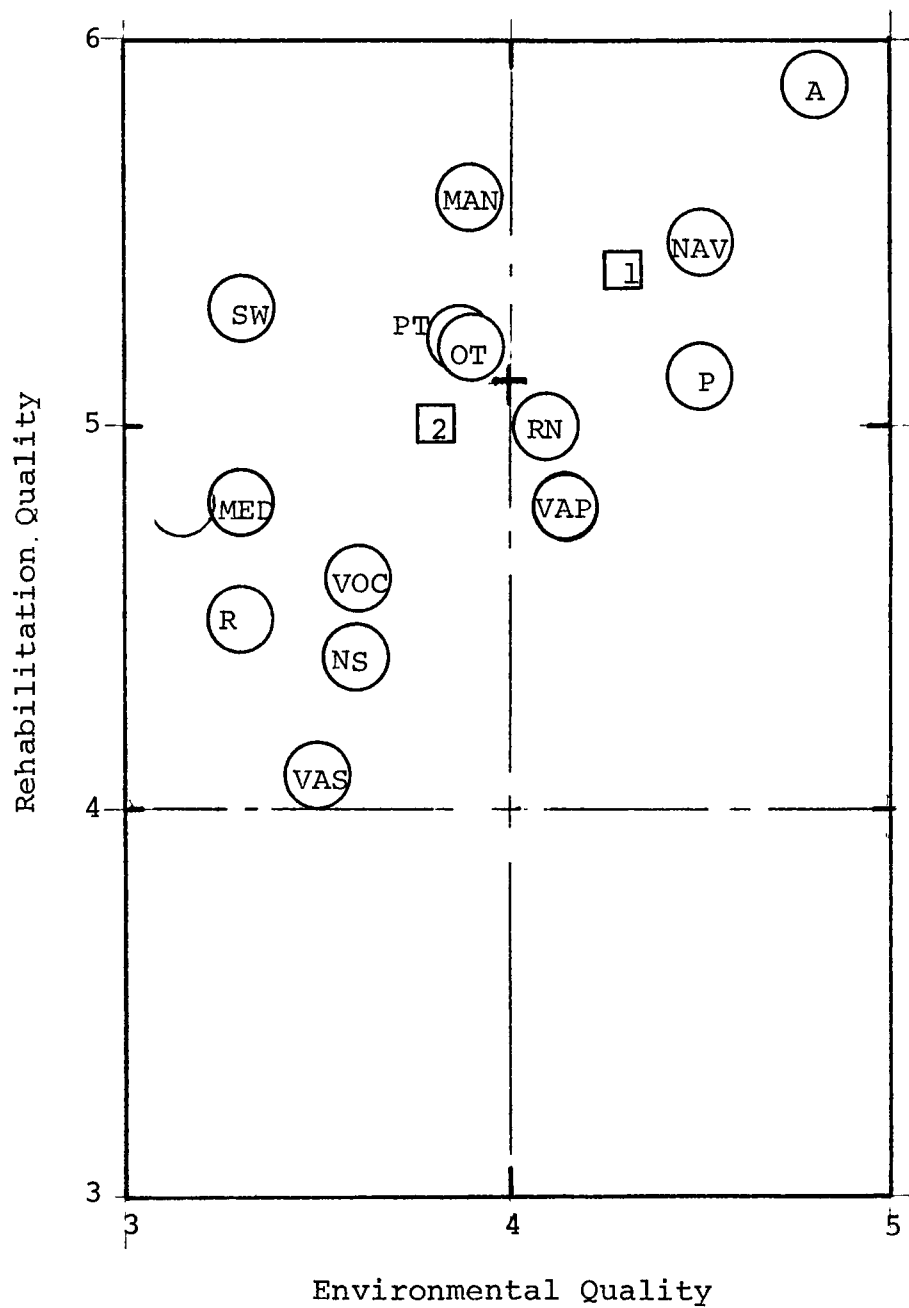


FIGURE 12
Environmental Quality and
Rehabilitation Quality

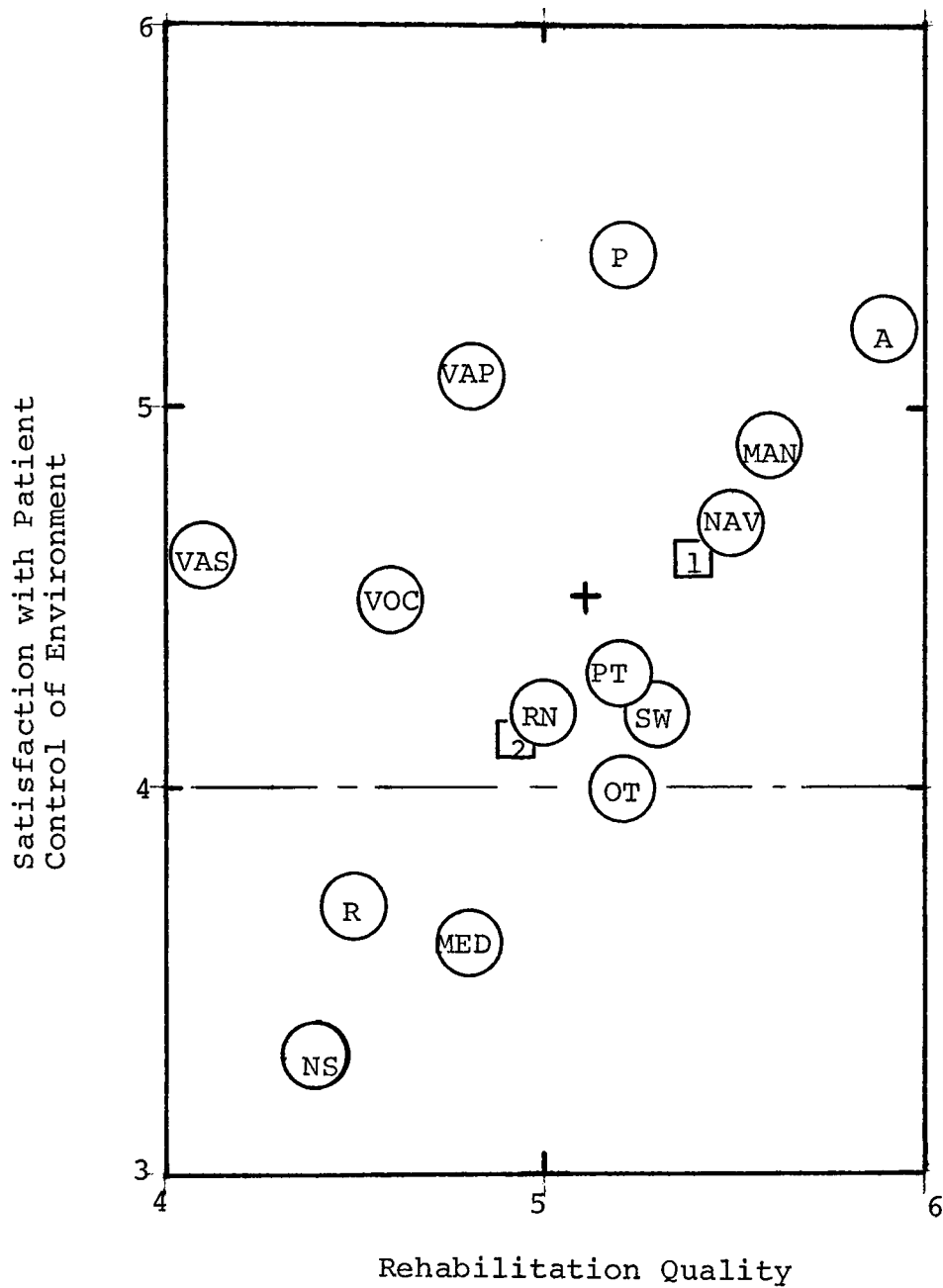


FIGURE 13

Rehabilitation Quality and
Satisfaction with Patient Control

groups from those of the more peripheral or control groups.

The Important Characteristics of Rehabilitation

The scales discussed up to this point have dealt with how well the hospital functions both day-to-day and in providing the services it offers. A slightly different viewpoint is provided by the question "what should the hospital be doing?" This issue was dealt with in one way by the MONEY and SIZE scales. Another approach is offered by this scale.

Respondents were asked to write down in a free response format the ten things that are most important in a patient's rehabilitation. These ten things were not restricted to services offered by a rehabilitation program. The responses were categorized as discussed in the Method section and the results are shown in Table 18 (see Appendix C for category definitions). The ratings are the percentage of responses assigned to each category for each response group. The largest percentage figures for each response group are underlined up to the point where the cumulative total exceeds 50%. For instance, the patient group (P) had 50% of its responses in just two categories: Physical rehabilitation and Patient characteristics. The mean percentage figure for TIRR staff is shown near the middle of the table and the mean for all 14 response groups is shown at the far right. The categories are rank-ordered on the basis of the total sample mean.

Fifty-one percent of the total responses were assigned to the first four categories: Physical Rehabilitation,

TABLE 18

Important Aspects of Rehabilitation: Percent
Responses Assigned to twelve categories

	OT	PT	SW	RN	A	MED	MAN	VOC	TIRR STAFF	P	R	NS	NAV	VAS	VAP	SAMPLE MEAN
Physical Rehab. OT-PT-Nur-Med	<u>14</u>	<u>13</u>	<u>15</u>	<u>15</u>	<u>27</u>	8	<u>25</u>	7	<u>15</u>	<u>30</u>	<u>14</u>	<u>22</u>	<u>16</u>	<u>22</u>	<u>30</u>	<u>18</u>
Patient Characteristics	<u>10</u>	<u>12</u>	10	<u>17</u>	4	<u>18</u>	<u>10</u>	<u>11</u>	<u>11</u>	<u>20</u>	<u>25</u>	<u>12</u>	<u>14</u>	<u>21</u>	<u>14</u>	<u>14</u>
Family/Friends/ Community Attitudes	<u>10</u>	5	7	<u>9</u>	<u>11</u>	13	8	8	9	15	7	<u>21</u>	11	4	<u>16</u>	<u>10</u>
Psychosocial/Voc. Rehabilitation	6	<u>10</u>	8	8	<u>8</u>	4	<u>11</u>	10	8	6	<u>12</u>	10	<u>14</u>	5	11	<u>9</u>
Staff Attitudes	<u>10</u>	10	<u>12</u>	7	6	8	10	<u>13</u>	<u>10</u>	4	8	4	6	<u>17</u>	4	9
Patient & Family Involvement	<u>10</u>	10	<u>14</u>	<u>9</u>	5	<u>17</u>	6	7	10	2	6	8	8	8	0	8
Hospital Organization /Skilled Staff	10	<u>19</u>	<u>12</u>	6	7	<u>14</u>	8	<u>11</u>	<u>11</u>	1	3	1	7	6	1	8
Community Contact/ Post-Hosp. Programs	8	7	12	7	7	7	4	10	8	5	7	3	3	2	7	6
Miscellaneous	3	2	3	4	6	4	2	<u>12</u>	5	9	5	6	4	2	5	5
Facilities	7	7	4	6	6	5	6	2	5	2	2	6	4	2	6	5
Patient Independence /General Rehab.	8	3	3	6	7	1	6	3	5	2	7	1	8	5	4	5
Recreation	4	4	0	5	4	2	4	4	3	5	2	5	3	5	4	3

Patient Characteristics, Attitudes of Family, Friends and the Community and Psychosocial Rehabilitation.

Physical Rehabilitation items were mentioned frequently by all groups except MED and VOC. The patients at both TIRR and the VA made the most responses in this category, giving it 30% of their responses. The Aide and Management groups had 27% and 25%, respectively, of their responses in this category. The business of physical rehabilitation, medicine, and nursing is thus seen as of primary importance by most response groups. Patients in particular seem to identify the physical/medical aspects of care as most important in a rehabilitation program. It is interesting however, that the physicians and nurse clinicians in the MED group, who are responsible for program planning for individual patients, de-emphasize these factors. They more often mentioned patients' personal characteristics, the involvement of patients and their families in the program, the attitudes of the family and a skilled, dedicated staff as important in rehabilitation.

Patient Characteristics were mentioned almost as frequently as the physical/medical aspects of care. Only the Aide group mentioned this in less than 10% of their responses. The research team, VA staff and the TIRR patients mentioned these factors most often, followed by the MED group and RNs. The Aide group spread their ratings fairly evenly over all the categories except for their high ranking of physical

rehabilitation and the attitudes of family and friends.

Family, Friends, and Community Attitudes ranked third in importance overall but ranked sixth for TIRR staff. The nursing students gave this category its highest rating followed by the ratings of the patients at TIRR and the VA. The Naive, Aide and OT groups had about 10% of their responses in this category. VA staff and TIRR physical therapists listed these items least often.

Psychosocial and vocational rehabilitation services were mentioned in about 9% of the overall responses, or about half as often as physical rehabilitation was mentioned. The research team (made up mostly of people in psychology) and the NAV group mentioned it most often and the MED and VA staff groups the least often. OT and TIRR patients made only 6% of their responses in this category.

Staff attitudes towards patients had the same mean rating as the preceding category. VA staff, the Vocational Unit and SW most frequently listed these items while patients at both hospitals, and the nursing students mentioned staff attitudes in only 4% of their responses. Staff in general mentioned staff attitudes two to three times more often than did patients, and VA staff mentioned it four times as often. As we have seen, patients had over 70% of their responses in the first four categories indicating that what they consider important is the delivery of rehabilitation services, their own personal characteristics and family support. They either

take staff attitudes for granted or consider them a not very important part of the rehabilitation process. The discrepancy between these points of view, or priorities might make a good discussion topic for staff meetings.

Patient and family involvement in the rehabilitation process was rated much more highly by TIRR staff than it was by the other response groups. The MED and SW groups had their second highest percentage scores in this category and the OT, PT and RN groups had scores above the mean. Patients at TIRR and at the VA seldom mentioned these factors--the VA patients never did and the TIRR patients had only 2% (or about three responses) in this category. Here again there is a difference in the perceptions of the consumers and those delivering the services. The nontreatment groups, the aides, Vocational Unit and VA staff had moderate scores on this factor.

Hospital Organization is another category mentioned more often by TIRR staff than by the other groups. The PT group had its highest score here, mentioning the need for skilled staff and competent organization in 19% of their responses. The MED group and SW also frequently listed items in this category. Patients, on the other hand, almost never mentioned these types of items.

TIRR staff appear to be very concerned with how quality rehabilitation services are delivered while the patients are primarily goal or outcome oriented--they are concerned with

whether adequate rehabilitation is provided. VA staff mentioned organization items about half as often as did TIRR staff, which is an almost exact reversal of the scores on the Staff Attitudes category.

The remaining five categories account for about 25% of the total responses. The Vocational Unit and SW were more concerned with posthospital programs and community contacts than most other groups and the Vocational Unit and patients made the most responses in the Miscellaneous category. Facilities received a fairly even 5% of the responses. It is interesting that Recreation and Facilities were mentioned very infrequently despite the fact they received large ratings on the MONEY scale and the recreation program was rated as needing expansion. These results suggest that Recreation and Facilities are seen as an amenity, or an environmental enhancement, but not as a crucial factor in rehabilitation.

The overall ordering of categories shown in Table 18 presents a fairly traditional view of the rehabilitation process. There is a heavy emphasis on the physical and medical aspects with much less emphasis on psychosocial adjustment. Patients in particular seem to have a straightforward medical view of rehabilitation. TIRR staff also largely accepts this model but would like to see more patient and family involvement in the program. They are most concerned however, with ensuring that high quality services are

delivered by insisting on highly skilled staff and a carefully organized program.

Response Clusters

Certain of the response groups were very similar in their ratings of the hospital while others differed widely. These similarities and differences provide the basis for forming response group clusters. A dual taxonomy of respondents based on their perceptions of the hospital and response group label provides information about the effect of staff positions on assessment of the hospital system.

ANOVA Clusters. Figure 14 shows a clustering of response groups based on dissimilarity. Blank cells in the matrix represent groups which differed from one another on less than five of 19 subtests with p less than .05. The groups OT-PT-SW-RN-MAN-MED-VOC and NAV did not show statistically significant differences on most of the subtests (MED did show five or more statistically significant differences with MAN and 10 or more with NAV). Aides, patients, the VA groups, the research team and the nurse students showed more differences with the TIRR staff groups and among themselves.

The TOT row at the bottom of Figure 14 indicates that the Aide group differed from other response groups most often (there were 19 comparisons for each of 13 other response groups or 247 comparisons; the Aide group had significant differences on 99 of these, while 12 would be expected by

Response Group Dissimilarity
on 19 Subtests

	OT	PT	SW	MAN	RN	MED	A	P	VOC	NAV	R	NS	VAP	VAS
OT														
PT														
SW														
MAN														
RN														
MED				*										
A	*	*	*		**	**								
P	*		*		*	*	*							
VOC							*							
NAV						**								
R			*	*			**	*		*				
NS	*	*	*	*			**	*		**				
VAP		*	*	*			*				*	*		
VAS	*	*	*	*			**	**		**			*	
TOT	37	45	48	48	36	61	99	70	33	52	59	81	53	82

* Groups differ with p less than .05 on 5-9 subtests.
 ** Groups differ with p less than .05 on 10-13 subtests.
 TOT = Sum of subtests with significant differences across
 all groups.

FIGURE 14

chance with p less than .05). VA staff and nursing students had the next highest number of significant differences followed by patients and the MED group.

Second Level Factor Score Clusters. Figure 14 provided information on differences in level of responses and the distribution of within and across group ratings. The cluster analysis described in the Method section, and shown in Figure 4 is based on the correlation matrix using the five second level factor scores for each respondent. A plus sign in a cell of Figure 4 indicates that members of the two response groups for that cell had similar distributions of responses on the five second level factors. It does not provide information on response level. A minus sign indicates a statistically significant difference in response pattern.

The cluster analysis indicates that OT-PT-SW and MAN had very similar response patterns. The Aide, MED and NAV groups were similar in pattern to the RN group and the Aide and NAV groups were similar to each other. The RN and Aide groups also had some similarity to the PT group. The fact that the Aide group appeared very different from the RN and MED groups in the ANOVA results and similar in the cluster analysis is not paradoxical because the cluster analysis is measuring similarity based on response pattern while the ANOVA is sensitive to differences in response level. Anderberg (1973) has argued that cluster analysis should be based on raw scores rather than correlations so that the clusters will

reflect differences in level as well as pattern. Such a procedure would have been helpful in the present case, but the scaling difficulties would have raised other questions.

The VA groups, the patients, nurse students and research team showed significant differences in pattern from the OT-PT-SW-MAN cluster, the nursing/medical groups and each other. The VOC group showed some differences with the nursing/medical groups and Research, but demonstrated no particular relationship with the others. Note that the PT, SW, RN, R and NS groups were sufficiently homogeneous in their response patterns to form clusters within themselves while the other response groups had diverse internal response patterns.

Important Aspects of Rehabilitation Clusters. A clustering of the responses from the Important Aspects of Rehabilitation section (Table 18) produces a variant on the above groupings. Table 19 shows the average euclidean cluster distances obtained using the percent rating scores from the first seven categories as the metric. This clustering is based on response groups rather than individual respondents. OT-PT-SW-RN-MED-VOC-NAV formed one cluster with a maximum diameter of 3.4 units. (This unit is the euclidean distance divided by the square root of the number of dimensions, that is, the distance between each pair of groups is calculated by taking the difference between the ratings on each of the seven scales, squaring the differences, summing them, dividing by the number of scores, or dimensions, and then taking the

TABLE 19
Cluster Distances Between
Response Groups on Important
Aspects of Rehabilitation

	OT-PT-SW RN-MED VOC-NAV	A-MAN	P-VAP	R	NS	VAS
OT-PT-SW RN-MED VOC-NAV	3.4	6.3	9.0	6.1	7.4	6.6
A-MAN		3.2	5.6	8.5	5.8	7.1
P-VAP			3.2	7.9	5.0	7.9
R				-	5.8	7.9
NS					-	5.8
VAS						-

square root.) Aides and the Management group formed a cluster and TIRR patients and VA patients formed another, both with diameters of 3.2 units. The remaining three response groups were between 5 and 9 units away from each other or any of the larger clusters.

Table 19 is based on opinions about the goals and methods of rehabilitation rather than ratings of performance: it shows all of the core TIRR staff groups as a unit, except for the Management and Aide groups. Patients at TIRR and the VA agree in their rankings, but the other groups retain their separate identities as they did in the other analyses.

Overall Positive Response. So far the similarities and differences between response groups have been presented without reference to how they differ. This information is available in the various parts of the Results section but it is possible to give a condensed summary of that data if some distortion is accepted. Figure 15 presents two types of overall judgments about the hospital. The vertical axis shows the deviation score of each response group from the mean of four ratings: Environmental Quality, Rehabilitation Quality, Critical Care, and Interpersonal Events (ARGU and COMPL). The horizontal axis shows the deviation score of each response group from the mean of the three hospital description ratings: USEFUL, HOPEFUL and ENJOY. The vertical axis thus rates service and environmental quality while the horizontal axis deals with the more abstract adjective

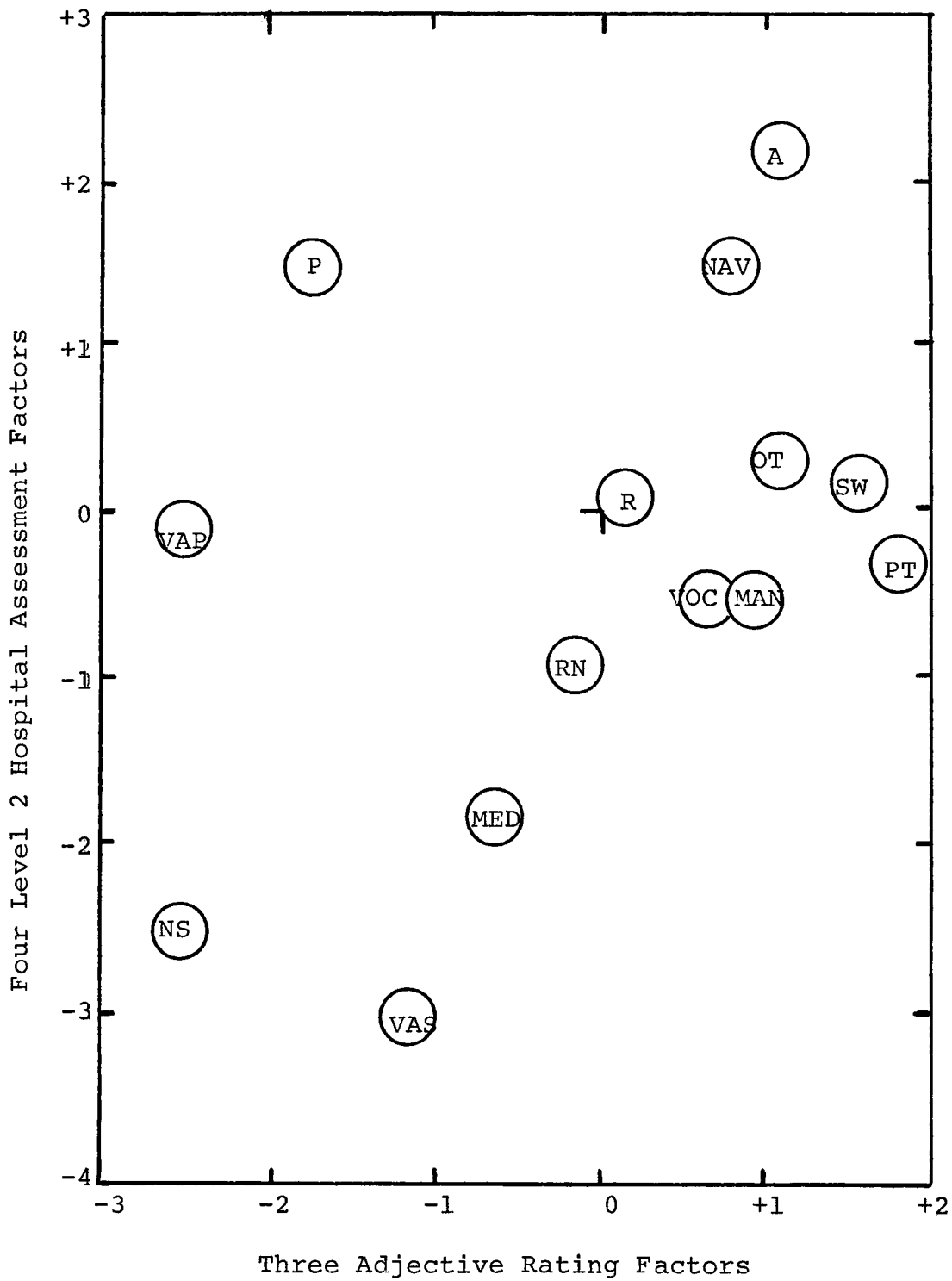


FIGURE 15

Deviation Scores for Adjective Ratings
and Hospital Assessment Ratings

ratings of the hospital. The deviation score is simply the difference between each response group's mean score and the total mean.

The cluster of TIRR staff groups is clearly visible near the overall mean of both dimensions. The Aide, NAV and P groups are the most positive in their overall ratings of hospital performance, but the patients made much lower ratings on the adjective list. The groups making the most negative ratings are clearly the NS and VAS groups with the MED group being the most negative TIRR response group. It will be remembered from Figure 11 that the mean ratings by TIRR staff on most scales were highly positive (with environmental quality receiving the lowest rating), so that the zero-zero point on Figure 15 actually represents a quite positive view of the hospital.

Also, compare Figure 15 with Figure 13 which shows the ratings of Satisfaction with Patient Control. The distributions are quite similar except that VA staff and the MAN group had relatively higher satisfaction scores than assessment scores, and the research team had relatively lower satisfaction scores.

Overall Taxonomy of Respondents. A taxonomy of respondents based on their total response patterns and levels would produce four classifications:

(1) TIRR staff consisting of OT-PT-SW-MAN-VOC-RN and MED groups. The RN and MED respondents are the most negative of

these and show a different response pattern from the SW group. The MED group also shows quite a few statistically significant differences in response level from the MAN group. The MAN group differs from the others in its listing of Important Aspects of Rehabilitation.

(2) The Patient class, made up of TIRR and VA patients. The VA patients generally made lower ratings than the TIRR patients, but few of these differences were significant. The two groups did not cluster together significantly on the basis of response pattern but did tend to differ significantly from the same groups, i.e., OT-PT-SW-MED. The patients at both hospitals generally made more positive ratings than did staff. Further, patients' listing of important aspects of rehabilitation were highly similar and quite different from those of the other response groups.

(3) Aide and NAV groups: These had very similar response patterns, as shown by the cluster analysis, and in addition their response levels were similar. The Aide group consistently made the most positive ratings of the hospital and the Naive group was usually not far behind. The Aide and NAV groups appear similar to the RN group in the cluster analysis due to the similarity of response pattern, but they differ in response level. The Aide and NAV groups were not similar in their listings of Important Aspects of Rehabilitation. There the NAV group was like the TIRR staff groups. The NAV group falls between the core staff groups and the Aide group in overall response.

(4) VAS-NS and R: These groups typically made the most negative ratings. The position of the R group near the mean in Figure 15 is slightly misleading because it is due to the unusually high ratings this group made on Critical Care and Interpersonal Events. The Interpersonal Events scale, in particular, is not readily applicable to the Research group because its peripheral position does not lead to its having complaints directed at its members. If the Interpersonal Events score is not considered the Research group would fall below the RN group on the vertical axis of Figure 15 which is a more representative position.

The R-NS and VAS groups were not like each other except for their negative ratings. The research team and nursing students formed very tight response groups within themselves but the VA staff did not. These groups, and to a lesser extent, the MED group should probably be thought of as distinct groups, related primarily by their critical attitude. This critical attitude might be expected in a student population since the ability to evaluate carefully is part of the student role. The R and NS groups had no direct stake in the system they were evaluating while staff and patient groups did. Patients, in particular, are very dependent on the care they receive and if they were to evaluate it very negatively they would be in the uncomfortable position of being dependent on a system they suspect as being inadequate.

The VA staff's negative ratings probably result from

actual differences between the VA and TIRR since the patient groups also show a similar split. The VA staff rate every aspect of their system more negatively than the TIRR groups rated theirs. Only on the Satisfaction with Patient Control scale did the VA staff have higher scores than the TIRR staff --and this does not necessarily indicate a positive evaluation of the system.

Consideration of the results from the four Target Group scales requires only slight modification in the response clusters discussed to this point. On the Target Group scales there is a distinction between high contact and low contact groups: the MAN and VOC groups, for instance, have lower rates of contact with other staff groups and with patients than do the treatment and nursing groups. The RN group takes on a unique position in these ratings: It is a high contact, high strain (in relation to the overall ratings) group; it was judged by the other staff groups to need expansion and it was given more money than other target groups. The therapy groups were alike in their moderate contact rates, moderate strain ratings, low SIZE scores and low average amounts of money.

Nursing, as represented by the RN and MED groups thus emerges as somewhat separate from the other staff groups at TIRR although the differences are not large (the Aide group is of course quite different). It is somewhat surprising, in fact, that larger differences were not observed. The

generally more negative ratings made by the RN and MED groups reflect a more difficult position in the hospital system, cf. the ARGU and COMPL scores (Figure 9), and a more cumbersome and difficult administrative structure, cf. the Staff/Hospital Relationship scale (Figure 11).

An argument might be made then, for retaining Nursing as separate from the other staff groups even though many of the differences just mentioned did not reach statistically significant levels. In this case, the overall pattern of responses carries some weight in identifying Nursing as a separate group. There are, in addition, members of the Genito-Urinary team and surgery staff who were not represented in this study. Whether the nurses on these teams, and the nurse clinicians and nurse specialists should be included as part of the RN group that does ward nursing is not clear. Given that the peripheral staff groups tended to be slightly more negative in their ratings, the effect of including these other nurses with the RNs would probably be to make the mean scores slightly more negative.

In general, the notion that staff can be treated as a unit was supported by this study (with the exclusion of the Aide group). Although there were many interesting differences between staff members, the position of most groups would not be greatly distorted if represented by the mean for all staff. The RN and MED groups would suffer the most distortion since their ratings were consistently lower than other groups.

The responses of the Aide group, on the other hand, do show the importance of looking at staff groupings separately in a new investigation. The Aide group responses were quite different from those of other groups and were so high as to be suspect, especially given the feeling expressed by some, that they are "at the bottom of the pile." Several interpretations of these results are possible. (1) The aides are "jiving" the investigator, i.e., giving him what they think he wants. (2) The aides are afraid of repercussions if they make negative comments about the hospital. (3) Aides really feel very positively toward the hospital. (4) The aides are naive both about rehabilitation and evaluation and therefore made uncritical ratings. (5) The aides who responded to the instrument were not representative of the aide population--those with a negative view refused the task.

Hospital administrative personnel and supervisors have supported possibilities 3, 4, and 5. They believe that many aides do feel very strongly that TIRR is an excellent place, but they also feel that this judgment is sometimes naive when applied to matters outside their immediate duties. The aides that refused the task may or may not have felt negatively about the hospital. Those who gave reasons for refusing said that it was too much trouble or that they felt it would do no good, i.e., that there would be no changes forthcoming because of the study. This suggests some perception of things that need to be changed.

The idea that aides are naive in their ratings is supported by the similarity of the responses to the NAV and P groups which also made very positive ratings on most portions of the instrument. In addition, new staff made more positive ratings than experienced staff. The Aides, Patients, and NAV groups were made up of individuals with little or no formal training in rehabilitation. The position of the aide group within the hospital does not encourage speculation about rehabilitation philosophy nor evaluation of procedures. Patients, likewise are essentially naive about rehabilitation and they do not gain much perspective until after they leave the hospital, if then. The hospital environment does little to draw them into evaluation of services, or speculation about other treatments. Indeed, patients have too little experience to have useful opinions at the early stages of injury and it is likely that they would view questioning of hospital procedures as threatening, cf. the Satisfaction with Patient Control ratings. Many of the patients told the investigator that they felt they did not know enough to respond to many sections of the instrument.

The fact that naive respondents made positive, rather than neutral ratings, is probably a result of the very positive regard this culture has for medical activity of all kinds. People may complain about the cost of medical care and about having to wait for service, but the fact remains that medical activity is highly regarded. This positive

regard for medical activity seems to have had some influence on the staff as well: TIRR staff rated their activity as "useful, enjoyable, and hopeful" in the extreme. They seem to like and value their work as well as feel that they are doing a good job.

CHAPTER V

DISCUSSION

TIRR rated itself very highly as a rehabilitation facility. Staff and patients agreed in rating the medical, physical and psychosocial care from good to excellent. The expected differences in ratings of the components of the rehabilitation process did not appear--TIRR was seen as providing all aspects of rehabilitation services equally well.

The interpersonal climate at TIRR was likewise rated very highly. Staff were seen as supportive and friendly, the level of interdepartmental strain was rated as very low, and the frequency of negative interpersonal events was low. Staff and patients rated themselves and each other as friendly and interpersonally warm. Staff rated their experience at TIRR as exciting, enjoyable, useful and hopeful to a high degree. Patients disagreed only in rating it considerably less enjoyable and somewhat less useful than staff.

The environmental or process ratings were somewhat lower than the outcome ratings. Hospital organization and environmental characteristics were rated near the midpoint of the scales, indicating that there is room for improvement in these areas. Staff/hospital relationships were rated only slightly above the midpoint by most groups. It is interesting to note, however, that the perceived quality of the environment had little relation to the perceived quality of

services. The level of organization at TIRR might be improved, but it could not have too much impact on the quality of services since that is already quite high. Instead, such improvement would have to be seen as improving the quality of care or as reducing the minor irritations that occur day-to-day. The quality of life, of staff and patients might thus be increased without any great impact on the quality of services. This is an important point because many assessments of program effectiveness deal only with outcome measures without concern for process measures. At TIRR such an evaluation would show little room for improvement.

Environmental Quality and Quality of Services

At some point, deterioration in environmental quality would have to have an impact on service delivery, but it is not clear at what point this would occur. This study was begun with the notion that hospitals are run in a fail-safe manner--a great deal of operational deterioration must set in before critical services are affected. It is possible then, that ratings of environmental quality would have to drop very low before there would be a corresponding drop in ratings of service quality. It might also happen that environmental quality could be rated higher than rehabilitation quality in situations where a smoothly functioning organization is seen as nevertheless ineffective in producing desired outcomes.

In practice, it is likely that lack of perceived progress would also affect perceptions of environmental quality

and even the environment itself. If staff and patients feel hopeless they might well cease their efforts to maintain a good environment. This would then have an influence on service quality in a destructive feed-back loop.

The relationship between perceived environmental quality and perceived quality of services is not simple nor unidirectional. In many studies, as in this one, they might be found to be uncorrelated. In order to demonstrate the linkages between the two concepts it would be necessary to observe them over long periods of time so that fluctuations in each can be plotted. It would probably take a long period of deteriorating or improving quality in one to produce a change in the other since it is a characteristic of complex systems to try and maintain homeostasis through minor adjustments.

The relationship between ratings of environment and service will also depend on who is doing the rating. The difference between ratings of environmental quality and rehabilitation quality was 1.3 scale points for TIRR staff and 0.6 scale points for TIRR patients, VA staff and VA patients. This suggests that TIRR staff are more sensitive to environmental quality than the other response groups. This view is supported by the rankings of Important Aspects of Rehabilitation (Table 18) where TIRR staff mentioned hospital organization items in 16% of their responses while the other groups mentioned them in 3 to 8% of their responses. It is possibly through being concerned with the process, that the TIRR staff

reached the high level of services they have achieved; the insistence on a high level of staff training expertise, and organization maintains the high level of service. The more negative ratings of environmental quality made by the TIRR staff may then be due not to a difference in actual quality but to a difference in expectations. The other response groups take the organizational properties more for granted, relatively, than do the TIRR staff. It should be noted that the mean ratings of environmental quality were not that different, it is the difference between the ratings of rehabilitation quality and environmental quality that shows the discrepancy.

Staff/Patient Differences

The patients generally made more positive ratings than staff at both the VA and TIRR. Only the patients' personal experience with the hospital was not rated as positively as the staff's--they did not find it as enjoyable as did the staff, but this personal reaction did not affect their ratings of services or the environment. A hospital, at best, is not a pleasant place for patients, but staff might very well find their work enjoyable, worthwhile and so on. High morale among the staff may be presumed to have an effect on the quality of the environment as perceived by patients, since an unhappy staff would not be expected to do their job as well, to relate to patients as well, or to provide the motivation or encouragement that many feel rehabilitation patients need.

The largest staff patient difference, aside from that of emotional reaction, was in the ratings of Satisfaction with Patient Control. Patients reported themselves as well satisfied with the amount of control they exercise over the program and the physical environment, while staff had a rating near the scale midpoint.

The amount of patient control over programming and environment is not high. There is no patient government, ward organization or therapeutic community concept in operation at TIRR. Patients do not participate directly in decisions about scheduling, selection of equipment, or direction of the program. Therefore, the staff level of dissatisfaction suggests that they would like more rather than less patient participation in some aspects of hospital operation. The ratings of the patients as very passive in Figure 7 might be recalled at this point.

Patients at TIRR and the VA have not been exposed to a system where patient participation is higher and therefore they do not have a standard for comparison. Both TIRR and the VA operate similarly to a general hospital with some modifications due to the longer stay of the patients. The expectation of a patient in such a system is that he will be cared for by professionals who know more than he does about his condition. So long as the care is adequate, the staff friendly, and the environment not too aversive, a typical patient would have little reason to expect or desire greater

say in the operation of the program. Now and then problems might crop up, as when a patient does not like the equipment ordered for him, or when he cannot get a weekend pass when he thinks he should, but these problems are generally handled by some minor adjustment in the system rather than by questioning who should be in charge.

The tendency to retain a medical model is strong at TIRR because the patients stay there for an average of only three months. The early part of this period is heavily focused on medical problems and the hospital/patient interactions are much like those in a general hospital. In the later phases the patient is expected to become more independent, and to take an active interest in his treatments. On the other hand, neither patients nor staff expect the patients to decide on what the exercises will be, or how long they should be performed. Similarly, the patient is expected to take an interest in learning personal care, how to take medications and so on, but is not expected to make decisions about what is to be learned, about the pacing of treatments or, especially, about who should be delivering the service.

The same attitudes apply to the nursing units. Patients are expected to obey ward rules, cooperate with the nursing personnel during required procedures and so on, but are not expected to make ward rules, comment on the behavior of personnel nor participate in selecting or training personnel.

All of these expectations appear to be pretty much

accepted by patients. Staff appear to feel that more participation would be desirable but this study provides no information on the form this would take. It is clear that if greater patient participation is to be implemented, the impetus will have to come from the staff rather than the patients. The consumerism movement does not exist in the hospital. They might have different opinions if exposed to a different way of doing things, but then again they might not. Without an actual, existing program with high patient involvement, there is no way to assess patient reaction to the concept. Why then is there an issue at all? If patients are satisfied with things as they are, why do staff insist on making trouble?

First of all it should be noted that working staff themselves, appear to hold a fairly traditional view of the rehabilitation process. Physical rehabilitation and its technology are rated as very important with psychosocial elements much less important. In other words, the major business of a rehabilitation program is to achieve the physical and medical goals of stability, return of function and retraining to replace lost functions. Psychological or emotional adjustment, family reactions, adjustment to the community and so on are not seen as central to the operation of the rehabilitation system. The importance of these factors is recognized but they are not seen as something to be influenced by the hospital.

The involvement desired by staff is thus a greater

involvement by patients in meeting the goals set by the hospital. The staff prefer to work with highly motivated patients who come eagerly to therapy, who want to absorb all that the staff can teach, who "accept" their disability and get on with the business of adjusting to the new conditions. They do not want to have to cajole patients into doing their exercises, and they dislike dealing with a depressed patient who cannot see why he should try when he will still be a cripple. In short, involvement means acceptance of the goals and procedures of the professionals, not involvement in the process of defining rehabilitation.

Rehabilitation theoreticians take a different view of the situation. They see the main purpose of rehabilitation as increasing patient independence; this means that the person accept and exercise control over his life and environment. However, the independent person will still rely on the opinions and advice of experts in making decisions. He loses his independence when he turns the decision-making process over to another.

From this viewpoint a hospital environment fosters dependency rather than independence. The patient lets others set the goals and procedures and his only real decision is whether or not to cooperate with the system--he is powerless to alter the system itself. The theoretician therefore calls for a non-medical model of rehabilitation which places the patient--now "person" at the center of the decision-making

process (Keith, 1971; Kutner, 1969; Szasz and Hollander, 1956).

There are a number of difficulties with the actual implementation of such a system. Physicians are notably reluctant to turn decision making control over to others, particularly since they are legally responsible for almost every aspect of patient care. Other professional groups might also dislike having their judgment questioned by patients, who are manifestly less knowledgeable about rehabilitation. The greatest difficulty however, lies with the patients themselves and with the nature of the recovery process--it is a sequencing problem.

When a person enters the hospital with a recently broken back he requires very competent and specialized medical care. He is, at that point, a medical, not a rehabilitation patient. He is not only unable to tell others what should be done, he is usually in no condition to make decisions of any sort.

As time passes the medical problems become more routine, and the participation of the person more active, but he is still hampered by his lack of knowledge and by the very time and energy consuming business of adjusting to a new mode of existence. At this point, it may be argued, the person needs to be taken care of. He is still in no position to worry about ward organization, or about his plans for the future. He may worry about the future but he is in no position to plan because he simply does not have the information at his

disposal to make effective plans. The job of the rehabilitation system at this point is to provide him with the information he needs and allow him the time and help necessary to assimilate it. Concomitantly, the process of discovering and developing his physical abilities can go on.

Learning goes on throughout the hospital stay and continues after the person leaves the hospital. It is during the posthospital period that the person really begins to deal with the problems of disability at first hand. It is during this period that the concept of independence takes on the most salience.

The argument made by rehabilitation theoreticians then, applies mainly to posthospital adjustment, at least in programs such as TIRR where the hospital stay is short. In programs where patients are retained for longer periods the independence issue will have to be met more fully during the hospitalization. Even in short-stay programs however, there is a transitional period, during which the person is preparing to leave the hospital, where conflicts between a medical model and a rehabilitation model occur. This process might be compared to that of an adolescent leaving home--he no longer requires the protective interventions of others but he is unsure still of his own abilities. It is during this period that a strictly medical model becomes grossly inadequate, but it is not clear what should be done about it.

This survey was conducted with inpatients and staff in

a medical setting. TIRR does offer transitional and post-hospital programs, but its greatest effort is focused on the early stages of recovery. Given this, a medical emphasis would be expected. The professional groups are involved in a difficult, exacting business, which they do well. They are not as a group, in the business of questioning or thinking about the long-term goals of rehabilitation. There are certain individuals at TIRR who are in this business, but the great majority of staff have their hands full running the existing programs.

This point is being stressed because the high satisfaction and service quality ratings obtained at TIRR suggest that the services and structure offered by TIRR is needed as it is, to deal with the initial phases of recovery from a spinal cord injury. The medical model is appropriate for such a task and attempts to institute a different model might do more harm than good for that stage. The question that remains is--should the system be providing something in addition to what it is already doing?

Some Reflections on Rehabilitation with Recommendations for Program Extensions

Respondents in this study did not directly indicate a strong perceived need for new services. Program items listed as important in rehabilitation were, by and large, confined to inpatient services, with posthospital services mentioned in less than 10% of the responses. However, all respondents

made frequent mention of the importance of patient and family characteristics. Patients' motivation, drive, will to succeed, flexibility, ability to adjust and perseverance were often mentioned. The support of family members, family cohesiveness, willingness to understand and accept the disability were also mentioned often. The reactions of friends and the community were considered important as were education, intelligence, income, vocational opportunities, age and race. In short, most respondents felt there was a large set of factors influencing the rehabilitation process that are not usually addressed by hospital programs. Twenty to thirty-five percent of the responses dealt with these types of comments.

The personal characteristics of patients and their families have some influence on the way they go through the rehabilitation system. The highly motivated patient will do better than the depressed, anxious patient; the person whose background has been dedicated to physical activity will have a harder time adjusting than one who can continue a sedentary occupation despite his new physical condition. These personal factors take on much more importance however, as the person nears discharge and after he has left the hospital. Family attitudes towards disability and the disabled person, which were important before now become critical.

Very often the person himself is simply unsure how much he can do on his own. If he returns to a very protective family system he may never learn the full extent of his

capabilities until some crisis occurs. Patients sent to nursing homes, likewise, may simply vegetate in bed because they have not had enough opportunity to explore their capabilities.

This lack of information does not result solely from a lack of effort on the part of the hospital system. As has been noted, the staff make some attempt to educate patient and family about the facts of disability--however, these are typically physical facts, i.e., medications, bowel care, transfers and the like. The opportunity to explore altered interpersonal relationships usually does not exist during the hospitalization. Neither patient nor family has had an opportunity to try living together under the altered circumstances. Neither patients nor family have gone out together to a movie, to dinner, or to buy some new clothes. The dependency-independence issues have not been formulated, much less resolved. The reactions of friends and the community have not been tested. In short, there is simply no way that many of the posthospital adjustment problems can be anticipated during the hospitalization. They must first be experienced before they can be dealt with.

This is not to say that increased educational efforts during hospitalization would not be effective--such efforts would go far to reduce the strain of transition from hospital to community and should be increased. However, there is a definite limit to what can be transmitted to patients and

their families before they have experienced some of the problems. It is after such experiences that they are most receptive to new ways of thinking about and doing things. It is then that psychosocial interventions can be most effective.

If the above arguments are accepted then one of the major issues addressed by this study is resolved--i.e., what is the relationship between psychosocial services and physical-medical services. This issue usually is formulated in terms of priorities, that is, which is more important. The result has been a clear emphasis on the physical and medical aspects of rehabilitation. Insurance companies, government agencies and hospital directors focus first on medical and physical care. Physical-medical care is first, but it is first in sequence not first in importance. Physiological stability must be insured, then come the physical therapies to regain or retrain the physical system, and finally the person is ready to deal with the problems of living with other people. Just as it would be impossible to put the medical phase last it is impossible to put the psychosocial phase anywhere but last. It must be included however or the rehabilitation is not complete no matter how well the first two phases were done.

The actual process is not quite so simple as the 1-2-3 just presented of course. In actual practice the reactions of patient and family are important from the day of injury, not just at discharge. In-hospital psychosocial services are

needed all through the hospitalization. Similarly, medical services and physical therapy may be needed after the person leaves the hospital. The issue is the emphasis on various services at different phases of the process.

Sequencing of services is not a great new discovery. Hospital systems have operated on this basis implicitly all along. However, since hospital systems are based on medical knowledge and practice they have tended to simply ignore the last stage of the rehabilitation process. When the person is discharged with a stable, retrained, physical condition it is assumed (or perhaps hoped) that the remaining steps of the process will take care of themselves.

TIRR provides a particularly good example of the difficulties encountered in the final phase because it has a very clear and strong philosophic commitment to total rehabilitation, meaning psychosocial as well as physical rehabilitation. Until recently, however, it has not succeeded in offering total rehabilitation in practice. There are several good reasons for this. Of greatest importance has been the reluctance of financing agencies--either governmental or private--to pay for nonmedical services. This reflects a general cultural belief that emotional or social adjustment has something to do with the moral quality of the person and is not something amenable to professional intervention. If a person has a broken back, it is not his fault and it is OK to treat it. If he sits at home doing nothing after hospitalization

it is presumed that he is an idler, or that he cannot do anything more because of his condition. This attitude is undergoing some promising changes which have opened the possibility of nonmedical treatments being covered by financial agencies.

Secondly, psychosocial services have been poorly performed because of the attempt to merge the psychosocial rehabilitation process with the medical process. Social workers and psychologists have been added to the hospital team and given the job of assisting the patient in his adjustment. The sharing of information and professional expertise in the team is a commendable goal and it sounds as if it should work. It has been, by and large, a failure.

It has been a failure because the psychosocial members of the team have been asked to do the impossible, just as if a surgeon had been asked to operate with a bottle opener. The psychosocial professionals have aided and abetted this situation by accepting it--by refusing to demand the conditions necessary for fulfilling their function.

The situation has been impossible for the following reasons:

(1) Despite the team concept, physicians are in charge of the rehabilitation process during hospitalization; they are no more knowledgeable about psychosocial adjustment than any other informed laymen, and more importantly, they have a clear set of medical priorities which take precedence at that time. This is as it should be during the hospitalization

period. Psychosocial workers have made the mistake of pursuing their goals within the priority system established by medicine.

(2) The patients are simply not ready to deal with psychosocial issues during hospitalization. This study has shown that patients, by and large, are more satisfied than staff are with the way the system functions. The hospitalization period, very properly, is concerned with physical development and this occupies virtually all of a patient's time and attention. Adjustment takes time, and attempts to hurry the process, to present problems that are far off in the future while current problems are still being processed, is not only wasteful, it is harmful, because it creates a bad relationship between the psychosocial worker and the person.

(3) Even if the patient is ready to deal with psychological adjustment issues, the hospital provides a poor setting for an intervention. Patients have complained, for instance, that they would have liked to talk to a psychologist about personal problems but were not about to do it when the guy in the next bed could hear the conversation. During the day the medical and therapy services are jealous of scheduled patient time. Psychologists and social workers find they are supposed to fit their contacts in around the edges of the physical program. They frequently have no interview or therapy space and it is often literally impossible to use treatments involving group methods because the

patients cannot be assembled at one time. Attempts to use evening or weekend times run into the objection that patients need some time off from formal program activities. Further, nursing activities such as bathing, feeding, medications and so forth conflict with long therapy sessions as do medical requirements on sitting and resting time. When family members visit the hospital from outlying communities it is often important that they meet with physical therapists and physicians first, reducing the opportunity for the psychologist or social worker to explore the interpersonal situation.

(4) It takes time to establish a working relationship when sensitive personal issues are at stake. The individual must be able to trust the therapist and this means "exploration" time is essential. Long, seemingly pointless conversations may be required before important concerns are finally voiced. Dealing with these concerns in any depth also takes time. There are, of course, rapid forms of therapy and many are applicable to spinal cord injury particularly those focused on supplying information or learning new behaviors or coping styles. The expression of anxieties, worries about family relationships, altered sexual patterns, reactions of children and the community, altered ideas about self-worth and on and on ... require a slower development. Attempts to hurry this process are counterproductive and during hospitalization this time is not available. Further, there is no reason why this time should be taken in an expensive setting like a hospital.

(5) There is a sense in which the term "rehabilitation" is inappropriate when applied to the services being discussed here. When a nondisabled couple come for counseling about their marriage, sexual problems or child-rearing practices the process is not termed rehabilitation. It is not the reinstituting of a condition but a learning of new ways of acting and thinking. Similarly, the disabled person is faced with a stressful situation and must learn ways to cope with it. The person must now think of himself in a new way--he is disabled. The goal is not to have him think of himself as he was before because he is no longer that person, instead the task is to explore and utilize to the fullest the capabilities and interests of the new "self." Similarly, the goal is not to re-establish old relationships with family and friends --instead the issue is creating good current relationships, either with old friends or new ones. In short, the problems are no different from those faced by every individual except for the additional stressful element of the disability. A person who is already well integrated, with a strong supportive family, may require little or no help in adjusting, just as he would adjust to other stressful situations. Other individuals will require help because of lack of environmental or internal supports.

The point of this rather extended discussion is that psychosocial services need to be delivered in their own setting and at the proper time in the rehabilitation process

(although certain supportive and preparatory services would continue to be delivered during hospitalization). Not all patients would require these services and each patient could be expected to require a slightly different mix of services. The proper time for this phase of the process would commence when the patient is nearing discharge and remain available for a period of about two years. No patient would spend two years in this phase but it is expected that some patients would not feel the need for assistance until they have lived for awhile in the community while others would require immediate transitional services. The two year period is a guess based on the length of time reported for adjustment to a traumatic change in life pattern (Cogswell, 1968). The services offered might include family and personal counseling, social skills training, opportunities to explore community living and reactions, meetings with former patients who have made good adjustments in the community, financial and vocational counseling and so on. In many ways the services would be similar to those offered in some community mental health centers.

The results of the survey do not directly support all the conclusions and speculations just presented; they primarily report that TIRR considers itself to be a very good rehabilitation hospital. The services offered by the existing program are highly valued by both staff and patients, and while this does not guarantee that the program is effective

or necessary, their judgments must be given considerable weight.

There remained, however, the arguments in the literature stressing the importance of psychological and social adjustment and the frequent mention of psychological adjustment, family reactions and community acceptance in the free response section of the survey. In addition, there were reactions to the survey results by staff and ex-patients, who pointed out the comparative underdevelopment of posthospital services.

In order to resolve these two positions the concept of sequencing of services was developed. It was at once obvious that this is not new. In fact, when these arguments were presented to Social Work, the Vocational Unit, and to Physical Therapy, they responded with numerous supporting anecdotes about the difficulty of attempting to deal with psychological or social adjustment issues while the person is still hospitalized. Both Social Work and vocational personnel stated their interest in developing posthospital programs. Surprisingly, Physical Therapy had also been giving thought to posthospital services since they felt that many of the issues they deal with do not become salient until patients had moved into the community.

The survey results acted to focus these issues. In particular, they made clear the distinction between a demand for more existing services and demand for new services. The demand for new services cannot be expected to come from

inpatients or from the majority of hospital staff who are concerned with operating the current structure. Positive ratings of a program thus cannot be taken to mean that innovative efforts are not required. The impetus for these efforts is likely to come from ex-patients, administrative and supervisory personnel and from researchers and theoreticians.

In this instance, the survey fulfilled its function of bringing an issue into focus and stimulating discussion of alternatives. It was most effective in this when presented to those members of the organization with responsibility for program planning where it functioned to crystallize opinions so that they could be examined more objectively.

Reliability, Validity and Usefulness

The test/retest stability of the responses was discussed in the Results section and found to be acceptable. The six week period between the two administrations resulted in few changes in the responses except on four scales dealing with interpersonal atmosphere. The reasons for the variation cannot be evaluated at the present time but it is possible that the interpersonal ratings are simply more sensitive than the ratings of hospital performance or environmental quality. Sensitivity is the obverse of stability; it is desirable to have an instrument that will respond to changes in the system, but not one that is so sensitive that it responds to meaningless fluctuations in respondent mood, etc. The exact balance

of sensitivity and reliability is hard to define and to insure. In the present study it was arbitrarily decided that important changes require a minimum of six months to a year to alter perceptions of the system significantly. In the absence of some specific traumatic changes a six week period between administrations should show no significant deviations in responses. Whether this time perspective has been represented properly in the construction of the instrument cannot be assessed by this study. It will be necessary to settle on a final form for the instrument and then use it over a long period to become aware of its temporal properties. In addition, it would be desirable to have some independent measures of changes in the hospital between instrument administrations so its ability to detect the changes can be observed.

Future work on the validity and usefulness of the instrument must be focused on comparisons with other methods of measuring hospital performance such as organizational studies, interviews, behavioral measures and so on. Each of these other methods will have as many or more methodological problems as does this approach but by comparing many different approaches some compensation for individual weaknesses can be made.

The discriminant validity of the instrument has been fairly well demonstrated by the comparison of TIRR and VA groups. The great similarity of responses within the core TIRR staff groups and the concomitant differences between

these groups and the VA, patient, and peripheral groups suggest that the instrument is capable of discriminating between different programs and between different types of observers in the same program. It had been expected that there would be greater differences within TIRR staff, but even though this was not observed, the differences between treatment staff and the peripheral groups indicates a useful level of discrimination. The separation of the Aide group from the rest of the staff also provided a useful insight into what may be educational differences in responding. If the large Aide group had been included with the RNs, the resultant mean would not have adequately represented either group. The tendency of those with little formal education to rate medical facilities very positively should be investigated to see if this is a widespread phenomenon. If it is, then program evaluators will want to control for the educational level of the respondents.

The face validity of the instrument and straightforward interpretation of response levels had to be accepted in this study since there were no other available criteria against which to compare them. On the strain scale, for instance, the responses obtained seem to indicate a possible logarithmic rather than linear function for the scale but this remains to be investigated, since the two hospitals do not provide an adequate normative sample.

The factor analytic techniques used here help to insure

that scale construction is on the basis of a large number of perceptions of the meaning of items rather than simply on the theoretical perceptions of the investigator. This increases the likelihood of scale validity--that is, it increases the probability that the interpretation of results will be intelligible to a selection of intelligent rehabilitation professionals. The generality of the factor structure itself, beyond the sample used here remains to be demonstrated.

Usefulness: The Vicissitudes of Program Evaluation

In the Introduction a clinical model of program evaluation was presented to address some of the problems encountered in assessment of service organizations, such as lack of clear success criteria, multiple goals, use of quality judgments rather than outcomes and so forth. In addition, there are many difficulties in the methodology of such studies. Campbell and Stanley (1963) argue that it is better to gather data from a wide variety of sources and from a variety of perspectives rather than to focus too heavily on one method which is likely to have unavoidable flaws. The different sources of information can then compensate each others' weaknesses.

The person doing program evaluation must also be concerned with political issues. The respondents are very likely to have a stake in the results and be concerned about how they will be used. Data can sometimes be inconclusive or uninterpretable because of poor instrument construction, but

it is just as likely that the results will be misused or misinterpreted because of factors extraneous to the form of the instrument. Some individuals or groups may have an interest in seeing that the results are interpreted in a particular way, but even when this is not the case the interpretation can be skewed because of a lack of sophistication about the nature of evaluation studies. Those in clinical practice have undoubtedly had the experience of trying to convey to parents that an IQ score for their child is not an absolute ranking--that an obtained score of 112 does not necessarily mean that the child is less intelligent than one with a score of 116. This problem is compounded many times when trying to present the complex results of an evaluation study.

The usefulness of evaluation research depends on the interpretation the institution puts on the findings as much as on the nature of the findings themselves, and this is affected by the way the investigator structures the study and presents the results. The clinical model of evaluation research is an attempt to make use of, rather than complain about, the conditions under which program evaluation is performed.

It is necessary to take an engineering/political/clinical stance to the problems rather than the simple scientific position of trying to find out what the truth is. In a field setting there are many competing truths, but the researcher can, if he is skillful, sharpen up some of the distinctions,

eliminate some possibilities and suggest others, and generally provide a firmer footing for discussion of alternatives. He will seldom, however, be able to provide a definitive resolution to an issue.

In the present study this model was carried out both in the creation of the instrument and in the presentation of results. Extensive interviews with hospital personnel were held to ascertain the important areas of hospital functioning. In the presentation phase each department received a separate presentation and private discussions of the results were held with individuals who had an interest in one part or another of the findings.

It was quickly apparent that the impact of the results would probably be felt only over a long period of time as the various individuals absorbed the results and began applying them to their day-to-day concerns. This pattern became clearly evident during the feedback phase. The original reaction of most groups was interest in hearing the results, gratification that they had received the feedback, questions about specific areas of interest, and then a general expression that there was so much material that they had a hard time keeping it all clear. Many people asked for some written presentation of the results (which will be provided). As time passed various individuals began to integrate the findings with plans that had been under exploration for a long time. Discussion of new ideas stimulated by the findings

has not yet surfaced. The lead time between presentation of new information and the use of this information in new planning is expected to be long. Consequently, any evaluation of the impact of the study should be made only after written results have been disseminated and digested.

The series of self-examination seminars proposed as one vehicle for use of the results has not developed to date but neither has it been strongly pushed by the investigator. Most departments meet regularly for such a purpose and they may begin to deal with the results of the study as time goes by.

The initial reaction of the hospital community has been positive. Few individuals have questioned the validity of the study although some have expressed relief that it did not turn out negatively. There was an impression that while many people felt very positively about the hospital they were worried that others did not feel the same way. The results have thus served to make known to the community its opinion of itself.

The most interesting payoff to date has come in the discussion of the need for posthospital programs with the Vocational Unit and Social Work. The research has provided them with some support for recommendations they will be making for future programs.

The VA response has been ambiguous. They have professed an interest in seeing the results but have expressed concerns

that the comparison with TIRR will prove damaging to staff morale and have delayed any presentations. This has not been a formal delay, but rather a simple lack of action despite repeated contacts by the investigator and an agreement to avoid making TIRR/VA comparisons in the presentation but to discuss the results in terms of the VA's ratings of itself. This reaction demonstrates the effect of the auxiliary status of the VA in the study. The investigator was not a part of the VA community, did not spend the time in getting to know the staff and patients that was spent at TIRR and therefore was seen as an outsider. This can severely restrict the usefulness of the study to the VA since they are less likely to accept the results or make use of them.

The usefulness of the study thus remains to be demonstrated although there are hints that it is having an impact. Interest has been expressed in the availability of the second generation instrument and in re-evaluation of the hospital to assess the effects of a number of changes in supervisory personnel.

Recommendations for a Second Generation Instrument

The instrument used in this study was purposely made longer and more inclusive than might be expected in order to explore the relationships between different types of responses to the hospital system. The very large data set which resulted made it relatively easy to interpret the value of sections of the test and to decide upon a useful reduced version.

The structure of the recommended instrument is based on the following considerations: (1) test/retest stability; (2) factor loadings; (3) distribution of responses and ability to discriminate response groups; (4) coverage of the important areas of the rehabilitation process as they emerged from this study; (5) economy; (6) package concept--the instrument is to cover several areas of interest, but organized in modules so that only part of the package need be used for a given purpose; (7) simplicity of scoring and interpretation is considered desirable but not of overriding importance. The package will be designed for use by an experienced investigator who will take an active role in interpreting the results to his community as part of the clinical evaluation model.

Each of the scales will be discussed and a recommendation made to retain, delete or modify it.

Target Group Scales

CONTACT. This scale was included to assist in interpreting the results from this exploratory study. It added little new information to what was already known about the pattern of contacts in the hospital although it did provide the researcher with more confidence in this information. The scale should be retained as an optional element for specific uses.

SIZE and MONEY. The Spearman rank-order correlation between target groups for these two scales was 0.88. Nevertheless, each offered its own unique insights. The SIZE

scale allowed a respondent to say that he wanted no group, or all groups expanded, while the MONEY scale required that the money go somewhere even if the respondent happened to feel that it was not needed. Patients, for instance, could not agree that any service at TIRR needed expansion (at the 50% agreement level) which reflected their basic satisfaction with TIRR; however, when asked to distribute a "windfall" \$100,000 they gave it to PT and physicians--not because they needed it evidently, but because it had to go somewhere and they valued those services. The MONEY scale had the advantage of forcing a ranking which was not required by the SIZE scale.

The MONEY scale had poorer test/retest correlations than SIZE and required more time per item than did many of the other scales. Subjects complained about having to add up the money properly, and in fact many subjects did not provide a correct sum and their responses had to be prorated. On the other hand, the MONEY results caught people's attention in the presentations and tended to spark discussion. Nevertheless, the functions served by the MONEY scale can be met by some modifications of the SIZE scale, so the MONEY scale can be dropped.

The SIZE scale can be usefully modified by asking for a somewhat more complex judgment about each target. Respondents would rate the number of staff, the range of services and the quality of services by using a plus sign to indicate

need for expansion or improvement, a minus sign for a decrease and a blank for no change. The format might look as follows:

	NUMBER OF STAFF	RANGE OF SERVICES	QUALITY OF SERVICES
OCCUPATIONAL THERAPY	_____	_____	_____

Although this requires more ratings the respondent only has to go through the list once and need only respond to those items where a change is desired, allowing a rapid test response. A more detailed response about each target is obtained and the response time should still be about half that previously required for the SIZE and MONEY scales together.

STRAIN. The usefulness of the strain or tension ratings is difficult to determine from this study. The ratings were quite low and were highly correlated with amount of contact between respondent and target groups. Various interpretations of the findings were made in the Results and Discussion sections but the data for determining the correct interpretation is not available at present. The attractive feature of the STRAIN scale (if it performs as designed) is that it pinpoints the location of problem areas in the staff. These problem areas might or might not already be obvious, but numerical data can help in reaching agreement that a problem exists and can stimulate discussion of the issue.

The correlation between rated strain and contact is not a problem since it is only to be expected that high contact

groups would have more opportunity to experience difficulties. The issue is determining what level of response indicates a problem that requires intervention. The best attack on this would probably be to interview supervisors and administrators and explore the behavioral and administrative problems associated with high strain ratings.

The potential value of this scale is great enough that it seems desirable to retain it for further study. The most intriguing characteristic suggested by this study is that the ratings may follow an exponential or logarithmic function and may actually be extremely sensitive to intergroup strain.

The recommendation is to retain the scale and study its characteristics in more depth. It can be shortened by removing the more peripheral target groups.

Interpersonal Events (PFRND, SFRND, ARGU, COMPL). The PFRND and SFRND scales were so poorly constructed that they were dropped from the analysis and that decision continues in force. The major attraction of the ARGU and COMPL scales was that they rated the frequency of behavioral events rather than judgments of an abstract concept such as interpersonal strain. The ARGU scale consists of only three items and the COMPL scale consists of four, two of which ask about the frequency of patient complaints about the respondent. This scale is therefore strongly influenced by the amount of patient contact. The results from these scales were not without interest, but they added little to the picture of

the interpersonal environment gathered from other parts of the instrument. In addition, the items might function just as well if formulated using the format of the HAS section rather than being presented as a separate scale with the consequent need for a separate set of instructions and scoring system. These arguments converge to the judgment that this scale be dropped but that equivalent items assessing the interpersonal environment be formulated as part of the HAS section of the test. These would have the form "There are frequent arguments between staff--disagree - agree." rather than ratings of actual frequency.

Satisfaction with Patient Control (SCHED, PLAN, ECA, ECB). The items from this section of the instrument produced four first level factors (plus two factors with only two items each) which recombined into one scale at the second level. The high item correlations indicated that the question was asked in far too much detail. Equivalent information could have been gathered by asking for a more general rating since satisfaction with patient control appears to be largely independent of the exact form the control might take. It would be more parsimonious therefore, to ask this question in a more general fashion and to include it in the HAS format so that instructions are reduced and the scoring simplified. The format for a typical item of this type would then be "Patients have enough control over the scheduling of their activities--agree - disagree." From six to eight items

should be adequate to assess this area, replacing the 28 specific items.

Staff and Patient Description Scales. Different factor structures were obtained for staff and patients on these adjective check lists. The scoring using the Leary system was interesting primarily in allowing direct comparison between descriptions of staff and patients. However, the overall utility of the scale is questionable. The test/retest correlations for the factor scores and for the LOV dimension of the Leary scoring were low. The list of adjectives has 24 items and is gone through twice so it consumes a considerable amount of time. The disadvantages seem to outweigh the advantages and both these scales should probably be dropped. The Interpersonal Diagnosis system continues to offer a fascinating method of analysis of interpersonal relationships, but it is most applicable to programs where a shift in attitude about the self or others is the focus.

Hospital Experience Scales (ENJOY, USEFUL, HOPEFUL).

These three scales seem to measure a kind of morale factor. They appear to tap a more emotional or subjective sphere than ratings of hospital quality and offer the possibility of identifying groups that have some dissatisfaction with the hospital that is not assessed by other parts of the instrument. A staff group, for instance, might feel it is receiving less than its fair share of system resources without rating the quality of hospital services as poor. A negative

rating would then serve as a warning sign of some unidentified problem which should be investigated.

In this study it was useful to be able to summarize staff and patient morale by reference to these scales, but the cost/effectiveness is hard to assess. It takes time to respond to the list of adjectives and to score them and the value of information on overall morale is not established. At present it seems best to retain the adjective list as an optional component and look further into the optimum composition and length of a list for rehabilitation settings.

Staff/Hospital Relationship Scales (STFA, STFB). These scales were retained in this study despite the fact that the factor structure defined by the items was extremely messy. Primarily because they assess an area of hospital functioning that was considered important. However, the results from this section generated little discussion in the presentations and it seemed hard to shift from discussion of other sections of the instrument to this one. The impression was that the evaluation of staff/hospital issues was such a large area in itself that the little slice included here was more confusing than helpful.

The difficulties in scale construction and the lack of usefulness suggest that assessment of staff/hospital issues should be left to a study directed specifically at those ends and deleted from this instrument.

Critical Care (CRIT). Critical care is one of the

central functions of the hospital and should be assessed. At TIRR the two items assessing this appeared as unique first and second level factors. These items should be retained and it might be worthwhile to strengthen the scale by adding three or four items dealing with other aspects of critical care such as surgery, intensive care, postoperative services, and emergency outpatient services.

Environmental Quality (ORGN, THRT). These two scales deal with communication, organization and scheduling issues. They appear useful and have good psychometric properties. They may be shortened by eliminating items with low factor loadings or test/retest correlations. This produces seven ORGN items (1, 2, 5, 6, 10, 11, and 12 from Appendix F) and five THRT items (2, 5, 6, 7, and 8 from Appendix F).

Rehabilitation Quality (SUPP, INFO, REHAB, INVLV, OPERT). These five first level factor scales load on the same second level factor, but they assess conceptually different areas of hospital functioning. It is possible that the correlations observed at TIRR are due to the even quality of services rather than to similarity in what the items measure. The scales appeared useful to the hospital community and generated discussion in the presentations. The psychometric properties of the scales were adequate except that the SUPP and INVLV scales had low test/retest correlations. Interestingly, the items with high factor loadings on these scales had low stability while the items with low to moderate loadings had

higher stability. These scales need to be studied further but it seems premature to eliminate them since they seem to tap an important aspect of the environment. The scales can be shortened by eliminating items with loadings less than 0.4. The SUPP scale would then consist of items 1, 3, 4, 6, 7, and 9 (see Appendix F for all five scales). The INFO scale would consist of items 1, 2, 3, 4, 5, and 7; the REHAB scale would retain all its items; INVLV would retain all but 8 and 9; and OPERT would drop 1 and 2 which are the same items as INVLV 8 and 9. In all, 15 items would be dropped from the 52 in the HAS section and two would be dropped from the 23 in the SER section.

Important Aspects of Rehabilitation. The free response section turned out to be one of the most interesting parts of the test despite the difficulties encountered in categorizing the responses. Considerable interest was shown in the presentations and this scale generated more discussion of future plans and concerns than did any other scale. A more consensually valid category system can easily be developed and it should not be difficult to achieve adequate coder reliabilities. This scale will be retained.

The recommended changes will produce an instrument that should require about half the time required by the former version with little loss of information. This version will of course require further developmental work. The factor analytic studies should be performed again and a better

evaluation of reliability needs to be made. Repeated administrations over periods of six months to a year should be tried to assess the sensitivity of the instrument to changes in an ongoing system. The usefulness of the results from this administration as well as from future administrations of the second generation instrument need to be assessed by interviewing decision-makers as they integrate the knowledge provided.

The instrument appears, on the surface, to have potential value to rehabilitation programs that are interested in self-assessment, and it appears worthwhile to continue developing it.

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APPENDIX A

Response Groups and Target Groups

APPENDIX A

RESPONSE GROUPS

<u>Code</u>	<u>TIRR Response Groups</u>	<u>Number of Subjects</u>
A	Nursing Aides Licensed Vocational Nurses	19 3 <u>22</u>
MAN	Management Personnel: heads of non-treatment departments such as Business, Maintenance, etc.	7
MED	Medical and nursing personnel with special assignments: Physicians Nurse Clinicians Respiratory Therapy GU Team	2 4 4 1 <u>11</u>
NAV	Naive group - subjects with no rehabilitation training or responsibility for treatment, supervision or administration: TIRR Secretaries TIRR Volunteers University students	2 4 5 <u>11</u>
NS	Nursing Students assigned to TIRR from the University of Texas School of Nursing	7
OT	Occupational Therapy: Treatment Supervision/treatment Clerks	10 1 2 <u>13</u>
P	Patients - adult in-patients with stroke or spinal cord injuries	17
PT	Physical Therapy: Treatment Supervision/treatment Clerks	14 6 4 <u>24</u>
R	Research team members studying TIRR patient / hospital interactions by behavioral observations	10

<u>Code</u>	<u>TIRR Response Groups</u>	<u>Number of Subjects</u>
RN	Registered Nurses:	
	Treatment	8
	Supervision/treatment	8
		<u>16</u>
SW	Social Work:	
	Treatment	6
	Supervision/treatment	1
		<u>7</u>
VOC	Vocational Unit	7
<u>VA Response Groups</u>		
VAP	Veterans Administration in-patients with spinal cord injuries	11
VAS	Veterans Administration staff assigned to spinal cord unit or who work with spinal cord patients	9

Target Groups

Code

A	Nursing Aides.
AUX	Auxillary services - laboratory, X-ray, pharmacy, housekeeping and maintenance.
FAC	Facilities - buildings, equipment, supplies.
FAM	Patients' families and visitors.
HSKP	Housekeeping personnel and services.
LAB	Laboratory, X-ray and pharmacy personnel and services.
MAIN	Maintenance personnel and services.
MD	Physicians.
MISC	Miscellaneous category for responses not covered by other categories.
NUR	Nursing service and personnel.
ORTH	Orthotics department.- personnel and services.
OT	Occupational Therapy.- personnel and services.
P	Patients.
PT	Physical Therapy - personnel and services.
PSY	Psychology - personnel and services.
RES	Research personnel and services.
REC	Recreation personnel and services.
RN	Registered Nurses.
RSP	
RESP	Respiratory Therapy - personnel and services.
SW	Social Work - personnel and services.

Target Groups

Code

TA	Transportation personnel and services.
VOC	Vocational personnel and services.
VOL	Volunteers - personnel and services.

APPENDIX B

Rehabilitation Program
Assessment Scales
(Staff and Patient Forms)

REHABILITATION PROGRAM
ASSESSMENT SCALES

Contents

1. Cover page
2. Informed consent signature sheet
3. Demographic data - staff form
4. Demographic data - patient form
5. Target group scales:
 - CONTACT
 - SIZE
 - STRAIN
 - MONEY
6. Adjective rating scales:
 - STAFF DESCRIPTION
 - PATIENT DESCRIPTION
 - HOSPITAL EXPERIENCE
7. SERVICE QUALITY
8. HOSPITAL ASSESSMENT
9. INTERPERSONAL EVENTS
10. Patient control of environment:
 - PATIENT SATISFACTION
 - STAFF SATISFACTION
11. IMPORTANT ASPECTS OF REHABILITATION

REHABILITATION PROGRAM
ASSESSMENT SCALES

Shalom Vineberg, Ph.D.
Dennis G. Stuart, M.A.
TIRR

1975

STAFF
FORM

Agreement to Participate in a
Staff and Patient Evaluation
of TIRR

In this study we would like to find out what you think about TIRR and the way things are done here . Both staff members and patients will be asked to participate and we hope to learn from you both what is going well in the hospital and where there are problems .

Your participation will consist of answering the items on a questionnaire . This takes about one hour . The answers will then be combined into averages for the different groups in the hospital , such as patients , physicians etc . The responses from individuals will be collected using code numbers and will not be reported or released to anyone . The group results will be presented to all interested staff and patients for their discussion . It is hoped the information will be useful in improving communication and services within the hospital .

Participation in this study is strictly voluntary . Your decision to take part or not will have no effect on any other aspect of your relationship with the hospital . We hope that you will find this an interesting and worthwhile activity . It is only with your cooperation that the results can be made useful in making TIRR a better hospital .

I have read the above statement and agree to participate in the described study . I understand that my participation is completely voluntary and I may withdraw at any time without prejudice .

Signature _____

Date _____

Witness _____

STAFF QUESTIONNAIRE

TITLE (RN, PT, MD, etc.) _____

How long have you had this title? _____

ASSIGNMENT (nurse clinician, charge nurse, supervisor, occupational therapist, etc,) _____

How long have you had this assignment? _____

How long have you been employed with TIRR? _____

What shift do you work? _____

How long have you worked this shift? _____

About how many hours a day do you spend with patients? _____

YOUR AGE: _____ YOUR SEX: M _____ F _____

EDUCATION: (Mark highest attained)

High School _____

Bachelor's Degree _____

Graduate Degree _____

Indicate any special training or
certification related to your job

GENERAL INFORMATION

SEX: M _____ F _____

AGE: _____

MARITAL STATUS:

RACE:

married _____
single _____
divorced _____
separated _____
widowed _____

Caucasian _____
Black _____
Oriental _____
Latin-American _____
Other _____

EDUCATION: (mark highest level completed, or present level if still in school)

Elementary _____
Junior High _____
High School _____

Some College _____
College Graduate _____
Graduate School _____

OCCUPATION:

Before injury _____
Currently: _____

AVERAGE ANNUAL FAMILY INCOME
(before injury)

AVERAGE ANNUAL FAMILY INCOME
(currently)

\$ 0 - 5,000 _____
\$ 5,000 - 10,000 _____
\$10,000 - 20,000 _____
Above \$20,000 _____

\$ 0 - 5,000 _____
\$ 5,000 - 10,000 _____
\$10,000 - 20,000 _____
Above \$20,000 _____

DATE OF INJURY: _____

DATE FIRST ADMITTED TO TIRR _____

DATE OF MOST RECENT ADMISSION TO TIRR _____ TOTAL TIME AT TIRR _____

Were you ever in another rehabilitation hospital? YES _____ NO _____

If YES, where and for how long? _____

NATURE OF DISABILITY:

Spinal cord injury _____ Level _____
Stroke _____
Other _____

MOBILITY STATUS:

Normal ambulation _____
Cane _____
Braces & crutches _____
Standard wheelchair _____
Electric wheelchair _____
Other _____

MARK THE CIRCLE WHICH BEST SHOWS THE AMOUNT OF CONTACT YOU HAVE WITH EACH OF THE GROUPS OR SERVICES LISTED BELOW: (INCLUDE CONTACT YOU HAVE WITH YOUR OWN GROUP)

	<u>ALMOST EVERY DAY</u>	<u>ABOUT ONCE A WEEK</u>	<u>ABOUT ONCE A MONTH</u>	<u>SELDOM</u>
Housekeeping	0	0	0	0
Volunteers	0	0	0	0
Physicians	0	0	0	0
Vocational Counseling	0	0	0	0
Occupational Therapy	0	0	0	0
Recreation Therapy	0	0	0	0
Lab & Technical Services (X-Ray, Pharmacy, etc.).....	0	0	0	0
Maintenance (Engineering).....	0	0	0	0
Psychology	0	0	0	0
Patients	0	0	0	0
Nursing (RNs, LVNs)	0	0	0	0
Respiratory	0	0	0	0
Physical Therapy	0	0	0	0
Nursing Aides	0	0	0	0
Orthotics	0	0	0	0
Transportation	0	0	0	0
Social Work	0	0	0	0
Patients' Families	0	0	0	0

MARK THE CIRCLE WHICH BEST SHOWS YOUR OPINION OF THE NUMBER OF PEOPLE IN EACH OF THE GROUPS OR SERVICES LISTED BELOW:

	<u>NOT ENOUGH</u>	<u>ABOUT RIGHT</u>	<u>MORE THAN NEEDED</u>
Psychology	0	0	0
Physicians	0	0	0
Nursing (RNs, LVNs)	0	0	0
Recreation Therapy	0	0	0
Patients	0	0	0
Nursing Aides	0	0	0
Occupational Therapy	0	0	0
Social Work	0	0	0
Maintenance (Engineering)	0	0	0
Respiratory	0	0	0
Volunteers	0	0	0
Physical Therapy	0	0	0
Transportation.....	0	0	0
Vocational Counseling	0	0	0
Labs & Technical Services (X-Ray, Pharmacy, etc.)	0	0	0
Orthotics	0	0	0
Housekeeping	0	0	0
Research	0	0	0

Give your opinion of the amount of strain, tension, or misunderstanding that now exists between you and each of the following groups or services. Include your own group. If you have almost no contact with a group, mark the "NO CONTACT" column instead.

Show your opinion by circling the number that best represents the strength of your feelings between "NO STRAIN AT ALL" and "A GREAT DEAL OF STRAIN".

		<u>STRAIN, TENSION OR MISUNDERSTANDING</u>						
	<u>NO CONTACT</u>	<u>NONE AT ALL</u>					<u>A GREAT DEAL</u>	
	()	1	2	3	4	5	6	7
Physicians	()	1	2	3	4	5	6	7
Respiratory Therapy.....	()	1	2	3	4	5	6	7
Transportation.....	()	1	2	3	4	5	6	7
Occupational Therapy.....	()	1	2	3	4	5	6	7
Nursing Aides.....	()	1	2	3	4	5	6	7
Housekeeping	()	1	2	3	4	5	6	7
Social Work.....	()	1	2	3	4	5	6	7
Volunteers.....	()	1	2	3	4	5	6	7
Nursing (RNs, LVNs).....	()	1	2	3	4	5	6	7
Vocational Services.....	()	1	2	3	4	5	6	7
Lab & Technical Services (X-Ray, Pharmacy, etc.)	()	1	2	3	4	5	6	7
Psychology.....	()	1	2	3	4	5	6	7
Physical Therapy.....	()	1	2	3	4	5	6	7
Recreation Therapy.....	()	1	2	3	4	5	6	7
Patients	()	1	2	3	4	5	6	7
Maintenance (Engineering).....	()	1	2	3	4	5	6	7
Orthotics.....	()	1	2	3	4	5	6	7
Patient's Family	()	1	2	3	4	5	6	7
Visitors.....	()	1	2	3	4	5	6	7
Research Personnel.....	()	1	2	3	4	5	6	7

IF YOU HAD \$100,000 TO DIVIDE AMONG THE FOLLOWING SERVICES,
HOW MUCH WOULD YOU GIVE TO EACH SERVICE? ASSUME THE MONEY
WILL BE USED TO EXPAND OR IMPROVE SERVICES RELATED TO PATIENT CARE.
YOU MAY GIVE ALL THE MONEY TO ONE SERVICE OR DIVIDE IT UP ANY
WAY YOU CHOOSE.

	<u>A M O U N T</u>
Physical	_____
Nursing Service	_____
Transportation Service	_____
Research Activities	_____
Food Service	_____
Vocational Services	_____
Housekeeping	_____
Respiratory Therapy	_____
Medical Services (Physicians)	_____
Maintenance (Engineering)	_____
Recreational Activities	_____
Social Services	_____
Technical Services (X-Ray, Pharmacy, Orthotics, Laboratory)	_____
Occupational Therapy	_____
Psychological Services	_____
Physical Plant (More space, equipment, etc.)	_____
OTHER (Please add any other services you think are important)	_____

PLEASE INDICATE WHY YOU MADE THE CHOICES YOU DID BY CIRCLING
ONE OF THE FOLLOWING:

- A. The services I selected need more money to do a good job.
- B. The services I selected are already doing a good job and I want to expand them.

CIRCLE THE NUMBER THAT BEST SHOWS YOUR FEELINGS ABOUT HOW TRUE EACH STATEMENT IS OF THE STAFF AT THIS HOSPITAL:

	<u>true of very few</u>				<u>true of most</u>		
Bossy.....	1	2	3	4	5	6	7
Helpful.....	1	2	3	4	5	6	7
Friendly.....	1	2	3	4	5	6	7
Trusting	1	2	3	4	5	6	7
Obedient.....	1	2	3	4	5	6	7
Touchy.....	1	2	3	4	5	6	7
Angry.....	1	2	3	4	5	6	7
Selfish	1	2	3	4	5	6	7
Respected.....	1	2	3	4	5	6	7
Considerate.....	1	2	3	4	5	6	7
Warm	1	2	3	4	5	6	7
Grateful.....	1	2	3	4	5	6	7
Passive.....	1	2	3	4	5	6	7
Gloomy	1	2	3	4	5	6	7
Impatient.....	1	2	3	4	5	6	7
Impersonal.....	1	2	3	4	5	6	7
Admired.....	1	2	3	4	5	6	7
Reassuring	1	2	3	4	5	6	7
Cooperative.....	1	2	3	4	5	6	7
Respectful	1	2	3	4	5	6	7
Quiet.....	1	2	3	4	5	6	7
Bitter	1	2	3	4	5	6	7
Firm	1	2	3	4	5	6	7
Independent	1	2	3	4	5	6	7

CIRCLE THE NUMBER THAT BEST SHOWS YOUR FEELINGS ABOUT HOW TRUE EACH STATEMENT IS OF PATIENTS AT THIS HOSPITAL.

	<u>true of very few</u>				<u>true of most</u>		
Bossy.....	1	2	3	4	5	6	7
Helpful.....	1	2	3	4	5	6	7
Friendly.....	1	2	3	4	5	6	7
Trusting	1	2	3	4	5	6	7
Obedient.....	1	2	3	4	5	6	7
Touchy.....	1	2	3	4	5	6	7
Angry.....	1	2	3	4	5	6	7
Selfish	1	2	3	4	5	6	7
Respected.....	1	2	3	4	5	6	7
Considerate	1	2	3	4	5	6	7
Warm	1	2	3	4	5	6	7
Grateful.....	1	2	3	4	5	6	7
Passive	1	2	3	4	5	6	7
Gloomy	1	2	3	4	5	6	7
Impatient.....	1	2	3	4	5	6	7
Impersonal.....	1	2	3	4	5	6	7
Admired.....	1	2	3	4	5	6	7
Reassuring	1	2	3	4	5	6	7
Cooperative.....	1	2	3	4	5	6	7
Respectful	1	2	3	4	5	6	7
Quiet.....	1	2	3	4	5	6	7
Bitter	1	2	3	4	5	6	7
Firm	1	2	3	4	5	6	7
Independent	1	2	3	4	5	6	7

The following descriptions might apply to your experience at this hospital.

For each item, circle the number that best describes your experience here, from (1) SELDOM TRUE to (7) USUALLY TRUE.

	SELDOM TRUE						USUALLY TRUE
Satisfying	1	2	3	4	5	6	7
Discouraging.....	1	2	3	4	5	6	7
Easy.....	1	2	3	4	5	6	7
Lonely	1	2	3	4	5	6	7
Desirable.....	1	2	3	4	5	6	7
Boring.....	1	2	3	4	5	6	7
Important.....	1	2	3	4	5	6	7
Depressing.....	1	2	3	4	5	6	7
Enjoyable.....	1	2	3	4	5	6	7
Waste of time	1	2	3	4	5	6	7
Interesting.....	1	2	3	4	5	6	7
Hopeless.....	1	2	3	4	5	6	7
Frightening	1	2	3	4	5	6	7
Useful.....	1	2	3	4	5	6	7
Helpful.....	1	2	3	4	5	6	7
Friendly.....	1	2	3	4	5	6	7

(cont.)

	SELDOM TRUE	USUALLY TRUE					
Disappointing	1	2	3	4	5	6	7
Confusing.....	1	2	3	4	5	6	7
Inspiring.....	1	2	3	4	5	6	7
Frustrating.....	1	2	3	4	5	6	7
Embarrassing	1	2	3	4	5	6	7
Exciting.....	1	2	3	4	5	6	7
Pleasant.....	1	2	3	4	5	6	7
Tiring.....	1	2	3	4	5	6	7
Disgusting	1	2	3	4	5	6	7

CIRCLE THE NUMBER THAT BEST SHOWS YOUR IMPRESSION OF HOW WELL TIRR DOES THE FOLLOWING THINGS FOR PATIENTS. PLEASE ANSWER EVERY ITEM EVEN IF YOU'RE NOT SURE ABOUT SOME OF THEM. When you have completed this task, then select the 5 items that are the most important to you. In the space on the left, place a "1" by the most important, a "2" by the next most important, and so on, through "5".

		Poorly	Very Well					
_____	Involves patient in responsibility for self-care ...	1	2	3	4	5	6	7
_____	Provides routine nursing care	1	2	3	4	5	6	7
_____	Provides critical nursing care (life-threatening situations)	1	2	3	4	5	6	7
_____	Provides routine medical care	1	2	3	4	5	6	7
_____	Provides critical medical care (life-threatening situations)	1	2	3	4	5	6	7
_____	Provides maximum physical rehabilitation	1	2	3	4	5	6	7
_____	Produces maximum social rehabilitation	1	2	3	4	5	6	7
_____	Provides psychological support	1	2	3	4	5	6	7
_____	Provides recreation	1	2	3	4	5	6	7
_____	Provides necessary equipment (orthoses, cushions, etc.)	1	2	3	4	5	6	7
_____	Teaches skills needed for daily living	1	2	3	4	5	6	7

(cont.)

		Poorly				Very Well		
		1	2	3	4	5	6	7
_____	Prepares patient to return home	1	2	3	4	5	6	7
_____	Prepares family for return of patient	1	2	3	4	5	6	7
_____	Increases patient independence	1	2	3	4	5	6	7
_____	Provides pleasant environment	1	2	3	4	5	6	7
_____	Provides information about disability	1	2	3	4	5	6	7
_____	Understands patient's needs	1	2	3	4	5	6	7
_____	Understands needs of patient's family	1	2	3	4	5	6	7
_____	Treats patients as adults	1	2	3	4	5	6	7
_____	Cares about patient's needs	1	2	3	4	5	6	7
_____	Provides enough privacy	1	2	3	4	5	6	7
_____	Moves patients safely	1	2	3	4	5	6	7
_____	Provides vocational services	1	2	3	4	5	6	7

Now go back and select the 5 items you think are most important.

For each of the following statements, circle the number which best shows the amount of agreement or disagreement you have with the statement. You may be unsure of some items but make the best judgment you can. Mark all items.

	DISAGREE							AGREE						
1. The staff here encourage and support patients.....	1	2	3	4	5	6	7							
2. Treatments are not explained to patients	1	2	3	4	5	6	7							
3. Patients here seldom discuss their personal feelings with staff	1	2	3	4	5	6	7							
4. Staff frequently don't hear about decisions affect- ing their patients in time to plan effectively	1	2	3	4	5	6	7							
5. Patients don't know what to expect as they go through program here	1	2	3	4	5	6	7							
6. Staff sometimes make patients really angry	1	2	3	4	5	6	7							
7. Staff are willing to answer patients' questions about their condition	1	2	3	4	5	6	7							
8. Patients are seldom kept waiting.....	1	2	3	4	5	6	7							
9. Staff conflicts take up a lot of time here.....	1	2	3	4	5	6	7							
10. The proper equipment is usually available when the patient needs it.....	1	2	3	4	5	6	7							
11. The ideas of all staff levels are considered in making changes here.....	1	2	3	4	5	6	7							
12. Staff here are too impersonal	1	2	3	4	5	6	7							
13. Patients can openly express their feelings here	1	2	3	4	5	6	7							
14. The program here lacks direction.....	1	2	3	4	5	6	7							
15. Patients here are treated more as objects than as people.....	1	2	3	4	5	6	7							
16. Some staff members here have been treated unfairly by the hospital.....	1	2	3	4	5	6	7							
17. Staff here go out of their way to help patients	1	2	3	4	5	6	7							

	DISAGREE				AGREE		
18. Patients are not told enough about their condition.....	1	2	3	4	5	6	7
19. Staff are provided with opportunities to use their own judgment here	1	2	3	4	5	6	7
20. Staff are interested in what happens to patients after they leave the hospital.....	1	2	3	4	5	6	7
21. Staff needs more feedback from supervisors	1	2	3	4	5	6	7
22. Patients receive little help in planning for discharge	1	2	3	4	5	6	7
23. Patients know how to get what they need from the hospital.....	1	2	3	4	5	6	7
24. Staff don't explain things so patients can under- stand.....	1	2	3	4	5	6	7
25. It's easy for staff to talk to supervisors when necessary	1	2	3	4	5	6	7
26. Staff are bossy and unfriendly towards patients.....	1	2	3	4	5	6	7
27. This hospital provides opportunities for staff to improve their skills.....	1	2	3	4	5	6	7
28. Staff here help build patients' self-confidence.....	1	2	3	4	5	6	7
29. Patients here are unfriendly towards staff.....	1	2	3	4	5	6	7
30. There is little wasted time in this program.....	1	2	3	4	5	6	7
31. Staff are interested in the patients as people.....	1	2	3	4	5	6	7
32. Information is passed from shift to shift pretty well.....	1	2	3	4	5	6	7
33. Patients here are afraid of some staff members.....	1	2	3	4	5	6	7
34. Patients generally get to their appointments on time ...	1	2	3	4	5	6	7
35. Patients don't know whom to talk to when a problem comes up	1	2	3	4	5	6	7
36. Sometimes staff don't seem to know what they are doing.....	1	2	3	4	5	6	7

	DISAGREE						AGREE
37. Some services schedule patients without regard for the needs and problems of others.....	1	2	3	4	5	6	7
38. Equipment is frequently misplaced here.....	1	2	3	4	5	6	7
39. New patients are helped to get acquainted with the hospital	1	2	3	4	5	6	7
40. Good work by staff members is rewarded by the hospital.....	1	2	3	4	5	6	7
41. If a patient's treatments or medications are changed a staff member tells him why.....	1	2	3	4	5	6	7
42. Patients know what is expected of them here.....	1	2	3	4	5	6	7
43. It's not safe for patients to criticize the staff here.....	1	2	3	4	5	6	7
44. Staff are impatient about answering patients' questions	1	2	3	4	5	6	7
45. Some patients have been threatened by the staff.....	1	2	3	4	5	6	7
46. The wards here seem cluttered and messy.....	1	2	3	4	5	6	7
47. Staff are interested in patients' feelings.....	1	2	3	4	5	6	7
48. A lot of time is lost due to scheduling problems here...	1	2	3	4	5	6	7
49. This hospital doesn't provide adequate training for new staff members.....	1	2	3	4	5	6	7
50. Patients sometimes make staff really angry.....	1	2	3	4	5	6	7
51. Changes in a patient's treatment are fully explained to the staff responsible for carrying them out	1	2	3	4	5	6	7
52. Staff have opportunities to use all their skills here.....	1	2	3	4	5	6	7

How often, on the average, do the following things occur at this hospital?
Mark the circle that best shows your feelings.

	<u>almost every day</u>	<u>once a week</u>	<u>once a month</u>	<u>a few times a year</u>	<u>never</u>	<u>no contact</u>
A patient shows appreciation for some- thing you've done.....0	0	0	0	0	0	0
A patient complains about something you've done.....0	0	0	0	0	0	0
A patient says something nice to you.....0	0	0	0	0	0	0
A patient gets angry with you.....0	0	0	0	0	0	0
You have a friendly conversation with a patient.....0	0	0	0	0	0	0
A staff member shows appreciation for something you've done.....0	0	0	0	0	0	0
A staff member complains about some- thing you've done.....0	0	0	0	0	0	0
A staff member says something nice to you.....0	0	0	0	0	0	0
You have a friendly conversation with a staff member.....0	0	0	0	0	0	0
There are arguments between staff members.....0	0	0	0	0	0	0
There are arguments between patients....0	0	0	0	0	0	0
There are arguments between staff and patients.....0	0	0	0	0	0	0
A staff member does something extra to help you0	0	0	0	0	0	0
A staff member gets angry with you.....0	0	0	0	0	0	0
You do something extra for a patient....0	0	0	0	0	0	0
You do something extra for a staff member.....0	0	0	0	0	0	0

SATISFACTION WITH ENVIRONMENTAL CONTROL

PATIENT

Circle the number which best shows how satisfied or dissatisfied you are with the amount of control you have over each item below. Control means that you have some say on when and how things are to occur even if you must have help. If others decide without consulting you, then you have no control. If an item doesn't apply to you (if you have no TV, for instance), mark the "Does Not Apply" space.

	<u>AMOUNT OF CONTROL</u>							<u>DOES NOT APPLY</u>
	<u>SATISFIED</u>			<u>DISSATISFIED</u>				
Mealtimes	1	2	3	4	5	6	7.....	_____
Choice of food	1	2	3	4	5	6	7.....	_____
TV.....	1	2	3	4	5	6	7.....	_____
Radio	1	2	3	4	5	6	7.....	_____
Telephone	1	2	3	4	5	6	7.....	_____
Lights.....	1	2	3	4	5	6	7.....	_____
Noise	1	2	3	4	5	6	7.....	_____
Temperature	1	2	3	4	5	6	7.....	_____
Personal items.....	1	2	3	4	5	6	7.....	_____
Clothing.....	1	2	3	4	5	6	7.....	_____
Ward rules.....	1	2	3	4	5	6	7.....	_____
Who visits you.....	1	2	3	4	5	6	7.....	_____
When people visit.....	1	2	3	4	5	6	7.....	_____
Therapy hours	1	2	3	4	5	6	7.....	_____
Physicians' visits.....	1	2	3	4	5	6	7.....	_____
Nursing routines.....	1	2	3	4	5	6	7.....	_____
Recreation time.....	1	2	3	4	5	6	7.....	_____
Recreation activities	1	2	3	4	5	6	7.....	_____

(cont.)

	<u>AMOUNT OF CONTROL</u>							<u>DOES</u>
	<u>SATISFIED</u>			<u>DISSATISFIED</u>				<u>NOT</u>
								<u>APPLY</u>
Sleeping time	1	2	3	4	5	6	7.....	_____
Medications	1	2	3	4	5	6	7.....	_____
Use of equipment (wheelchair, etc.)	1	2	3	4	5	6	7.....	_____
Rehabilitation planning.....	1	2	3	4	5	6	7.....	_____
Discharge date	1	2	3	4	5	6	7.....	_____
Choice of equipment	1	2	3	4	5	6	7.....	_____
Behavior of staff.....	1	2	3	4	5	6	7.....	_____
Behavior of other patients.....	1	2	3	4	5	6	7.....	_____
Bedside area	1	2	3	4	5	6	7.....	_____
Decoration of ward	1	2	3	4	5	6	7.....	_____
Time away from hospital	1	2	3	4	5	6	7.....	_____

SATISFACTION WITH ENVIRONMENTAL CONTROL

STAFF

Circle the number which best shows how satisfied or dissatisfied you are with the amount of control patients have over each item below. Control means that they have some say on when and how things are to occur even if they must have help. If others decide without consulting them, then they have no control.

AMOUNT OF CONTROL

SATISFIED DISSATISFIED

Mealtimes	1	2	3	4	5	6	7
Choice of food	1	2	3	4	5	6	7
TV.....	1	2	3	4	5	6	7
Radio	1	2	3	4	5	6	7
Telephone	1	2	3	4	5	6	7
Lights.....	1	2	3	4	5	6	7
Noise.....	1	2	3	4	5	6	7
Temperature.....	1	2	3	4	5	6	7
Personal items.....	1	2	3	4	5	6	7
Clothing.....	1	2	3	4	5	6	7
Ward rules.....	1	2	3	4	5	6	7
Who visits	1	2	3	4	5	6	7
When people visit.....	1	2	3	4	5	6	7
Therapy hours	1	2	3	4	5	6	7
Physicians' visits.....	1	2	3	4	5	6	7
Nursing routines.....	1	2	3	4	5	6	7
Recreation times.....	1	2	3	4	5	6	7
Recreation activities	1	2	3	4	5	6	7
Sleeping time	1	2	3	4	5	6	7
Medications	1	2	3	4	5	6	7

AMOUNT OF CONTROL (cont.)

	<u>SATISFIED</u>	<u>DISSATISFIED</u>					
Use of equipment	1	2	3	4	5	6	7
Rehabilitation planning	1	2	3	4	5	6	7
Discharge date	1	2	3	4	5	6	7
Choice of equipment	1	2	3	4	5	6	7
Behavior of staff	1	2	3	4	5	6	7
Bedside area	1	2	3	4	5	6	7
Decoration of ward	1	2	3	4	5	6	7
Time away from the hospital	1	2	3	4	5	6	7

Write down the ten things you think are most important in a patient's rehabilitation. These may be people, activities, events, or personal characteristics - anything you feel is helpful and important in adjusting to a disability.

VERY IMPORTANT

Please be sure to write down at least ten things. You may write down more than ten if you wish.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Write down the ten things that have been most important to you in your rehabilitation. These may be people, activities, events or personal characteristics – anything you feel has been helpful or important in adjusting to your disability.

VERY IMPORTANT

Please be sure to write down at least ten things. You may put down more than ten if you wish.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

APPENDIX C

Categories for Important Aspects of Rehabilitation

Important Aspects of Rehabilitation:
Description of Categories

1. Physical Rehabilitation: Treatment groups or functions concerned with physical or medical treatment.
2. Patient Characteristics: Patients' motivation, intelligence, flexibility, education or socioeconomic background.
3. Family, Friends and Community Attitudes: The attitudes of others towards the disabled person or disability in general.
4. Psychosocial / Vocational Rehabilitation: Treatment groups or services in the areas of psychological, social or vocational counseling or therapy.
5. Staff Attitudes: The attitudes of staff towards patients and disability; particularly emotional support and encouragement towards patients. This support is distinguished from the psychosocial category in that it is not part of a specific treatment program or offered by professional counselors.
6. Patient and Family Involvement: Involvement of patients and family in rehabilitation planning and decision - making and the provision of adequate information to patients and family about disability and the hospital.
7. Hospital Organization / Skilled Staff: Responses stressing the importance of skilled, motivated staff, a smoothly functioning hospital, agreement on goals and high staff morale.
8. Community Contact / Post-Hospital Programs: Trips outside the hospital and contact with community groups or services. Transitional living programs and outpatient services.
9. Miscellaneous: Programs, services or groups not covered by other categories -- see list on following page.
10. Facilities: Buildings, equipment or supplies.
11. Patient Independence / General Rehabilitation: Nonspecific statements concerning the need to increase patient independence.
12. Recreation: Hospital sponsored recreation.

Important Aspects of Rehabilitation:
Miscellaneous Items

Type of Response	Number of Responses
Pharmacy, Central Supply, Orthotics, Admissions, Respiratory, Transportation, Driver's Training	13
Food or diet	12
Passage of time or day-to-day progress	10
Volunteers	8
Privacy or quiet time for patients	8
Early Treatment	7
Religious factors	5
Sexual information	3
Research	3
Control of patients / enforcement of rules	3
Opportunities for patients to express feelings	3
Staff pay or input into system	3
Timing of prognosis	2
Removal of staff labels and territoriality	1
Program active all day long	1
	82

APPENDIX D

Computer Programs

```

500 CONTINUE
    W(IM)=W(JM)+W(IM)
    W(JM)=0.0
C PRINT CLUSTER ID, ELEMENTS, DISTANCE AND WEIGHT.
    WRITE(6,103)M,IM,JM,DIST(IM,JM),W(IM),IM
103 FORMAT(//2X' CLUSTER ',I3,' = ELM ',I3,' + ELM ',I3,' AT
    1DIST = ',F8.4/2X' WEIGHT = ',F4.0,4X,'CLUSTER NOW STORED
    2 AS ELM ',I3)
C EXIT WHEN ALL VARIABLES ARE IN ONE CLUSTER
    IF(W(IM)-NV)600,999,999
C COMPUTE NEW DISTANCES FOR CLUSTER
600 DO 601 I=1,NV
    IF (W(I).LT.1.0) GO TO 601
    IF(I.EQ.IM)GO TO 601
    ED=0.0
    DO 602 J=1,NF
        ED=ED+((DATA(IM,J)-DATA(I,J))**2
602 CONTINUE
    DIST(I,IM)=SQRT(ED)
    DIST(IM,I)=DIST(I,IM)
601 CONTINUE
C MAKE ANOTHER PASS
    GO TO 333
999 STOP
END

```

NOTE: CPU time for 174 variables and 5 dimensions on a UNIVAC 1108 was approximately 30 seconds.

Cluster Analysis Program

```
C FORTRAN CLUSTER PROGRAM - CSTUART - CENTROID METHOD
C NV IS NUMBER OF VARIABLES. NF IS NUMBER OF DIMENSIONS.
C DATA(NV,NF) IS DATA ARRAY. DIST(NV,NV) IS ARRAY OF
C EUCLIDEAN DISTANCES BETWEEN DATA ELEMENTS. W(NV) IS CLUSTER
C WEIGHT ARRAY.
C
C READ DATA (BASED ON FACTOR3 FACTOR SCORE OUTPUT FORMAT)
  DIMENSION DATA(180,5),DIST(180,180),W(180)
  READ(5,100)NV,NF
100  FORMAT(2I3)
  READ(25,101) ((DATA(L,M),M=1,NF),L=1,NV)
101  FORMAT(16X,5E10.5)
C INITIALIZE WEIGHT ARRAY
  DO 200 I=1,NV
  W(I)=1.0
200  CONTINUE
  M=NV
  NVM1=NV-1
C CREATE INITIAL DISTANCE MATRIX
  DO 300 I=1,NVM1
  L=I+1
  DO 301 J=L,NV
  ED=0.0
  DO 302 K=1,NF
  ED=ED+((DATA(I,K)-DATA(J,K))**2)
302  CONTINUE
  DIST(I,J)=SQRT(ED)
301  CONTINUE
300  CONTINUE
C FIND MINIMUM DISTANCE:
333  DMIN=100
  DO 400 I=1,NVM1
  L=I+1
  IF(W(I).LT.1.0) GO TO 400
  DO 401 J=L,NV
  IF(W(J).LT.1.0) GO TO 401
  DMIN=DIST(I,J)
  IM=I
  JM=J
401  CONTINUE
400  CONTINUE
C PUT NEW CLUSTER BACK INTO DATA REPLACING FIRST ELEMENT AND
C DELETING SECOND
  M=M+1
  DO 500 J=1,NF
  DATA(IM,J)=( (W(JM)*DATA(JM,J))+(W(IM)*DATA(IM,J)) ) /
  1 (W(JM)+W(IM))
```

Test/Retest Correlation Program

```
      SUBROUTINE PEARS(X,Y,N)
C  FORTRAN SUBROUTINE FOR COMPUTING PEARSON CORRELATIONS AND
C  T - TRANSFORMS. X IS THE ARRAY OF X SCORES. Y IS THE ARRAY
C  OF Y SCORES. N IS THE NUMBER OF ELEMENTS IN EACH ARRAY.
C  ***INITIALIZE VARIABLES
      DIMENSION X(N),Y(N)
      SXY=0.
      SX=0.
      SY=0.
      SSX=0.
      SSY=0.
      RN=N
C  ***COMPUTE SUMS AND SUMS OF SQUARES
      DO 10 I=1,N
      SX=SX+X(I)
      SY=SY+Y(I)
      SXY=SXY+X(I)*Y(I)
      SSX=SSX+(X(I))**2
      SSY=SSY+(Y(I))**2
10  CONTINUE
C  ***COMPUTE R AND T.WITH BRANCHES FOR SPECIAL CASE WHERE
      DENOMINATOR = ZERO.
      XD=RN*SSX-SX**2
      YD=RN*SSY-SY**2
      IF(XD.LE.0.OR.YD.LE.0)GO TO 40
      R=(RN*SXY-SX*SY)/SQRT((RN*SSX-SX**2)*(RN*SSY-SY**2))
      IF(ABS(R).LE.0.999)GO TO 20
      T=100.
      GO TO 30
40  R=1.
      T=500.
      GO TO 30
20  T=R*(SQRT((RN-2.)/(1.-R**2)))
30  WRITE(6,100)R,T
100  FORMAT(2X'PEARSON CORR = ',F7.4,' T = ',F8.4/)
      RETURN
      END
```

APPENDIX E

Composition of Response Clusters

Composition of Clusters Based
on Second-Level Factor Scores
at Distance $z = 1.6$ and 1.8

Respondant	Tenure	Age		Respondant	Tenure	Age
OT	1	1		OT	1	1
A	2	1		MAN	2	2
PT	1	1		OT	2	1
A	1	1		PT	1	1
PT	1	1		OT (O)	1	2
OT	1	1		VOC	2	2
A	1	1		PT	1	1
RT	1	1		NAV	-	1
VOL	-	-		PT (O)	1	2
PT (S)	2	1		SW	1	1
PT	1	1		OT	1	1
PT	2	1		SW (S)	2	2
MAN	2	2		PT (S)	1	2
RN (S)	2	1		PT (S)	2	1
PT (S)	2	1		P	1	1
NAV	-	1		PT	2	1
PT	1	1		MAN	2	2
RN	2	1				1.6
RN (S)	2	2				
RN (S)	1	1		PT	2	2
RN	1	1		PT	1	1
RN	2	1		OT	2	2
MD	2	2		A	2	2
RT	1	-		SW	1	1
MD	2	2		SW	2	1
A	2	1				1.8
VAS	2	2				
VAS	2	2				
A	2	2				
OT	2	2		OT	2	2
VAP	1	2		RN (S)	2	1
MAN	2	2		NS	1	1
PT	2	2		RN	1	1
VAS	2	2		RT	1	1
A	2	2		A	2	2
		1.6		NCL	2	2
				GU	2	2
						1.8

Tenure: 1 = one year or less
2 = more than one year
Age: 1 = 30 years or less
2 = 31 years or more

(S) supervisor
(o) clerk or other

(continued)

Composition of Clusters
(continued)

Respondant	Tenure	Age
A	2	2
P	1	1
VAS	2	2
P	1	1
VOC	2	2
VOC	2	2
P	1	2
VAP	1	1
MAN	2	2
VAP	1	2
VAS	2	2
		1.8
A	1	1
VAP	1	1
OT(O)	1	2
A	2	2
P	1	2
VAP	1	1
PT(O)	1	1
VOC	2	2
VOC	2	2
PT	1	1
NAV	-	1
VOL	2	2
PT(O)	2	2
MAN	2	2
A	1	2
A	1	1
A	1	2
RN	1	2
P	1	2
A	1	1
VOL	1	2
P	1	2
SEC	2	2
P	1	2
		1.8

Respondant	Tenure	Age
OT	1	2
NAV	-	1
A	2	-
NS	1	1
RN	1	1
RT	2	1
PT	1	1
A	2	2
NS	1	1
RN	1	1
RN	1	2
RN(S)	2	2
VAS	2	2
P	1	1
P	1	1
VAP	2	1
		1.6
A	2	1
NS	1	1
P	1	1
NS	1	1
NAV	-	1
R	2	1
NS	1	1
SEC	2	1
		1.8
OT	2	2
R	2	2
SW	2	2
RN	2	2
NCL	2	2
R	1	2
R	2	1
R	2	1
R	2	2
R	2	1
R	2	2
		1.6

(continued)

Composition of Clusters
(continued)

Respondant	Tenure	Age	Respondants not in clusters larger than 2 at $z = 1.8$	
P	1	1		
SEC	2	1		
P	1	1		
PT	1	2		
R	1	1		
R	1	1		
MAN	2	2		
		1.8		
NCL	2	2		
VAS	2	1		
SW	2	2		
VOC	2	2		
RN (S)	2	2		
		1.8		
A	2	2		
VAP	2	2		
VAP	2	2		
			<u>Group</u>	<u>Number</u>
			OT	1
			PT	3
			SW	1
			RN	1
			A	3
			NS	1
			VOC	1
			P	4
			R	1
			VAP	3
			VAS	2
				21

APPENDIX F

First Level Factor Scales

FACTOR DESCRIPTIONS

CRITICAL CARE

<u>Critical Care</u>	Factor Loading
(CRIT)	
Service Quality section:	
1. Provides critical nursing care (life threatening situations).	.92
2. Provides critical medical care (life threatening situations).	.93

ENVIRONMENTAL QUALITY

<u>Hospital Organization</u>	
(ORGN)	
Hospital Assessment section:	
1. Staff conflicts take up a lot of time here.	.48
2. The proper equipment is usually available when the patient needs it.	-.53
3. The program here lacks direction.	.33
4. There is little wasted time in this program.	-.33
5. Information is passed from shift to shift pretty well.	-.66
6. Patients generally get to their appointments on time.	-.77
7. Patients don't know whom to talk to when a problem comes up.	.53
8. Sometimes staff don't seem to know what they are doing.	.41
9. Some services schedule patients without regard for the needs and problems of others.	.46

Hospital Organization (continued)

Factor
Loading

- | | |
|--|------|
| 10. Equipment is frequently misplaced here. | .63 |
| 11. The wards here seem cluttered and messy. | .49 |
| 12. A lot of time is lost due to scheduling problems. | .69 |
| 13. Changes in a patient's treatment are fully explained to the staff responsible for carrying them out. | -.32 |

Threatening Environment

(THRT)

Hospital Assessment section:

- | | |
|---|------|
| 1. Patients here seldom discuss their personal feelings with staff. | .38 |
| 2. Patients are seldom kept waiting | -.42 |
| 3. Patients can openly express their feelings here. | -.52 |
| 4. Patients know how to get what they need from the hospital. | -.51 |
| 5. Patients here are afraid of some staff members. | .56 |
| 6. If a patient's treatments or medications are changed a staff member tells him why. | -.41 |
| 7. It's not safe for patients to criticize the staff here. | .66 |
| 8. Some patients have been threatened by staff. | .61 |

REHABILITATION QUALITY

Supportive Staff

(SUPP)

Hospital Assessment section:

- | | |
|--|------|
| 1. The staff here encourage and support patients. | .47 |
| 2. Staff here are too impersonal. | -.44 |
| 3. Patients here are treated more as objects than as people. | -.59 |

Supportive Staff (continued)

Factor
Loading

- | | |
|--|-----|
| 4. Staff here go out of their way to help patients. | .73 |
| 5. Staff are interested in what happens to patients after they leave the hospital. | .40 |
| 6. Staff here help build patients' self-confidence. | .46 |
| 7. Staff are interested in patients as people. | .71 |
| 8. New patients are helped to get acquainted with the hospital. | .41 |
| 9. Staff are interested in patients' feelings. | .62 |

Patient Information

(INFO)

Hospital Assessment section:

- | | |
|--|------|
| 1. Treatments are not explained to patients. | .68 |
| 2. Patients don't know what to expect as they go through the program here. | .56 |
| 3. Staff are willing to answer patients' questions about their condition. | -.44 |
| 4. Patients are not told enough about their condition. | .45 |
| 5. Patients receive little help in planning for discharge. | .65 |
| 6. Staff don't explain things so patients can understand. | .41 |
| 7. Staff are bossy and unfriendly towards patients. | .48 |
| 8. Patients know what is expected of them here. | -.32 |
| 9. Staff are impatient about answering questions. | .41 |

Rehabilitation Quality

Factor
Loading

(REHAB)

Service Quality section:

1. Provides maximum physical rehabilitation.	.68
2. Produces maximum social rehabilitation.	.79
3. Provides psychological support.	.71
4. Provides recreation.	.67
5. Provides necessary equipment.	.59
6. Teaches skills needed for daily living.	.50
7. Provides vocational services.	.64

Understands and Involves Patients

(INVLV)

Service Quality section:

1. Involves patients in responsibility for self-care.	.53
2. Prepares patient to return home.	.62
3. Prepares family for return of patient.	.60
4. Increases patient independence.	.55
5. Provides information about disability	.83
6. Understands patients' needs.	.72
7. Understands needs of patient's family.	.67
8. Treats patients as adults.	.48
9. Cares about patient's needs.	.51

Hospital Operation

Factor
Loading

(OPERT)

Service Quality section:

- | | |
|-----------------------------------|-----|
| 1. Treats patients as adults. * | .43 |
| 2. Cares about patient's needs.* | .48 |
| 3. Provides routine nursing care. | .70 |
| 4. Provides routine medical care. | .61 |
| 5. Provides pleasant environment. | .64 |
| 6. Provides enough privacy. | .67 |
| 7. Moves patients safely. | .82 |

* also appears in INVLV factor.

STAFF / HOSPITAL RELATIONSHIP

Staff / Hospital

(STFA + STFB)

Hospital Assessment section

NOTE: These items do not have their high loadings on the same factor but tend to load on "unique" factors, i.e. those with low eigenvalues.

1. Staff frequently don't hear about decisions affecting their patients in time to plan effectively.
2. The ideas of all staff levels are considered in making changes here.
3. Some staff members have been treated unfairly by the hospital.
4. Staff are provided with opportunities to use their own judgement here.
5. Staff need more feedback from supervisors.
6. It's easy for staff to talk to supervisors when necessary.
7. This hospital provides opportunities for staff to improve their skills.

Staff / Hospital (continued)

8. Good work by staff members is rewarded by the hospital.
9. This hospital doesn't provide adequate training for new staff.
10. Staff have opportunities to use all their skills here.

SATISFACTION WITH PATIENT
CONTROL OF THE ENVIRONMENT

Hospital Routine and Scheduling

Factor
Loading

(SCHED)

Patient Control section:

- | | |
|--------------------------|-----|
| 1. Therapy hours | .56 |
| 2. Physician's visits | .67 |
| 3. Nursing routines | .57 |
| 4. Recreation times | .74 |
| 5. Recreation activities | .70 |
| 6. Use of equipment | .54 |
| 7. Behavior of staff | .42 |

Planning and Decision-making

(PLAN)

Patient Control section:

- | | |
|----------------------------|-----|
| 1. Medications | .51 |
| 2. Rehabilitation planning | .59 |
| 3. Discharge date | .84 |

<u>Planning and Decision-making (continued)</u>	Factor Loading
4. Choice of equipment	.71
5. Time away from hospital	.81

Environmental Characteristics - Factor "A"
(ECA)

Patient Control section:

1. Mealtimes	.66
2. Choice of food	.72
3. Noise	.53
4. Ward rules	.44
5. Sleeping time	.63
6. Bedside area	.52
7. TV	.46

Environmental Characteristics - Factor "B"
(ECB)

Patient Control section:

1. Telephone	.65
2. Lights	.66
3. Temperature	.68
4. Personal items	.61
5. Clothing	.43
6. Decoration of Ward	.47

<u>Visitors</u>	Factor Loading
(not used)	
Patient Control section:	
1. Who visits	.85
2. When people visit	.85

<u>Radio / TV</u>	
(not used)	
Patient Control section:	
1. TV*	.58
2. Radio	.82
* appears on ECA factor	

INTERPERSONAL EVENTS

<u>Friendly Staff</u>	
(SFRND)	
Interpersonal Events section:	
1. A staff member shows appreciation for something you've done.	.74
2. A staff member says something nice to you.	.86
3. You have a friendly conversation with a staff member	.85
4. A staff member does something extra to help you.	.77
5. You do something extra for a staff member.	.63

Friendly Patients

Factor
Loading

(PFRND)

Interpersonal Events section:

- | | |
|--|-----|
| 1. A patient shows appreciation for something you've done. | .71 |
| 2. A patient says something nice to you. | .87 |
| 3. You have a friendly conversation with a patient. | .89 |
| 4. You do something extra for a patient. | .79 |

Complaints

(COMPL)

Interpersonal Events section:

- | | |
|--|-----|
| 1. A patient complains about something you've done. | .79 |
| 2. A patient gets angry with you. | .60 |
| 3. A staff member complains about something you've done. | .83 |
| 4. A staff member gets angry with you. | .84 |

Arguments

(ARGU)

Interpersonal Events section:

- | | |
|--|-----|
| 1. There are arguments between staff members. | .75 |
| 2. There are arguments between staff and patients. | .86 |
| 3. There are arguments between patients. | .85 |

HOSPITAL EXPERIENCE
(adjective Rating Scale)

<u>Useful / Satisfying ,</u> (USEFUL)	Factor Loading
1. Satisfying	.52
2. Important	.62
3. Interesting	.75
4. Useful	.82
5. Helpful	.84
6. Friendly	.67
 <u>Exciting / Enjoyable</u> (ENJOY)	
1. Desirable	.65
2. Enjoyable	.79
3. Inspiring	.69
4. Exciting	.82
5. Pleasant	.62
 <u>Frustrating / Hopeless</u> (HOPLSS)	
1. Discouraging	.39
2. Depressing	.32
3. Waste of time	.49
4. Hopeless	.52
5. Disappointing	.56
6. Confusing	.83
7. Frustrating	.67

Frightening

Factor
Loading

(SCARY)

1. Lonely	.44
2. Boring	.43
3. Frightening	.60
4. Embarrassing	.72
5. Tiring	.47
6. Disgusting	.73

APPENDIX G

Items Added to MONEY Scale
by Respondents

Response Categories Added by
Respondents to the Money
Distribution Scale

Audio-visual department

Chaplains

Laboratory personnel

Volunteers

Patient education

Patient fund

Outside relaxation area

Business office personnel

Extra Parking

Skills training program

Outpatient Clinic

Community trips and activities

Sex education