

PERFORMANCE EVALUATION,
A COMPARISON OF TWO METHODS
OF RATING PERFORMANCE

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by

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Psychological Research
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Graduate Physical Therapy
Curriculum

CASE WESTERN RESERVE UNIVERSITY
CLEVELAND, OHIO

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PREVIOUS PUBLICATIONS RELATED TO THE STUDY

Selection of Students for Physical Therapy Educational Programs
Part I: Critical Job Requirements for Physical Therapists

by

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June 1970

Student Selection for Physical Therapy Education; A Project in Progress

by

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PHYSICAL THERAPY, 50, 12, 1970

ABSTRACT

Performance ratings were obtained on over 300 physical therapists with five years or less of employment. Two forms were used, a traditional eight scale graphic rating and a 34 item component behavior scale. Both scales were based on critical incident data. Factor analysis indicated the component behavior scales could yield one factor, called Patient Care, which was highly significant when used as a predicator in a multiple regression on analysis. This is the second phase in development of an improved technique for selection of students for entry into physical therapy educational programs.

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INTRODUCTION

Education of physical therapists involves the allocation of expensive resources of time and money for both the student and the institution providing that program. The program must provide a professional staff, have hospitals and clinical educators available, and provide research opportunities.

The problem studied here is the selection of students for entry into training. Which characteristics of the applicants are indicative of success in the educational program and on the job? How do you measure success on the job? Measurement of performance for any professional job is difficult. Professional work is characterized by flexibility and independence. Good performance is a minimum; superior performance is expected.

The relatively small number of students at each training center make it difficult for a single center to do an effective analysis alone. Meaningful data can be gathered using a sample representing many educational programs and many physical therapists. To do this requires support from an outside agency which is concerned with the quality of health care, as well as the support of the professional association. This study program was conceived by the Faculty of the Graduate Physical Therapy Curriculum at Case Western Reserve University. They looked at the problem of selection of students for their educational program and developed an interim selection program in cooperation with Psychological Research Services of Case Western Reserve

University. That program reported by Pinkston & Margolis (1970) was the start of the current study. The overall purpose was to provide improved procedures for selection of Physical Therapy students. That required the development of a performance standard, or criteria to evaluate physical therapists presently working.

A research program was planned to take place in several phases. In the pilot phase, critical incident interview data was collected and used to develop a performance rating scale for the evaluation of performance of students in a clinical environment. Both rating scale information and rankings of the students by two or more instructors were obtained. This data was used as a criterion to evaluate a Biographical Information Blank (B.I.B.), consisting of approximately 200 items related to the background and the attitude of students. The results of the pilot phase indicated that: (1) Critical Incident Interview Data could be used to develop performance ratings scales and (2) Biographical Information Data could be used as basis for screening and selection of applicants, based on a criterion of success in clinical education.

Clinical education is at best an approximation of work in a health care center. Performance in a health care center could differ depending on the job environment or orientation of the center. The measurement of performance was limited by the criterion being successful in a training environment and by the limited sample of students available for evaluation. Success in predicting training evaluation is only the beginning. Nevertheless, the pilot phase was successful in testing methods and techniques. It was apparent, however, that the problem of predicting success on the job could not be solved easily.

The first study phase was to define the critical job requirements for physical therapists. Critical incident interviews were conducted with one hundred and forty physical therapists at hospital and treatment centers over the country. Six hundred and forty samples (incidents) of effective and ineffective behavior on the job were collected. The incidents were categorized and eight critical job parameters were determined. Those are outlined in Table I. It is apparent that every physical therapist should have the basic skill and knowledge to perform all the critical job requirements but not all jobs require them all to an equal amount. Some physical therapists specialize in one area to the exclusion of others. For example, a physical therapist may work with children; another with the aged. The model developed in Phase I is useful for selection or for curriculum development but does not in itself provide a tool for evaluation of performance.

The Critical Incident Method (Flanagan, 1954) of analysis and determination of critical job requirements used has been reported by McIntyre, et al (1970), in the Phase I report of this project. The analysis gives an overview of the critical aspects of the job. Taken together, these Critical Job Requirements represent a job description of effective performance of a hypothetical physical therapist.

The Critical Incident Method is not a statistical evaluation. The relative importance of each category must be further evaluated for each specific job. The procedure identifies and categorizes the behaviors (incidents) into as many categories as are practical. Unusual or infrequently reported behaviors may be of equal or greater importance to the more common behaviors. The critical incident data employed in developing the critical job requirements are used as the basic data for

TABLE I
CRITICAL BEHAVIOR CATEGORIES

A. PATIENT RELATIONS

Patient Evaluation
Patient Contacts
Patient Instruction
Concern For Safety
Miscellaneous

B. SUPPORTIVE PERSONNEL

Relations With Supportive Personnel

C. COMMUNICATION WITH OTHER PERSONNEL

Communication With Professional Personnel
Participation in Education of Physical Therapy Students

(Ref. McIntyre, et al 1970)

the performance criterion reported in this phase of study.

There has been previous research in the area of selection and evaluation of physical therapists. Gobetz (1954) developed the "Clinical Practice Performance Report" which consisted of two parts, a 90 item performance checklist and three open-ended questions and three overall rating scales. He used grade point average as a measure of scholastic ability. Clinical practice ratings obtained in student clinical training and on the job clinical practice were compared to grade point averages and showed a positive relationship with correlations of .34 to .19 for males and about .50 for females. Gobetz notes that females were more stable in terms of relationship between school grades and performance ratings. The implications for the present study is that evaluation based on job performance could be obtained using performance checklists or rating scales.

McDaniel (1964) used critical incident data to develop a model of the effective physical therapists in a study which is similar to the present study. She obtained an average of two critical incidents from 15% of a sample of 1,734 hospitals. She specified that the incidents should be related to "...something that significantly contributed to preventing, minimizing, overcoming, or analyzing defects while treating a patient." This maximized the possibility of collected incidents being related to the patient-physical therapist interaction. The present research used a broader open-ended response and requested only that the incident be related to an event where the physical therapist did something effective and related to the job. The power and validity of the critical incident method is demonstrated in that the six critical behavior job areas found by McDaniel are similar to the eight

categories of the present research, shown in Table I. McDaniel's categories were:

- I. RELATIONSHIP WITH PATIENT
- II. EVALUATION
- III. INTERPRETATION AND EXECUTING ORDERS
- IV. TECHNIQUES OF TEACHING
- V. COORDINATION OF OTHER HEALTH SERVICES
- VI. MANIPULATION OF EQUIPMENT

The present research used an open-ended question ("Think of a time a physical therapist did something outstanding?") and found more incidents and data related to categories such as working with supportive personnel and concern for safety than the McDaniel Study. The McDaniel study did show that locality and hospital size made no difference in the distribution of the data and lends credance to the approach used in this research where the incident data was collected from a small sample of hospitals and treatment centers and studied in depth. Sex differences in the physical therapist's model and critical job requirements were ignored, as was done in this research.

MEASUREMENT OF PERFORMANCE

The goal of a selection program is to predict future performance on the job. The on-the-job performance which is predicted is called in terms of selection testing the criterion. The first step in defining the criterion is to establish the major dimensions of job behavior. This has been done for physical therapists through the critical job requirements. The next step is to measure variability along those job related dimensions. Several approaches were considered.

The most direct, and most often used criterion measure, involves the judgment of a knowledgeable person about the performance of an individual. The judgment is usually made by a supervisor. That judgment may be collected in the form of a multi-dimensional scale (graphic ratings), or a comparison or report of the observed behavior of an individual (checklist). Both the Graphic Rating Scale and Component Behavior Rating Scale were determined to be feasible and were adapted for use in this study. Those scales (Appendix A), as originally proposed, are included in the Phase I Report (McIntyre, et al 1970).

The advantages of this approach for this particular job were as follows:

1. Ratings could be multi-dimensional. It was initially determined from the critical job requirements and a separate weighting of factors by supervisors that more than one aspect of the job was important. Both the Graphic Area Scale and the Component Behavior Scales sample many dimensions of the job. The supervisor rating approach lends itself to the statistical analysis discussed later.
2. Response categories are easily defined and understood by raters. The description of the area and the detail of the

component behaviors allows a supervisor who is untrained in ratings to make a valid estimate of performance. When the sample consists of more than one hundred locations, it is not practical to train raters. Therefore, the rating scales must be self-explanatory.

The weakness of rating scales has been discussed by Guion (1970). They have a low reliability between raters and there may be tendencies toward uniform ratings, (the so-called "Halo" effect). With this possibility in mind, the determination was made to provide both the Graphic Scales and a Component Behavior Scale. Both scales are on the same data base, the critical incidents and critical job requirements data previously reported.

GRAPHIC RATING SCALES

Each of the eight categories defined in the Phase I study was used as the basis for a scale. The scales are defined in Table II. The scales were developed using a procedure similar to the retranslation procedure discussed by Dunnette (1970). The incidents were initially sorted by the study team within behavioral areas into levels ranging from very effective or good behaviors to very ineffective or poor behavior. A sample of Physical Therapy supervisors from four hospitals used the preliminary rating forms and then reviewed the order of the sample behaviors. The scales were modified to reflect the comments of the supervisors.

For each of the eight areas of behavior, five sets of descriptions were used to represent behaviors at points on the scale. Because that was not always practical, a smaller number was occasionally used. Three separate behaviors were considered adequate to identify each of the points. A line graph was presented along the left hand axis of the

TABLE II
CATEGORY DESCRIPTIONS - GRAPHIC RATING SCALES

-
1. Evaluation - Patient evaluation includes the initial referral evaluation, continued observation during treatment, and formal evaluations at the end or at specific times in treatment. The evaluation may be a specific task, requiring a formal, written report or it may be an observation leading to a continuation or modification of a treatment process. This behavior differs from the treatment process or patient contact in the emphasis on the skill and judgment used in doing something different or making a change. Evaluations where no change in treatment is indicated are also included in this category.
 2. Patient Contacts - This category defines the treatment situation where the physical therapist provides direct care of and supervises a patient's treatment.
 3. Instructs Patients - Communication with instruction of the patients is a necessary requirement of the physical therapist's job. Most treatment involves the patient being aware of what is being done. Communicating and instructing is particularly important when dealing with special classes of patients such as the very young or the very old or those with minimal functional capability. This category includes the in-house instruction of the patient in the treatment process, and the instruction for continued treatment or exercises away from the treatment center. While it normally involves the physical therapist and the patient, it may also include the family or any others responsible for maintaining or providing treatment.
 4. Concern For Safety - Includes all activities related to concern for safety of the patient and reaction when an emergency develops. Typical behaviors are related to work habits and knowledge of safety procedures including judgment in the application of treatment to avoid circumstances where the patient could be injured.
 5. Relations With Supportive Personnel - Physical therapists work with supportive personnel, including aides, orderlies, or assistants. Sometimes these personnel do not work for or report to the Physical Therapy Department, therefore, special skills are required in maintaining a good working relationship. This category includes all situations where the physical therapist interacts with supportive personnel.

TABLE II (Continued)

CATEGORY DESCRIPTIONS - GRAPHIC RATING SCALES

-
6. Communication With Other Professional Personnel - Physical therapists work as a part of a team responsible for the total care of the patient. They should be able to receive and understand written and verbal communications from physicians, nurses, and other personnel. They should be able to communicate with these personnel both by written clinical records and evaluation reports.
 7. Participation in Education of Physical Therapy Students - Participation in education of physical therapists is a special function which not all physical therapists are called on to do. It involves considerable judgment and skill different from the core work of the physical therapists. Degrees of performance in this role must be stated in general evaluative terms. Many of the collected behaviors relate to standard practices or environmental conditions beyond the control of the physical therapist.
 8. Modification and Improvement of Techniques and Equipment - Physical therapists must be flexible in treatment process. Equipment or procedures must sometimes be modified to suit the needs of a particular patient. The physical therapist may need to improvise equipment from what is available for economic reasons or to save time. Performance in this area involves a knowledge of both the dynamics of the equipment or procedures and the individual patient being treated.
-

page and the behavior descriptions placed at five points along this scale. Each scale was divided by five major index lines and ten minor index lines, giving 15 possible scoring units.

Instructions in the use of the scales were prepared and pre-tested in conjunction with the scale items. Supervisors were requested to: (1) read the descriptions, (2) rate each physical therapist on each scale, (3) mark where the particular physical therapist would be most likely to perform, and (4) work quickly.

COMPONENT BEHAVIOR RATING SCALES

The second approach to ratings were used initially on an experimental basis. There were available a large number of specific component behaviors from the incidents and the Phase I study. Those component behaviors are the individual bits of behavior which go into making up the category. They are often taken directly from the incident report in the exact words of the person providing the incident. The component behaviors are reported in a positive form but may reflect an incident report of an ineffective incident. By itself the component behavior represents one sample behavior. The original intent was to have the individual component behaviors used as a checklist. They would be marked as observed or not observed over a given time period. The frequency of positive behaviors performed minus the negative behaviors could serve as a score of performance. From a logical and theoretical point of view, this checklist approach is highly desirable. Certainly, the best physical therapist is the one who performs the positive job behaviors most frequently. But that approach has been used with limited success, particularly by Fitzpatrick, et al (1968) in a

study comparable to this. In the referenced study the small sample size (Nuclear Reactor Operators) at each location, and the differences of work required for each facility made performance evaluation difficult. A checklist based on those behaviors reported as being particularly effective or ineffective was used with a system of weighting the importance of each item. The results of the referenced study were marginally successful. The results in the present study were not promising in the pre-test. Most of the behaviors were marked for all physical therapists. We had succeeded in describing the job elements but not in differentiating between therapists.

An alternate method was used where performance ratings were requested on the component behaviors from low to high, with letter grades assigned. "D" represented marginal or inferior performance and A+ represented outstanding performance. The items were initially grouped by critical job categories (e.g., Evaluation, Treatment, etc.) but that categorization was dropped as the individual items could have multiple area relationships. The component behavior items were reviewed by the study team. Duplications were removed and the list was reduced to 34 items with each one written as a positive statement.

Each supervisor was asked to provide a rating on a 15 point scale. Where a behavior was inappropriate for the particular physical therapist, or where it had not been performed in the past four weeks, the supervisor was instructed to draw a line through the scale and not to rate on that scale.

DATA COLLECTION

A list of treatment centers was obtained from Hospitals, journal of the American Hospital Association. Several hundred were contacted to determine if they would participate in the project. In most cases an individual physical therapist in charge of the department was invited to participate and contacted personally. The initial selection was based on size of treatment center. The responding centers were asked to indicate if they had physical therapists with five years or less experience. The five-year cutoff was considered as a reasonable goal for evaluation of initial selection. Beyond five years physical therapists may have specialized or been promoted to administrative positions. The five-year limit also should reduce the effect of experience on ratings. The treatment centers participating are listed in Appendix B. They represent a cross section of the United States in geographical distribution. The number of qualified physical therapists in each center ranged from 1 to 25. The demographic characteristics of the sample centers are important to the extent that all sections of the country were represented, and that no facilities offering special treatment methods or specializations were intentionally selected.

Approximately 500 packages consisting of rating scales and a Biographical Information Blank were mailed to the Physical Therapy supervisor for each hospital or treatment center. Return postage and a return mailing label were included. After four weeks a follow-up

mailing was made to encourage response. The anonymity of the data was maintained by requiring only social security numbers and by marking the packages for return to the Psychological Research Institute, and not requiring B.I.B. review by the supervisor.

The data was used only where both the supervisor rating and the Biographical Information Blank were returned. A total of 350 usable packages was returned. In several cases an individual did not choose to complete the Biographical Information Blank, which made the ratings of the supervisor unusable. The 70% return is somewhat higher than normal for mail surveys. That may be due to the interest of the participants which resulted from the questionnaire soliciting interest in participation in the study.

DATA ANALYSIS

As the data were returned, each was given a log number. The responses were scored and prepared for data processing. The Graphic scales were considered first and were analyzed to determine the inter-correlations among the eight scales. The method of analysis was a statistical technique called correlation ("r") or more technically, the coefficient of correlation. This is a single number which tells to what extent two things are related or to what extent variations in the one go with variations in the other. The "r" may vary from +1 (perfect positive "r") to -1 (perfect negative "r"). These numbers show how two things vary together and have no implication of one causing another. The Correlation Matrix presented in Table III is a combination of the scores for each Graphic Rating Scale compared by each subject. Correlations allow for analysis of relationships such as the following:

1. The correlations ("r's") are generally high-positive and in the same direction. That indicates that some overall or common factor may be operating to account for much of the variance. That is, each of the "r's" may be highly related to some overall measure.
2. The low "r" between Scale II (Patient Contacts) and Scale V (Working With Supportive Personnel) is .31 and VII (Participation in Education of Physical Therapists) is .32. That may mean that dealing with patients and with subordinate personnel are different aspects of the behavior of the physical therapist. An individual high in one area may not be high in the other.
3. The "r" between I (Evaluation) and II (Patient Contacts) is low (.45). That may be interpreted to mean that those two behaviors may tend to be independent and different. The independence may appear if the common or halo effect on both scores could be reduced.

TABLE III
CORRELATION MATRIX - GRAPHIC RATING SCALES

Scales	I	II	III	IV	V	VI	VII	VIII
I Evaluation	-	-	-	-	-	-	-	-
II Pat. Contacts	.45	-	-	-	-	-	-	-
III Pat. Instruction	.82	.58	-	-	-	-	-	-
IV Safety	.70	.67	.59	-	-	-	-	-
V Supp. Personnel	.86	.31	.88	.79	-	-	-	-
VI Prof. Personnel	.80	.63	.78	.24	.87	-	-	-
VII Education	.87	.32	.84	.77	.94	.86	-	-
VIII Improved Tech.	.61	.94	.68	.91	.65	.91	.67	-

M=300

Factor Analysis was selected as the appropriate technique to identify and describe the underlying dimension, or factors, that produce those correlations. The result of factor analysis is a table of factor loadings which show in this case the hypothetical correlation of each scale with each of the identified factors. The factor loading is identified like other correlations.

Analysis of the matrix and rotation to an oblique factor solution yielded one general factor accounting for 56% of the variance. One factor was significant. Each of the eight scales contributed about equally to this factor. That one factor could be defined as an overall rating of performance or as measurement error caused by rater bias. The rater effect causing measurement error would be the familiar "halo" effect, or criterion contamination.

As the correlation matrix indicates, potential difference between performance on various parts of the job and the critical job requirements indicated difference in various aspects of the job. The conclusion was drawn that those Graphic Rating Scales did not discriminate adequately between the various aspects of job performance. As there was an alternative approach available in the Component Behavior Rating Scales, those scales were examined next.

Behavioral Factor Scales. The 34 independent Component Behavior Ratings were inter-correlated. The "r's" ranged from +.24 to +.95. Inspection of the items revealed that this large variation might be caused by the items being samples of specific, observably different behaviors. The rater is not required to abstract or integrate a number of observed incidents but can rate the individual on each different aspect of the job.

Factor Analysis of the Component Behavior Scales indicated the presence of three statistically significant factors. The naming of

those factors is a subjective process. It is an inference from the characteristics of the items or scales that define the factor. The items most highly weighed for each scale are shown in Table IV. In this case we chose to name the three factors as follows:

- I. PATIENT CARE
- II. COMMUNICATION WITH STAFF
- III. UNDERSTANDING PATIENT'S NEEDS

Factor I, Patient Care, is loaded most heavily on items related to performing initial evaluations and observing the patient's condition during treatment. It is most directly concerned with the interaction between the patient and the physical therapist. It involves concern for the well being of the patient and evaluation of his response to treatment. The factor loads positive and high on most of the 34 scale items, and may be thought of as a general rating of overall performance. Items most highly related, or weighed with that factor, were selected to represent the factor. That factor accounted for 63% of the total scale variance.

Factor II, Communication With Staff, is loaded most heavily on items related to administrative practices, communication with doctors and nurses, and working with subordinates such as aides, orderlies, and supportive personnel. That factor accounts for 12% of the variance.

Factor III, Understanding Patient's Needs, involves concern for safety of the patient, caution in making decisions, maintaining work area clear of hazards, and effectiveness in emergency situations. That factor accounts for 7% of the variance.

Multiple Regression. The next action was to determine how much each of those three factors contributed to the total performance score.

TABLE IV
FACTOR DEFINITIONS

A. PATIENT CARE

1. Performs an initial evaluation of the patient on referral.
2. Observes and evaluates patient's condition during treatment. Is alert for any signs of distress or abnormal reactions.
3. Develops confidence and establishes rapport with patient.
4. Does not leave a patient in doubt about his schedule status.
5. Gives patient a feeling of achievement by encouraging progress and noting improvements.
6. Does not allow failures or incidents to disturb patient's confidence in his ability.
7. Plans progressive treatment program for patients.
8. Gets most efficient response from patient.
9. Uses knowledge of patient's pain threshold in giving treatments.
10. Uses good judgment in scheduling patients. Does not schedule so many that treatment is insufficient or undue waiting required.
11. Provides full instructions at a level the patient understands.

B. COMMUNICATION WITH STAFF

1. Contacts physician where additional or different treatment would be beneficial to patient.
2. Maintains patient's records and reports patient's response to treatment.
3. Makes the physician aware of problems in a way that avoids confrontation.
4. Shows mutual, professional respect for other professionals on the treatment team.
5. Takes a positive approach in making other professionals aware of contributions that can be made by Physical Therapy discipline.

TABLE IV (Continued)

FACTOR DEFINITIONS

-
6. Confident in own technical skill and judgment and able to communicate this confidence.
 7. Takes time to complement supportive personnel for good work.
 8. Explains reasons behind unusual requests of supportive personnel.
 9. Assigns specific duties and jobs to supportive personnel.

C. UNDERSTANDING PATIENT'S NEEDS

1. Modifies examination procedures where patient's condition requires different approach.
 2. Understands patient's medical record. Questions areas that are not clear or which might indicate a restriction on treatment.
 3. Anticipates physical failures.
 4. Discourages unrealistic expectations of the patient through instruction and explanation of what is possible.
 5. Maintains work area clear of hazards.
 6. Uses safe operating procedures in treatment room.
 7. Effective when potential emergency situation develops.
-

A Wherry-Doolittle Linear Multiple Regression Analysis was performed, using the three factors, with weights determined from the factor analysis, to determine how each would weigh in predicting the total score. The analysis indicated that Factor I was the only significant factor.

Patient Care Scale Definition

The thirteen items making up Factor I were designated as the Patient Care Scale. This scale was designated to be used as the performance criterion. Scores on this scale were normally distributed, and had a Mean of 63.4 and a Standard Deviation of 28.5 (N=356). Low scale scores are indicative of good or superior performance and high scores indicate marginal to average performance. The scale reliability or consistency was measured using a test of internal consistency of the items. The Kuder-Richardson Formula 20 was determined to be an appropriate statistic. This formula involves an analysis of item variance and internal consistency. The reliability correlation for the scale was estimated at .82.

The Patient Care Scale is the sum of the scores from 11 component Behavior Items (Item Nos. 1, 3, 6, 9, 10, 11, 13, 14, 15, 17, & 18). As each scale has 15 units, an arbitrary system of scoring from 1 (Superior) to 15 (Marginal) was selected. This scale is the performance measure or criterion for the evaluation of the Biographical Information Blank which is the Phase III activity.

A copy of the Component Behavior Rating Scale, with instructions, is included as Appendix II to this report. It is suggested that the entire scale be used and that the Patient Care Scale be used as the primary scale for measurement. As more data is available, the other scales may be used.

DISCUSSION

The purpose of this phase of the study for selection of students for Physical Therapy educational programs was to develop a performance evaluation instrument. Two separate approaches were tried. The first was the more traditional Graphic Rating Scale of performance. The eight separate scales appeared to relate to specific and different aspects of the job. The scales developed were based on critical incident data abstracted and developed into scales after ratings and evaluations by a team of expert physical therapist clinicians and administrators. The scales did not differentiate among the several behaviors that the job was known to contain. Weightings of various aspects of behavior could not be investigated as their scales were measuring one common factor.

Apparently, the Graphic scales did not work well under the study condition for the following reasons:

1. Small numbers evaluated by each supervisor. There is ample research evidence to show that multi-scale ratings are more discriminating where the rater is able to rate several individuals on one scale and then proceed to the other scales. Rating of a limited number (often only one or two) apparently does not allow for differentiating among the various behaviors.
2. No opportunities for training of raters. The large number of scales completed incorrectly indicates that the instructions may not have been sufficiently clear. The distribution of the sample made any face-to-face training impossible.

The Component Behavior Ratings were based primarily on the data gathered from the Critical Incident interview. The rater had only to read the item and determine if the ratee performed the task and then

rate on a simple scale. No interpretations were required of the rater. Previous research has shown that to be the most meaningful way of rating. That was again demonstrated in this study. The 34 component behaviors were factor analyses and five significant factors were extracted. That verifies, to some extent, that the measures were differentiating both among individuals and among the many specific behaviors.

There was a strong effect of an overall rating. That tended to influence all the ratings and probably submerged the importance of the other factors and reduced their strength in the Multiple Regression Analysis.

There are some unique aspects to this study. Rating scales generally have been developed based on data collected from a homogenous sample; that is, a number of people doing a similar job but under similar work conditions. For this study it was determined that a broad based approach was more desirable. The Critical Incident data used to define the job and the rating scales were collected from a number of treatment centers both geographically and philosophically separate. The application of the scales differed from the traditional in that no real training was provided to the raters, and each rater had only a limited number of physical therapists to rate. In this study this method succeeded. In the Fitzpatrick, et al (1968) study the same approach was not as successful, possibly because of the wide variation in the task. The Nuclear Reactor Operators studied vary considerably in the requirements of the task. Apparently, the physical therapist's task is not really different from one treatment center to another. A Reactor Operator would have difficulty in transferring from one

facility to another, while a physical therapist could move from one treatment center to another with little difficulty.

The factor analysis of the component behaviors was a heuristic attempt to define a factorially pure scale. It did work for this study, and represents another different and unique approach. That only one factor was significant in the Multiple Regression Analysis is of concern. The multiple regression used total score as the criterion, and it may be that the differences in the behavior units (scales) caused the significance of the other factors to be artificially lowered. For this reason it is suggested that the entire scale be continued in use and that eventually more sophisticated statistical analysis can be performed to show the contributions that the other factors make to real performance.

In summary, the Component Behavior Rating Scales, based on actual reports of behaviors, did perform adequately in determining one scale on which the performance of physical therapists were evaluated. This scale appears to have high inter-scale reliability and at least content validity, as it is based on actual job behaviors. This performance criterion is in use in determining the biographical data which could be used for selection. The analysis will be reported in the next phase of this program.

APPENDIX A

PERFORMANCE RATING SCALE: Graphic

PHYSICAL THERAPISTS
CRITICAL JOB REQUIREMENTSPERFORMANCE RATING SCALES

The Behavioral Rating Scales included in this package have been developed as a research tool based on interviews with over two hundred Physical Therapists and Supervisors in sixteen hospitals and treatment centers over the United States. The data will be used for research and development purposes only by the study team. The rating scales are based on a concept of critical job behaviors, that is, those behaviors which differentiate between Physical Therapists. It is possible that the scale can be used after more development as a performance rating device. Use for performance rating without additional data is not recommended.

Hospital or Training Center _____

Social Security Number of Physical Therapist _____

Years Experience _____

(Note: for initial scale development, ratings are to be made on Physical Therapists with five years experience or less.)

Social Security Number of Supervisor _____

Prepared by:

Psychological Research Services
&
Graduate Physical Therapy Curriculum
Case Western Reserve University
Cleveland, Ohio

June 1970

prsl

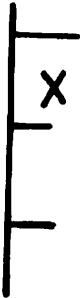
APPENDIX A - Continued

INSTRUCTIONS FOR PART I

GRAPHIC RATING SCALES

1. Read the description for each scale (top paragraph) to clarify what is being rated on that scale and to distinguish between the behaviors being rated.
2. If more than one Physical Therapist is to be rated by you, rate each one on each scale (page) in Part I at one time. That is, rate all therapists for Evaluation then Patient Contact etc.
3. The graphic rating scales are arranged from top to bottom. There is a line with defined points and several typical types of behavior to the right. You are to mark one point on each vertical scale between the index marks corresponding to your evaluation of the therapist.

Sample:




4. The behavior types used to the right of the scale are descriptions of behavior classes ranging from high to low. It is not required that the Physical Therapist do everything listed on the right hand scale. It is necessary that the observed performance is most like one of the typical performance characteristics.
5. The lowest performance class listed (bottom of scale) represents negative or less desirable behavioral characteristics. Each of the ascending descriptive categories are assumed to be additional more effective performance. The top descriptive category represents all positive qualities of the categories below plus the additional quality indicated for that category (the significant addition to the performance).
6. When you have decided which of the performance types is most like the therapist being rated, place an "X" on the scale between the appropriate pair of points, and continue on to the next scale. First impressions are generally most accurate for this type of rating, so try to work quickly.

APPENDIX A - Continued

I EVALUATION

Patient evaluation includes the initial referral evaluation, continued observation during treatment, and formal evaluations at the end or at specific times in treatment. The evaluation may be a specific task, requiring a formal, written report or it may be an observation leading to a continuation or modification of a treatment process. This behavior differs from the treatment process or patient contact in the emphasis on the skill and judgment used in doing something different or making a change. Evaluations where no change in treatment is indicated are also included in this category.



Independent evaluation and insight into patient's condition which lead to observable positive change in treatment process.

Bases observations on thorough knowledge of patient's structural and dynamic capability.

Reviews clinical records prior to treatment, presents continued challenge through evaluation of progress and potential, alert to emotional symptoms.

Errs in evaluation or recording data on clinical records and delays patient's progress.

Fails to understand symptoms causing unnecessary distress or pain to the patient.

APPENDIX A - Continued

II PATIENT CONTACTS

This category defines the treatment situation where the Physical Therapist provides direct care or supervises a patient's treatment.

Gains confidence of patients by explaining apparatus and procedures to be used; instills feeling of achievement in patients by moving in slow easy stages; demonstrates real concern for patient in distress or pain; provides support over and above therapy; not afraid to show real concern.

Provides opportunities for motivation; discusses treatments and potential results frankly and clearly; able to use special techniques where situation requires; uses tact and judgment in difficult situations.

Shows interest and concern for patient's welfare beyond treatment process; develops confidence in patient's capability; uses right amount of reassurance to maintain confidence; exhibits confidence in treatment program.

Fails to motivate due to poor communication or attitude towards patient. Reinforces false optimism. Uses treatment which is easiest or most convenient for therapist, not most effective for patient.

Loses composure with patient; lack of sympathy and tact, causes pain or distress through poor judgment or inattention, poor or ineffective procedure.

APPENDIX A - Continued

III INSTRUCTS PATIENTS

Communication with instruction of the patient is a necessary requirement of the Physical Therapist's job. Most treatment involves the patient doing something and all treatment involves the patient being aware of what is being done. Communicating and instructing is particularly important when dealing with special classes of patients such as the very young or the very old or those with minimal functional capability. This category includes the in-house instruction of the patient in the treatment process, and the instruction for continued treatment or exercises away from the treatment center. While it normally involves the Physical Therapist and the patient, it may also include the family or any others responsible for maintaining or providing treatment.

Provides opportunity for patient to participate in making decisions regarding treatment. Sometimes demonstrates feasible limits by allowing patient to try activities beyond his limitation.

Explains treatment in detail, at level patient can understand. Adjusts instructions to level of understanding of patient. Uses demonstrations, pantomime, or other non-verbal methods to supplement verbal instructions.

Plans ahead for each patient. Explains what is expected of the patient in a way patient understands. Provides opportunity for dialogue with patient. Provides instructions to family as well as patient.


Fails to explain what the patient is to do, or how the treatment is related to problem. Corrects patient without explaining why.

Instructions mostly verbal and not clear or not repeated often enough for patient to follow. Tends to overpower patient by instruction rather than communicating. Confuses patient rather than helping.

APPENDIX A - Continued

IV CONCERN FOR SAFETY

Includes all activities related to concern for the safety of the patient and reaction when an emergency develops. Typical behaviors are related to work habits and knowledge of safety procedures including judgment in the application of treatment to avoid circumstances where the patient could be injured.



Takes charge in emergency and directs activity of others.

Quickly analyzes emergency and initiates appropriate action. Able to convey essential information to emergency team quickly and accurately.

Calm in emergency. Anticipates and avoids potential safety problems and emergency situations. Stops treatment whenever a possibility of injury to patient is suspected.

Does not put knowledge of safety procedures into practice. Occasionally fails to consider safety precautions.

Shows poor judgment regarding safety, leaves patient or equipment unattended where accident could occur. Panics in emergency, fails to follow prescribed procedures immediately when indicated. Fails to call for assistance of physician.

APPENDIX A - Continued

V RELATIONS WITH SUPPORTIVE PERSONNEL

Physical Therapists work with supportive personnel, including aides, orderlies, or assistants. Sometimes these personnel do not work for or report to the Physical Therapy Department and special skill is required in maintaining a good working relationship. This category includes all situations where the Physical Therapist interacts with supportive personnel.

Allows supportive personnel to do as much work as their training and experience will allow. Trains them on procedures and enriches their jobs.

Maintains particularly good relations with supportive personnel. Shows real appreciation for assistance.

Makes specific assignments to supportive personnel. Makes requests in a pleasant manner. Explains what has to be done. Cooperates and works together when required.

Demands respect based on position only. Becomes upset and abusive when orders not followed. Not in control of supportive personnel. Provides incomplete instructions.

Fails to provide proper instructions to supportive personnel. Does not correct supportive personnel, even when actions are contrary to well being of patients. Allows supportive personnel to give treatments or work with patients without adequate instructions and supervision.

APPENDIX A - Continued

VI COMMUNICATION WITH OTHER PROFESSIONAL PERSONNEL

Physical Therapists work as part of a team responsible for the total care of the patient. They should be able to receive and understand written and verbal communications from physicians, nurses, and other personnel. They should be able to communicate with these personnel both by written clinical records and evaluation reports.

Takes initiative in communicating with other professionals. Tactful in handling problems where difference of opinions exist. Takes positive approach in establishing and maintaining communications. Does well when assigned to work on interdisciplinary study teams.

Special skill in discussing patient's problem with physician and communicating the different roles of physician and therapist. Uses objective measurements, not opinion, to make physician aware of patient's real status. Takes advantage of opportunities to teach special techniques to other therapists. Educates other departments on role therapist should play in treatment process.

Works with other offices to assure referrals and records are timely and correct. Communicates directly with medical personnel when question arises in treatment. Provides written reports and evaluations which assist total patient care. Can communicate by suggestion, where tact is required.


Communicates poorly. Offends other professionals by lack of communication skill. Fails to respond to suggestions. Communications regarding patients do not convey realistic appraisals.

Fails to communicate with other professionals. Accepts directions without question, even when the directions may be in error. Not able to explain treatment or therapist's role to other professionals. Lack of communication leads to ineffective treatment. Fails to maintain clinical records up to date. Little or no communication with other professionals regarding patients.

APPENDIX A - Continued

VII PARTICIPATION IN EDUCATION OF PHYSICAL THERAPY STUDENTS

Participation in education of Physical Therapists is a special function which not all Physical Therapists are called on to do. It involves considerable judgment and skill different from the core work of the Physical Therapist. Degrees of performance in this role must be stated in general evaluative terms. Many of the collected behaviors relate to standard practices or environmental conditions beyond the control of the Physical Therapist.



Encourages students by observing treatment and reviewing with student what has been done. Available to student for advice at any time. Suggests alternative approaches rather than directs. Has students write up treatments and diagnosis rather than only verbalize. Evaluates performance with student after demonstrations. Directs students to other areas (such as observing surgery procedures) to encourage learning.


Provides criticism and feedback routinely as result of observation of student. Allows student freedom to work out relationships with patients. Works together with student to teach skills and techniques. Allows time to discuss cases prior to treatment. Allows students to select technique rather than merely follow instruction.

Inflexible in presenting treatments or procedures. Does not consider that students have had some training and have some skill and knowledge. Makes students dependent on therapists by continual checking, even when not required. Does not teach but examines students continuously. Allows students to try different procedures without direction or guidance.

APPENDIX A - Continued

VIII IMPROVEMENT TECHNIQUES AND EQUIPMENT

Physical Therapists must be flexible in treatment process. Equipment or procedures must sometimes be modified to suit the needs of a particular patient. The Physical Therapist may need to improvise equipment from what is available for economic reasons or to save time. Performance in this area involves a knowledge of both the dynamics of the equipment or procedure and the individual patient being treated.



Initiates change to procedures when indicated by knowledge of fundamentals of patient and procedure. Flexible in approach to treatment. Willing to try new approaches after consideration of possible effects. Improvises equipment to facilitate treatment. Plans ahead where changes in procedures or modifications to equipment are required.

Does not require assistance or supervision when a change in approach or procedure is indicated. Makes minor modifications of equipment without requiring supervisor's assistance.

Makes use of available equipment or procedures without modification or attempts at improvement. Follows exact procedures even where change would be beneficial to patient. Not flexible in approach to treatment. Unwilling to take responsibility for changes. Restricts treatment to application of book knowledge and formulas.

APPENDIX A - Continued

PERFORMANCE RATING SCALE: Behavioral

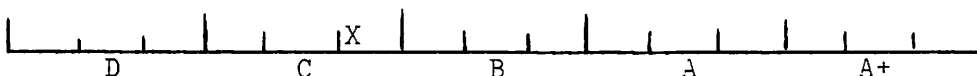
COMPONENT BEHAVIOR RATING SCALE

The following component behaviors have been identified by Physical Therapists as being representative critical behaviors of the job. Please rate each Physical Therapist on each item, following the instructions below. Where more than one therapist is being rated, please go through each item for each therapist, i.e. rate all on item 1, then 2, etc. As a basis for your rating consider the past four (4) week period, or a typical four (4) week period.

- (1) Rate each therapist for each item on the scale below the item. The scale is labelled from low to high, with "D" representing marginal or inferior performance, "C" average, "B" above average, "A" superior, "A+" outstanding.
- (2) Between each of the letter grades on the scale are three division marks, to allow for fine distinctions between ratings.
- (3) Place an "X" between the scale marks, as shown in sample I below.
- (4) Use "D" for performance that is marginal or in the lowest 20%.
- (5) Use "A+" for performance that is outstanding or in the highest 20%.
- (6) Where a behavior has not been performed in the four (4) week rating period, or is not in the scope of the job of the therapist being rated, draw a line through the scale as shown in sample II below.

Sample I

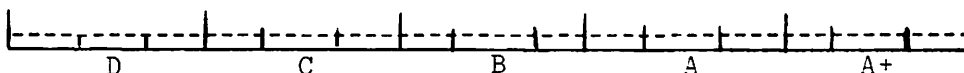
Provides only tasks the patient will perform successfully.



Interpretation: Therapist is slightly above average in providing only easily performed tasks for patient.

Sample II

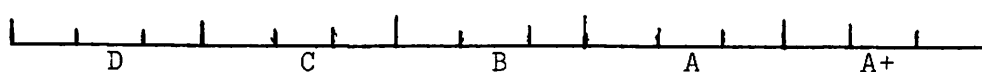
Discusses alternate treatment approaches with patient.



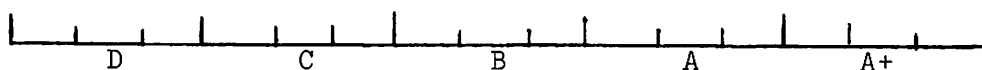
Interpretation: Policy or administrative practice discourages allowing patients to chose treatment.

APPENDIX A - Continued

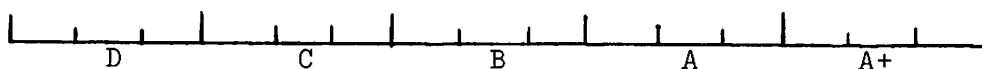
1. Performs an initial evaluation of the patient on referral.



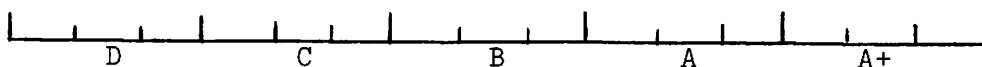
2. Modifies examination procedures where patient's condition requires different approach.



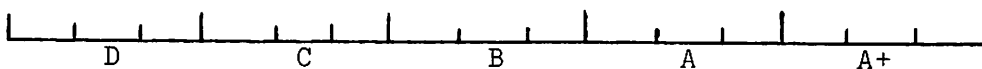
3. Observes and evaluates patient's condition during treatment. Is alert for any signs of distress or abnormal reactions.



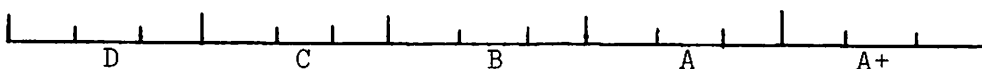
4. Is responsive to patient's emotional condition.



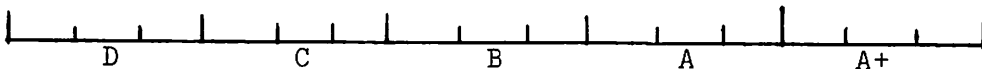
5. Provides initial tasks that the patient will be successful in performing.



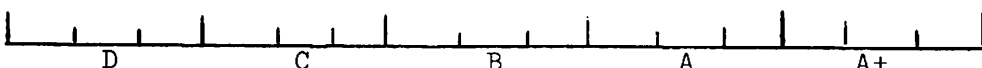
6. Develops confidence and establishes rapport with patient.



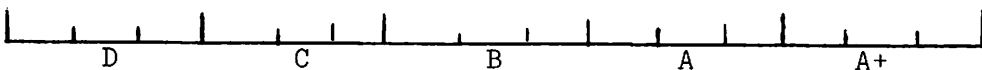
7. Takes initiative in relaying information regarding patient care.



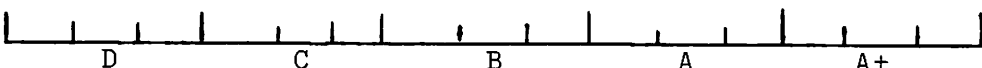
8. Understands patient's medical record. Questions areas that are not clear or which might indicate a restriction on treatment.



9. Does not leave a patient in doubt about his schedule status.

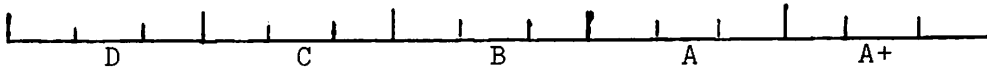


10. Gives patients a feeling of achievement by encouraging progress and noting improvements.

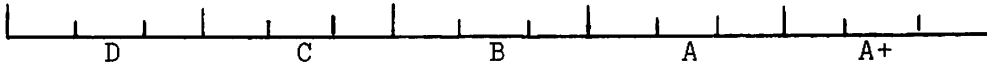


APPENDIX A - Continued

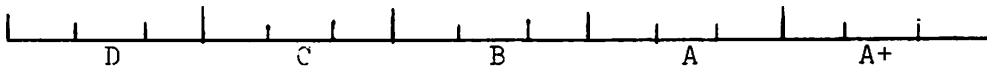
11. Does not allow failures or incidents to disturb patient's confidence in his ability.



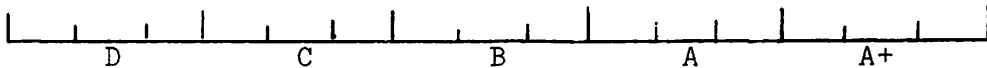
12. Anticipates physical failures.



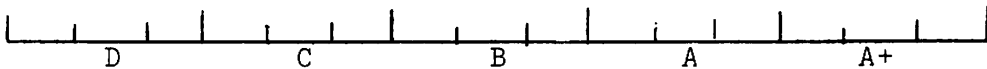
13. Plans progressive treatment program for patients.



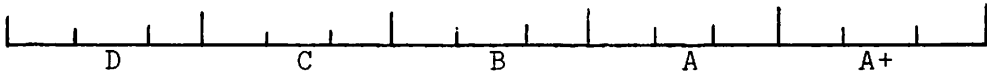
14. Gets most efficient response from patient.



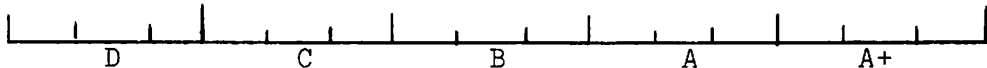
15. Uses knowledge of patient's pain threshold in giving treatments.



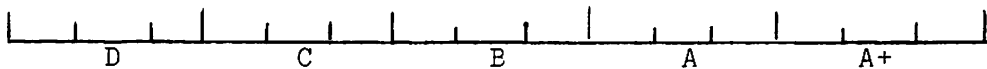
16. Exhibits a firm and determined attitude towards patient's treatment, particularly where the patient must exert himself to achieve results.



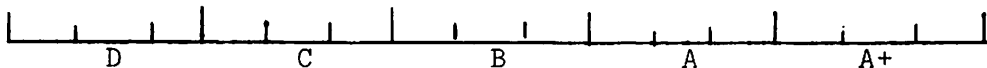
17. Uses good judgment in scheduling patients. Does not schedule so many that treatment is insufficient or undue waiting required.



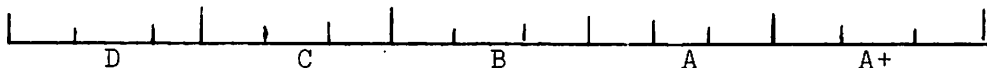
18. Provides full instructions at a level the patient understands.



19. Uses non-verbal instructions and demonstrations when required.

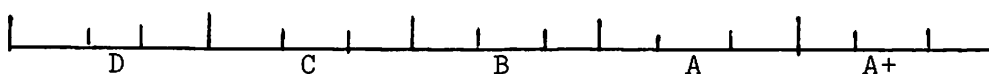


20. Discourages unrealistic expectations of the patient through instruction and explanation of what is possible.

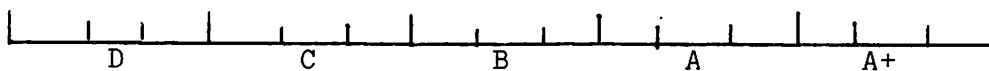


APPENDIX A - Continued

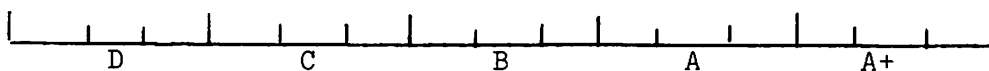
21. Maintains work area clear of hazards.



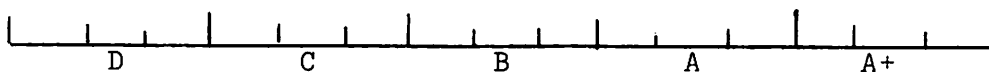
22. Uses safe operating procedures in treatment room.



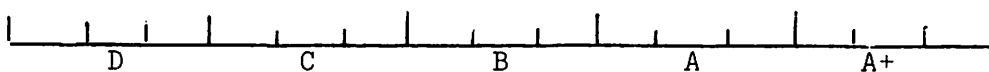
23. Effective when potential emergency situation develops.



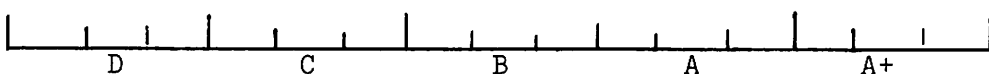
24. Modifies and improvises equipment and procedures effectively.



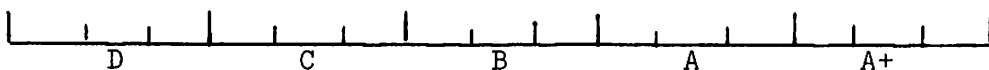
25. Willing to perform extra duties.



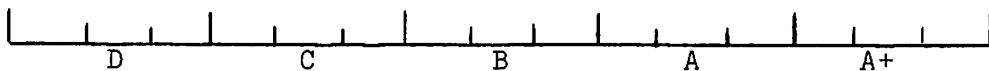
26. Contacts physician where additional or different treatment would be beneficial to patient.



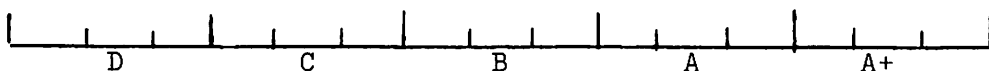
27. Maintains patient's records and reports patient's response to treatment.



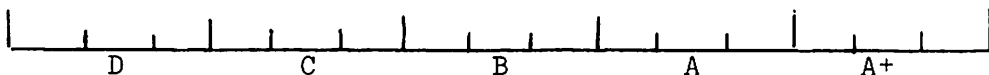
28. Makes the physician aware of problems in a way that avoids confrontation.



29. Shows mutual, professional respect for other professionals on the treatment team.

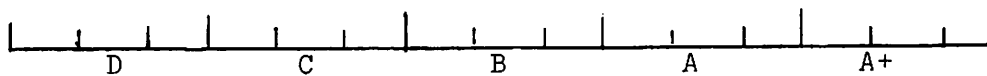


30. Takes a positive approach in making other professionals aware of contributions that can be made by Physical Therapy discipline.

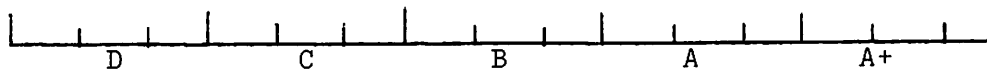


APPENDIX A - Continued

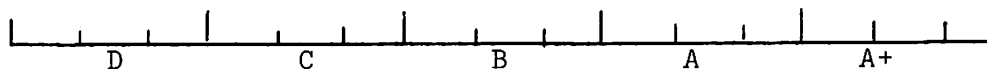
31. Confident in own technical skill and judgment and able to communicate this confidence.



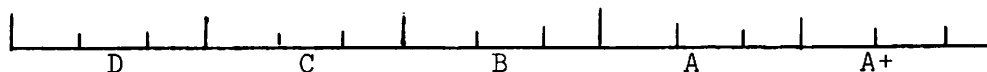
32. Takes time to complement supportive personnel for good work.



33. Explains reasons behind unusual requests of supportive personnel.



34. Assigns specific duties and jobs to supportive personnel.



APPENDIX B

HOSPITALS AND TREATMENT CENTERS WHERE PERSONNEL
ASSISTED IN COLLECTION OF DATAALABAMA

Spain Rehabilitation Center
Birmingham

ARKANSAS

Hot Springs Rehabilitation
Hot Springs

Baptist Medical Center
Little Rock

CALIFORNIA

Fresno Community Hospital
Fresno

Southern California Permanente
Medical Group
Harbor City

El Cerrito Hospital
Long Beach

Memorial Hospital of Long Beach
Long Beach

Los Angeles County Crippled
Children's Services
Los Angeles

Queen of Angels Hospital
Los Angeles

Contra Costa County Medical
Services
Martinez

Huntington Memorial Hospital
Pasadena

Sequoia Hospital
Redwood City

Riverside Community Hospital
Riverside

CALIFORNIA (continued)

San Bernardino County General
Hospital
San Bernardino

Childrens Hospital & Health
Center
San Diego

Fairmont Hospital
San Leandro

El Portal School for Handicapped
Children
San Mateo

Mills Memorial Hospital
San Mateo

St. John's Hospital
Santa Monica

Queen of the Valley Hospital
West Covina

Los Angeles Orthopaedic Hospital
Los Angeles

Rancho Los Amigos
Downey

University of Southern
California Medical Center
Los Angeles

Ventura General Hospital
Santa Barbara

CONNECTICUT

Central Connecticut
Rehabilitation Center
Meriden

Norwalk Hospital
Norwalk

APPENDIX B - Continued

CONNECTICUT (continued)

Gaylord Hospital
Wallingford

St. Mary's Hospital
Waterbury

FLORIDA

Halifax District Hospital
Daytona Beach

Memorial Hospital
Hollywood

Brevard Crippled Children's
Clinic
Melbourne

Mt. Sinai Hospital of Miami
Miami Beach

ILLINOIS

Passavant Memorial Hospital
Chicago

Rehabilitation Institute of
Chicago
Chicago

Institute of Physical Medicine
& Rehabilitation
Peoria

St. Luke's Presbyterian Hospital
Chicago

University of Illinois Research
& Education
Chicago

Chicago Wesley Memorial Hospital
Chicago

INDIANA

Winona Memorial Hospital
Indianapolis

LOUISIANA

Ochsner Foundation Hospital
New Orleans

MARYLAND

Union Memorial Hospital
Baltimore

MASSACHUSETTS

Peter Bent Brigham Hospital
Boston

Burbank Hospital
Fitchburg

Berkshire Rehabilitation Center
Pittsfield

MICHIGAN

Butterworth Hospital
Grand Rapids

Mary Free Bed Hospital
Grand Rapids

Rehabilitation Medical Center
Lansing

St. Joseph Mercy Hospital
Pontiac

MINNESOTA

St. Mary's Hospital
Duluth

MISSISSIPPI

University of Mississippi Medical
School Hospital
Jackson

MISSOURI

Veterans Administration Hospital
St. Louis

APPENDIX B - Continued

MISSOURI (continued)

Lester E. Cox Medical Center
Springfield

NEBRASKA

Archbishop Bergan Mercy
Hospital
Omaha

NEW JERSEY

Hackensack Hospital
Hackensack

Mercer Hospital
Trenton

NEW YORK

St. Barnabas Hospital
Bronx

Kings County Hospital Center
Brooklyn

The Long Island College Hospital
Brooklyn

Veterans Administration Hospital
Brooklyn

Columbia Presbyterian Medical
Center - Neurological Institute
New York

Goldwater Memorial Hospital
New York

New York University Medical
Center - Institute of
Rehabilitation Medicine
New York

St. Peter's Hospital
Albany

Tompkins County Hospital
Rehabilitation Center
Ithaca

OHIO

Highland View Hospital
Cleveland

Cleveland Metropolitan General
Hospital
Cleveland

St. Vincent Charity Hospital
Cleveland

Cleveland Veteran's Administra-
tion Hospital
Cleveland

University Hospitals
Cleveland

OKLAHOMA

Southern Rehabilitation Services
Oklahoma City

PENNSYLVANIA

St. Vincent's Hospital
Erie

Harrisburg Polyclinic Hospital
Rehabilitation Unit
Harrisburg

Conemaugh Valley Memorial
Hospital
Johnstown

Latrobe Area Hospital
Latrobe

Magee Memorial Hospital
Philadelphia

Harmarville Rehabilitation Center
Pittsburgh

Home for Crippled Children
Pittsburgh

St. Francis General Hospital
Pittsburgh

APPENDIX B - Continued

RHODE ISLAND

Meeting Street School
Providence

WISCONSIN

St. Mary's Hospital
Madison

SOUTH DAKOTA

Sioux Valley Hospital
Sioux Falls

TEXAS

The University of Texas
Medical Branch
Galveston

Scott & White Clinic
Temple

UTAH

McKay-Dee Memorial Hospital
Ogden

VERMONT

Medical Center Hospital of
Vermont
Burlington

VIRGINIA

National Orthopaedic &
Rehabilitation Hospital
Arlington

Woodrow Wilson Rehabilitation
Center
Fishersville

WEST VIRGINIA

Memorial Hospital
Charleston

West Virginia University
Hospital
Morgantown

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