SELECTION OF STUDENTS FOR PHYSICAL THERAPY EDUCATIONAL PROGRAMS

SUMMARY

PART B: THE ROLE OF COGNITIVE STYLE IN THE SELECTION PROCESS

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GRADUATE PHYSICAL THERAPY CURRICULUM
PSYCHOLOGICAL RESEARCH SERVICES
CASE WESTERN RESERVE UNIVERSITY
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PART B: THE ROLE OF COGNITIVE STYLE IN THE SELECTION PROCESS

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by

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PREVIOUS PUBLICATIONS RELATED TO THIS STUDY

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by
D. Pinkston & B. Margolis
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Selection of Students for Physical Therapy Educational Programs
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ABSTRACT

This report focused on the role of cognitive style in the selection of students for an educational program in Physical Therapy. The stylistic tendency as measured, showed that the overall style of perceiving situations is sufficiently common so that differences among the groups tested were observed. The life style is also shared to a marked extent by the subjects in this study.

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INTRODUCTION

In the past few decades the needs of society for health care services have increased progressively. The means for providing those health care services are under scrutiny. In the past, the public has looked to the physician and the nurse to provide the care required as a result of illness or injury. However, with the introduction of the concept of health care, which implies prevention of illness or impairment of function and the maintenance of health, as well as care for illness and injury, other types of health professionals have assumed important roles in the delivery of health care services.

Among those health professions which have concern for the health status of members of our society is Physical Therapy. Johnson (1971) defined Physical Therapy as:

> . . . a health science which concerns itself primarily with the motor abilities of man and his ability to function in his environment. Physical Therapy encompasses the assessment of the individual's status through the use of special evaluative procedures, interpretation of the results of that assessment, and the planning and direction of a program based on the needs of the individual [p. 6].

The shifting of roles and responsibilities within the health professions and from one profession to another has created a dynamic and evolving role for the physical therapist.

The Graduate Physical Therapy Curriculum

Establishment of the Graduate Physical Therapy Curriculum at Western Reserve University was based on the premise that physical therapy is one of the health professions and as such it must produce practitioners who can share responsibilities with other members of the health professions. Therefore, it was assumed that physical therapists are entitled to educational opportunities equivalent to those provided in other health professions, such as medical social work, clinical psychology, speech pathology, medicine, etc.

A proposed curriculum in physical therapy was accepted by the Graduate Council of the University in February, 1958. In September, 1960, the first student was admitted for the two-year program of study for the Master of Science.

The Curriculum was divided into three phases which covered two academic years and one summer. Phase I was a study of the normal structure and functions of the body; the basic principles in the administration of physical therapy procedures; and the development of basic skills in the application of physical therapy procedures. Phase II included a study of abnormal structures and functions of the body and the application of physical therapy principles and procedures to abnormal conditions. Phase III included the submission of a thesis; introduction to organization, administration and supervision;

curriculum development and principles of teaching; the interrelationships of professional personnel; and the transition to full clinical participation. Although the major portion of clinical education occurred during Phase III, the clinical experience began during the first semester of Phase I and continued with increasing breadth and depth throughout all phases.

Each graduate of the Curriculum was expected to accept employment for one year in a hospital department which had been approved by the faculty for that purpose. It was the opinion of the faculty that this was an essential phase of the educational experience provided for students in this program. That year was included to provide the new graduate with adequate supervision as well as the opportunity to increase the knowledge and skills acquired as a student. Periodic evaluations were made during that first year to furnish the faculty with valuable information about the strengths and weaknesses of the program and an appraisal of each graduate in his first employment.

Philosophy. The Faculty of the Graduate Physical Therapy Curriculum, Case Western Reserve University accepted and supported the following philosophy:

> Man is endowed with certain rights and privileges. He is entitled to respect for his person and to maintenance of his dignity. As an individual he occupies a position in his family, community, and place of employment. Each individual has obligations to himself and to society.
>
> Impairment of normal function alters man's role in society. His role may be altered temporarily or permanently and in providing service to him it is necessary for the physical therapist to comprehend the implication of disability to the individual. Physical therapy is represented in the evolving concept of comprehensive health care. As a member of a health profession working cooperatively with the physician and other health personnel, the physical therapist has a unique privilege in helping persons attain important elements and components of personal independence. A physical therapist participates in health care by evaluating patients' capacity for physical performance and selecting and administering appropriate physical measures and activities.
>
> The needs of society continually modify the demands imposed on the health professions. As a result, there is a shifting of roles and responsibilities within the professions and from one profession to another. The role of the physical therapist is a dynamic and evolving one. To enable the physical therapist to contribute maximally to health care, education must equip him to examine his role, to modify it appropriately and to participate in it fully. Education must prepare the physical therapist to accept the increased responsibilities of the profession in service, research and education. This preparation is best provided at the graduate level.
>
> The basis of graduate education is the willingness and the desire on the part of the student to read, to think logically, soundly and creatively and to assume considerable responsibility for his own education. To do so the student must have the maturity to exercise good judgment and self-disipline. He must also have the necessary educational background and academic abilities.
>
> Graduate education provides opportunities which prepare individuals to progress into positions of responsibility and leadership. The application of knowledge is directly dependent upon the acquisition and understanding of principles from general and professional education. The learning process and the integration of knowledge, skills and attitudes by the student is facilitated by horizontal and vertical coordination of the learning experiences. Learning occurs most efficiently when experiences are designed to meet the needs of individual students and when the student-teacher ratio is consistent with the level of student development.
>
> The concept of professional responsibility is best developed by precept and example of the faculty, both clinical and academic, and other members of the professional community. Although the student has responsibility for his actions, the faculty has responsibility for providing an environment that is conducive to the acquisition of the knowledge, skills and attitudes necessary for a high level of performance. Effectiveness is increased and expertness is developed through continued learning. The responsibility for continued learning rests with the individual.

Objectives. Based upon the philosophy accepted and supported by the Faculty of the Graduate Physical Therapy Curriculum, this program of study was designed to include opportunities for the student to develop:

1. Willingness to accept the patient as a person, as a member of society and as the focal point of health care.
2. Readiness to accept responsibility for the welfare of the patient entrusted to his care.
3. Readiness to contribute maximally to health care as a physical therapist.
4. Acceptance of objectivity and systematic planning as basic methods for making decisions.
5. Willingness to become involved in the current social, political, and economic aspects of health care.

Educational programs must prepare individual persons. The responsibilities and duties of the profession, once identified as the most appropriate, will be assumed and performed by individual persons. It is an individual person who will provide the services within the developing pattern of health care. The right person must be admitted to the right educational program if the health care needs of society are to be met effectively and economically. Methods must be devised to predict potential for success of given individuals in given health occupations.. In student selection an attempt must be made to predict the success of the individual in the profession he is entering. This is of special importance today with the limitation on enrollments in educational programs and the unlimited need for health personnel. Therefore, a means of predicting success among the applicant population is essential.

PURPOSE OF THE STUDY

The purpose of the study was to improve the methods of selection of students for educational programs in Physical Therapy. The consequence of identifying and successfully recruiting candidates with exceptional potential to perform effectively as physical therapists was judged to be the improvement of the quality of health care. The primary goal of the study was the development of instruments that could be used to improve the process of identifying those persons who are most likely to become outstanding physical therapists.

Divisions of the Study

So that the study could be completed within a specific time period, it was divided into three distinct segments. The results of that portion of the study which focused on the development of instruments for the identification of those candidates with the potential to perform effectively as physical therapists and for the evaluation of actual performance as physical therapists was reported by Johnson, Pinkston, and Mc Intyre (1971). The results of another part of the study, an approach to the recruitment of

candidates for educational programs in Physical Therapy, was reported by Johnson, Pinkston, & Di Stefano (1971). The results of the segment of the study dealing with cognitive style are presented in this report.

Selection Procedures for Students in the Graduate Physical Therapy Curriculum.

Soon after the establishment of the Graduate Physical Therapy Curriculum at Case Western Reserve University, the faculty agreed on a specific procedure to be used for the selection of students. That procedure included:

- A careful evaluation of previous academic performance of the candidate
- Consideration of the results of the following battery of tests:

  Gordon Personal Inventory
  Gordon Personal Profile
  Edwards Personal Preference Schedule
  Psychological Research Services Classification Test
  Strong Vocational Interest Inventory
  MacQuarrie Test for Mechanical Ability
  Watson-Glaser Critical Thinking Appraisal

- A structured interview with the candidate by members of the faculty
- A review of the personal and academic qualifications of the candidate by members of the faculty

AN APPROACH TO THE STUDY OF COGNITIVE STYLE

This segment of the study was designed to examine the cognitive functioning of those involved in making judgments about others in the selection process regarding entry to a professional school (i.e., the selectors in the Graduate Physical Therapy Curriculum) as well as those who have been judged (i.e., the applicants to the Graduate Physical Therapy Curriculum).

Studies of human behavior, using a framework of perception as a function of cognitive structures, have utilized the notion of an organizing process which is developmental in nature and which aids the individual in processing, discriminating and interpreting external events (i.e., Freud's "ego", Piaget's "schema", and Kelly's "personal construct system"). Those studies have generally been approached from the perspective of individuals as communicators of information and as transforming that data in a conceptual style consistent with previous learning and experience. That is, the individual learns to interpret events by virtue of the various vicissitudes encountered and experienced and the effectiveness of response modes evolved. The mode of perceptual selection chosen not only has relevance to the physical environment but, more importantly, to those who occupy one's social environment, for therein lie the elements by which one differentiates relational aspects between self and others. It is not that specific behaviors as such are duplicated but, rather, that underlying themes are replicated consistently in varying ways and in varying degrees within an individual's repertory of behaviors. To the extent that one can

abstract aspects of these themes as being similar to, or different from, other events, one can construe or interpret another's behavior, as well as his own, within various contexts (Kelly, 1955).

When an individual seeks a graduate level of training which will culminate in a specific profession, it can be assumed that a choice has been made in that specific field. Following Kelly's (1955) point of view, this choice can be described as based on a field of experience defined as a "set of construed events . . . falling within a man's purview . . . exercising a selective effect on his experiences (p. 748)." In time, certain behaviors will follow as a result of the experiences which led to such a choice. That is, the individual will seek more information by reading and/or by contacting people in that specific field.

If the constructs he uses to structure the situation can bring the facts within his scope of understanding, he may seek concrete experiences by working temporarily in the field. If the evidence accumulated validates his anticipations and he can conceptualize himself in that role, he then seeks formal entry into that field.

Although there undoubtedly are many individual differences, and many have taken different routes to arrive at the same place, it is hypothesized that not only are there commonalities in cognitive styles within professional groups but, in addition, many similarities in personal-social developmental antecedents. Having made such a choice, the individual has construed events so that he can anticipate finding his life's satisfactions in that field. By the same token, one who is already in the field (i.e., the selector) will more readily be able to subsume the applicant's constructs since they will share elements in common.

The present study was aimed at looking at the selection process from the perspective of cognitive styles, using the framework of G. A. Kelly's personal construct theory (1955). The stylistic mode examined was cognitive complexity-simplicity (CC or cognitive complexity) as it relates to the perception of others. Certain interpersonal events, which are presumed to affect the development of life styles, were also investigated. The structure of this study is based on the following assumptions:

1. Faculty who work together on common problems will often, by means of repeated discussions, understand or subsume others' constructs, anticipate others' behaviors and perceive others' expectation of them. The fact of working together constructively for an extended period often implies the sharing of certain ideals and goals and some mutuality of understanding.

2. Frequently, in small classes there is close interaction between instructor and student. The student differentiates or identifies certain patterns of behavior on the part of various instructors and, in order to understand, tries out his own patterns of constructs to make consistent sense as he goes along. Some degree of identification can occur between student and instructor, on the basis of perceived similarity, in aspects of one's own and others' behavior patterns. This would come about by means of the personal construct since the dimensions of similarity and contrast in the personal construct guide behavior.

3. Since graduate school studies can produce a condition of stress, one's anticipations of what is expected may be ambiguous. While the engendered anxiety varies in degree among individuals, some elements may persist beyond completion of the program, guiding the direction of one's constructs and subsequent action away from the poorly differentiated situation toward one in which better predictions can be made.

4. Following completion of the program, the new professional gradually elaborates and clarifies his construct system as he acquires experience and increases his understanding of instructors' behavior patterns. His stylistic modes of response, based on those interpretations, will vary, depending on the degree of similarity or contrast used in his constructions.

5. An individual who has had a greater number of interpersonal contacts and who has learned to deal with social situations relatively early in his development is assumed to be able to differentiate and to understand others' behaviors to a greater extent. He has had more opportunities to test out his anticipations about people and to experience validation of his hypotheses. Presumably, he is more likely to note the differences and the nuances which exist within the various personalities encountered.

The following general hypotheses were based on the above assumptions:

1. There will be a significant positive relationship between cognitive complexity as measured by the Role Construct Repertory Test (Rep Test) and the number of interpersonal experieces, as measured by the Interpersonal Activity Scale (IAS), for each group: faculty, graduates, and students.

2. Cognitive complexity scores will differ significantly among the three groups: faculty, gratuates, and students.

3. Faculty members will successfully predict each others' ratings of randomly selected students.

4. There will be a positive correlation between the student's self-ratings and the ratings of the members of the faculty of the same student.

5. There will be significant differences in cognitive complexity between the faculty and graduates engaged in teaching, between the faculty and graduates engaged in clinical practice, and between the graduate - teachers and the graduate - clinicians.

Review of Related Literature

The review of the literature presented here is not an exhaustive one but is representative of pertinent literature about interpersonal perception. Accordingly, the material cited has been limited to the area of cognition, especially as it relates to the concept of cognitive styles.

Cognitive Styles. Shortly after World War II, various techniques to explore ways of integrating different perspectives were used by one group of investigators, who chose perceptual activity as an approach to focus on the modes people use to cope with different situations (Klein, 1951). Using as a theoretical framework a combination of elements from psychoanalytic ego psychology, Gestalt psychology,

and Piaget's theory of cognitive development, the group at Menninger Clinic conducted studies of perceptual and cognitive organization. They concerned themselves with modes or patterns of perceiving and the ways in which those were expressed in behavior. According to this orientation, perception is the key point of reality contact and the perceptual act is motivated by the aims of the individual as well as his temporary need states.

In a series of experiments in which patients served as subjects, the Menninger group studied the kinds of solutions people adopted upon being confronted with various tasks. Using subjects who scored only at the extremes of their distributions, they tested them in a variety of situations. People were found to be both idiosyncratic as well as consistent in their perceptual activities (Klein, 1951, 1970; Gardner, 1954). It was concluded that:

> Perceptual experiences and its contents reflect stabilized rules of control operating through the perceptual system . . . the organismic controls are not ad hoc constructions, but workable strategies that have proved themselves in countless environmental encounters [Klein, 1970, p. 9].

These resulting stabilized modes of perceptual and cognitive activity are referred to as "cognitive styles" and are considered to reflect basic, personality invariants.

Another approach in an attempt to relate cognitive functions with developmental and motivational variables is exemplified in the developmental psychology of Heinz Werner (1968). His theory is holistic, organismic and is conceptualized as a construct defined by orthogenetic laws. This law states that development proceeds from a state of global diffusiveness and lack of differentiation to a state of increasing differentiation (Werner, 1968).

Witkin's research (1962), following in Werner's tradition, focused on psychological differentiation as a pervasive personality variable. In a recent review of cross-cultural studies of cognitive styles, Witkin (1967) stressed the relevance of this concept in the study of cognitive development. He said:

> "Cognitive styles" are the characteristic self-consistent modes of functioning found pervasively throughout an individual's cognitive, that is, perceptual and intellectual, activities. They are now known to be manifestations, in the cognitive sphere, of still broader dimensions of personal functioning, evident in similar form in many areas of the individual's psychological activity. Cognitive styles thus speak on more than cognition. Evidence now exists that individual differences in cognitive style are related to differences in family experiences while growing up. To the extent that cognitive styles are end-products of particular socialization processes, they may be used in the comparative style of these processes [p. 234].

Other investigators are cited in this study who have applied his concepts and methods of testing for cognitive styles to diverse populations (i.e., Caucasian, Asian, and African groups and subgroups). Accumulated evidence points to the socialization process as either hampering or enhancing the separate, autonomous functioning of the individual. The closely interrelated socialization factors found to be influential in the development of a particular cognitive style are: the opportunities afforded the child to achieve separation, especially from the mother, the ways in which the child is taught to deal with

expression of impulses, and the effects of the personal characteristics of the parents in these processes.

The conceptualization of cognitive function relevant to this study, the personal construct system of G. A. Kelly (1955), incorporates the notions of selective perception and differentiation. This cognitively based theory of personality, subsuming developmental and motivational aspects of behavior, posits as a given a master motive which tends to direct the individual toward better prediction of his world. The philosophy underlying this position, called "constructive alternativism" in essence, states that all events are subject to as great a variety of interpretations, reconstructions or revisions as one's capacities or creativity permit. In trying to understand man's behavior, Kelly applied this philosophy, by using an alternative perspective of man, as he worked with people in various situations. He noted that attempts made to cope with events bore striking resemblance to the kinds of behavior associated with scientists, that is, the curiosity, the making of an hypothesis, the activity in testing out solutions, and the anticipation of results. Man-the-scientist, he saw, exists in a real, palpable universe and is constantly engaged in construing relationships where none previously existed as a means of creating a more integral world. Like other living things, man, in particular, is characterized by his capacity to react to his environment. In addition, he has the capacity to represent this environment. Since these representations can be changed, man is not seen as bound by his environment but only by his interpretations or representations. This viewpoint, placing man in the position of being his own pilot, is formalized in the fundamental postulate, which states that "a person's processes are psychologically channelized by the way in which he anticipates events [Kelly, 1955, p. 46]." this statement is further elaborated by 11 corollaries explicating ways in which man organizes patterns or constructs to understand and master reality.

Constructs are abstractions formed when observing behaviors and events. They form the basis on which one is enabled to distinguish elements of reality, to group them, to interpret them. They are reference axes created by the individual in order to construct his world in a coherent manner. The personal construct, according to Kelly (1966):

> . . . serves as a baseline from which we may proceed to erect categories or continua and upon which we are free to project any behavior in our effort to understand it . . . and which may be regarded as essentially a dichotomous, differentiating and integrating unit . . . [p. 104].

Constructs erected involve similarity and contrast, both being inherent characteristics of the construct. The personal construct system emphasizes both the processes the individual uses to interpret others' behaviors as well as the various ways he organizes his constructs to predict these behaviors.

Over time, constructs are not only changeable, but may be discarded, replaced, restructured, or elaborated in response to different experiences and new expectations. They are bipolar in nature, may or may not be verbalizable, and are conceived of as dimensions by which people and events may be compared and contrasted.

As a logical outcome of his theorizing, Kelly devised the Role Construct Repertory Test (Rep Test) with which to assess the personal-social constructs of the individual. It is similar to a concept formation test procedure except that, instead of sorting objects, the individual sorts those persons who are significant to him and who have shared his social environment. The objectives of this sorting concern, first of all, the kinds of categories used; secondly, how the subject deals with people he knows; and finally, a means of looking at the differentiation and integration process that forms the basis for categorization.

In the performance on the Rep Test, the subject is presented with a series of role titles or descriptions which he is asked to associate with people in his life (i.e., mother, friend, boss, teacher, etc.). After naming individuals to fit those role descriptions, the subject is then presented with three of those figures and is asked to indicate in what important aspects two of those people are alike and yet different from the third and to define the contrast. When all constructs have been elicited, the subject (S) is then asked to reconsider each construct and check those people who may also be described by that construct. This produces a matrix, or grid, of checkmarks which is then scored in terms of similarity of check patterns. If two construct rows have identical patterns, these constructs are, for all practical purposes, considered to be equivalent despite verbal labels used. The number of different constructs (ways in which people are alike or different) which the subject uses to describe these people provides a measure of the degree of differentiation and constitutes the score.

Consistency studies of the Rep Test, expressed in percentage of construct similarity between two sessions, averaged 69 percent; when expressed as Pearson correlations in other studies, r = .79 and .80 [Bonarius, 1965, p. 4]. This instrument has been used extensively in clinical research and has undergone various modifications, according to the prevailing interest of the experimenter (and in accordance with the philosophy of constructive alternativism). Kelly suggested at least five variations of grid procedures which could be used in eliciting and assessing personal constructs (1955). Methods of abstracting different kinds of information vary and according to Kelly:

> Rep Test results can be subjected both to formal analysis and . . . to a clinical analysis. The constructs themselves can be analyzed as to content or tone and as to more abstract features, such as permeability and communicability. The figures can also be taken into account – that is, the kinds of people they are construed to be . . . one can get some insight into the facets of the subject's role . . . some judgment of the extent and flexibility of the subject's constructs can be made; also of the difficulties the subject has in construing some figures within his construct system [p. 232].

Cognitive Complexity. Studies of cognitive complexity and interpersonal perception cited here are primarily those utilizing the Rep Test which was formulated by Kelly and modified by Bieri. Since this study is concerned with interpersonal events, constructs will herein refer to interpersonal constructs; cognitive complexity will refer to the degree of cognitive differentiation.

A cognitive structure has been defined by Bieri (1966) as a . . . "hypothetical link between stimulus information and an ensuing judgment which refers to those cognitive processes which mediate the input-output sequence [p. 184]." As a property of cognitive structures, cognitive complexity is a construct providing some information as to the manner in which an individual structures his social environment. It also refers to the relative number of constructs contained in a cognitive system and reflects the degree of differentiation of an individual's construct system. As a variable in a structural concept of personality, emphasizing both the process and the manner of the organization of constructs, cognitive complexity presumably enables the individual to structure reality so that he may anticipate and predict events within his social environment with relatively greater efficiency.

According to Crockett (1965), impressions of others depend on a large number of factors. Some of those are derived from the observed behavior of the perceived, his value to the perceiver, and the potential or actual relationship to the perceiver. Another source of variables comes from the perceiver himself, his experiences, his intentions, his value system, all of which interact with his personality traits. It is also suggested that an individual develops his own personality theory which enables him to understand and explain to himself, in an acceptable manner, other's behaviors as well as his own. In an interpersonal encounter, for example, the amount of stimulus information received from an impression is actually quite sparce. However, use of extended inferences, based on other, similar situations, permits the assignment of considerable attributes to the perceived. This process, in turn, depends on the organization of constructs in the perceiver's implicit personality theory and the relationship among these constructs. It seems reasonable to assume that the cognitively complex person, having more constructs available in his cognitive system, would be better able to construe and to differentiate a greater variety of individuals' behaviors than would a more cognitively simple person.

One of the earlier studies, using the Rep Test as devised by Kelly, was conducted by Jones (1961), who used the concept of assumed similarity as referring to perceived similarity of self to significant others. This concept also served as his operational definition of "identification". Using two groups of male Ss, Jones matched a hospitalized neuropsychiatric (N.P.) group and a normal group on both the age and education variables. His basic hypotheses, among others, related to measuring: (a) a generalized tendency for people to see themselves as more alike than different from the majority of Rep Test figures (confirmed at the $p<.01$ level for normals and at the $p<.02$ level of significance for the N.P. group), (b) a tendency to perceive similarity with those one accepts rather than with those one rejects (significant at the $p<.01$ level for both groups), (c) matrix complexity (significantly more simple for the N.P. group, and (d) general identification tendencies (the N.P. group overidentified to a significant extent at $p<.01$ and showed a

tendency to underidentify p<.10, as well).

Jones concluded that this study reconciled the findings of both Mowrer and Erikson on the development of neuroticism with Mowrer considering overidentification and Erikson underidentification as symptomatic of neurotic maladjustment. Jones further attributed this defect to an "oversimplified value laden construct system." He said:

> When an adolescent or a young adult polarizes his world into social objects hated and social objects idealized, relevant dimensions of perception become inoperant, learning becomes inadequate for daily adjustive behavior. The "self" ceases to grow, in fact, becomes less and less internally differentiated, and more and more "all good" or "all bad [p. 15]."

That author also states that one's identification with others on the Rep Test was indicative of acceptance of others as well as a willingness to engage in social intercourse. He also suggested that construct patterns, as well as matrix simplicity or complexity, all carry some predictive meaning.

A review of studies on CC (Bieri, 1961; Bieri, Atkins et al, 1966; Bannister and Mair, 1968; Crockett, 1965), show that subjects high in complexity relative to those lower on this dimension tend to perceive and to stress differences between people rather than similarities, are more moderate in their judgments, tending to form less univalent impressions of others, hence show less change of that impression with the addition of new information. In terms of making predictions, high CC subjects compared to lows, are more accurate in predicting other's behavior, as well as predicting differences between themselves and others, can assess more accurately other's attitudes toward authority and, in general, were found to be high in social intelligence. No significant relationship has been found, however, between intelligence and cognitive complexity. Other studies, designed to investigate the generality of CC across domains, show some evidence that subjects showing high complexity in regard to one domain are likely to show high complexity in other domains.

Since cognitive complexity refers to the relative number of constructs in a cognitive system and reflects the degree of differentiation within an individual's construct system, the present study will be exploratory in nature and discriptive in terms of cognitive styles and life styles found within selected members of a professional group, i.e., Physical Therapists.

PROCEDURE FOR COLLECTION AND ANALYSIS OF DATA

The objective of this segment of the study was to explore an aspect of the selection process in terms of personal constructs and certain life history antecedents of both the selectors of Physical Therapy applicants and those candidates who were accepted and educated at the Graduate Physical Therapy Curriculum (GPTC) at Case Western Reserve University.

TABLE 1

Subjects Participating in the Study of Cognitive Complexity

Group	Sex		N
	Males	Females	
Faculty	3	7	10
Students	2	13	15
Graduates	6	26	32
Total	11	46	57

Subjects Participating in the Study

The subjects who participated in this segment of the study are shown in Table 1.

Instruments Used in the Study

The Role Construct Repertory Test (Appendix A) and Interspersonal Activity Scale (Appendix B) were administered to faculty, students and graduates of the Graduate Physical Therapy Curriculum. In addition, faculty were paired and rated selected students on the Rep Test (Appendix C) twice: first as he perceived each student and second as he felt his paired-partner perceived each student. The data collected were tested with the appropriate correlational, nonparametric, and parametric statistics.

The theoretical range and means of the instruments used (Rep Test and IAS) and the observed range, means, and standard deviations obtained by the subjects on those instruments are shown in Table 2. The range of observed scores of all subjects on the Rep Test was restricted to less than one-half of the possible range of 40 to 450, while the range of scores on the IAS was restricted to less than one-quarter of the possible range of 1 to 109. It should be noted that the educational level of all subjects in this study is at the master's degree level or higher and that the practice of Physical Therapy involves working closely with people. Both require a certain versatility of one's construct system which should be reflected in relatively low cognitive complexity scores.

Hypotheses Tested and Results Obtained

Cognitive styles are assumed to be developmental. Differentiation and organization of constructs evolve as a result of life's experiences, i.e., learning with significant others. Over time, modes of perceiving tend to become idiosyncratic and are shared, to varying degrees, by others. The stylistic tendencies of the physical therapists in this study were operationalized by scores achieved on the Role Construct Repertory Test (Rep Test). The interpersonal experiences were operationalized as the frequencies tabulated on the Interpersonal Activity Scale (IAS). The following hypotheses were tested means of the Pearson Product-Moment Correlation Coefficient.

1. There will be a significant negative correlation between the Rep Test scores and the IAS scores of the faculty members.
2. There will be a significant negative correlation between the Rep Test scores and the IAS scores of the students.
3. There will be a significant negative correlation between the Rep Test scores and the IAS scores of the graduates.

The expected relationship between the Rep Test and the IAS scores was not demonstrated. The computed r for each group is shown in Table 3.

TABLE 2

The Theoretical Range and Means and the Observed Range, Means and Standard Deviations on the Rep Test and the IAS

	REP TEST[a]			IAS (f)[b]		
	Range	Mean	S.D.	Range	Mean	S.D.
Theoretical						
	40-450	205		0-109	54.6	
Observed						
Subject	N					
Faculty	10	82-194	142.5	39.4	43-66	59.5	7.7
Graduates	32	125-177	148.9	17.4	50-75	61.4	6.3
Students	15	125-183	159.6	16.7	47-68	58.7	5.3

[a]low scores are indicative of a relatively higher degree of cognitive complexity

[b]"f" refers to the frequency of interpersonal activities

TABLE 3

Correlations Between Cognitive Complexity and Frequency of Interpersonal Activity for Faculty, Students, Graduates

Group	N	r
Faculty	10	- .0486
Students	15	- .0213
Graduates	32	.0177

Since each group, faculty, students, and graduates, represents different points in time, and since constructs change over time, the assumption that stylistic tendencies develop as a result of learning from interpersonal experiences which may be shared by others was operationalized by differences among the mean Rep Test scores for the three groups of physical therapists. That assumption was tested by the following hypotheses:

4. There will be a significant difference in the means of the Rep Test scores among the faculty, graduates, and students.

5. There will be a significant difference in the mean IAS scores among the faculty, graduates, and students.

Analysis of the Rep Test scores of the faculty, students, and graduates was carried out using the Kruskal-Wallis one-way analysis of variance. An H-value of 5.99 was necessary to show a significant difference. However, the observed H-value was less, H = 3.23; therefore, Hyphthesis 4 was rejected. Hypothesis 5 was also tested using the Kruskal-Wallis one-way analysis of variance. The observed H-value for Hypothesis 5, H = 2.40, failed to reach the set level of significance and was, therefore, rejected.

In order to work together in selecting students for the Graduate Physical Therapy Curriculum, it was assumed that the selectors, who undoubtedly shared some ideals, must have developed ways of understanding each other that made consistent sense, and enabled them to predict each other's behaviors. When ideas are shared concerning a group of students, the judgments made may reflect those shared ideas. Rating scores were utilized to operationalize judgments made and the following hypothesis tested:

6. There will be a significant positive correlation between the pairs of faculty's Rep Test ratings of each of the students rates.

A Pearson Product-Moment Correlation Coefficient was computed for Hypothesis 6. This suggested that one faculty member would successfully predict ratings that a colleague would assign to the same students. The computed r = .69 was significant, $p < .05$, thereby confirming this hypothesis.

Another aspect of the above assumption concerned the degree of similarity between those judgments regarding students and the students' judgments about themselves. Rating scores were utilized to operationalize those judgments and the following hypothesis was tested by use of the Pearson Product-Moment Correlation:

7. There will be a significant positive correlation between mean faculty Rep Test ratings of the students rated and the students' self-ratings on the Rep Test.

The computed r = .19 did not confirm the hypotheses that a positive association would be found between the ratings students assigned to themselves and the mean of the ratings faculty members assigned to each of those students.

After a candidate was selected, entered the program, and completed it successfully, employment in a clinical setting for at least one year was required. It is assumed that the elaboration and

TABLE 4

Mann-Whitney U Test Comparing Cognitive Complexity Scores of Faculty With Cognitive Complexity Scores of Graduate-Clinicians

Group	N	Scores									
Faculty	10	84	97	102	117	150	159	164	172	186	194
Clinicians (F)	10	114	115	120	133	145	154	159	169	177	165

Note: Observed U=49, ns

TABLE 5

Mann-Whitney U Test Comparing Cognitive Complexity Scores of Graduate-Teachers With Cognitive Complexity Scores of Graduate-Clinicians

Group	N	Scores									
Teachers (F)	7	126	133	149	150	151	152	177			
Clinicians (F)	10	114	115	120	133	145	154	159	165	169	177

Note: Observed U=34, ns

TABLE 6

Mann-Whitney U Test Comparing Cognitive Complexity Scores of Graduate-Teachers With Cognitive Complexity Scores of Faculty

Group	N	Scores									
Teachers (F)	7	126	133	149	150	151	152	177			
Faculty	10	84	97	102	117	150	159	164	172	186	194

Note: Observed U=35, ns

clarification of the graduate's construct system regarding the professional role continued during that period. That is, constructs derived from experiences, both academic and interpersonal, in the educational period are matched against those new experiences as a professional person. Depending on personal judgments made, which may or may not be conscious, those constructs may be discarded, retained, or elaborated. After approximately one year, these new physical therapists identify themselves as either teachers or clinicians or may leave the field temporarily to assume family responsibilities. This study sought to determine whether there were stylistic differences among graduates with varying self-identifications and whether they differed from their teachers. Sytlistic differences were operationalized by the scores on the Rep Test and tested by the following hypotheses using the Mann-Whitney Test:

8. There will be significantly lower mean Rep Test scores for faculty than for graduates engaged in clinical practice.

9. There will be significantly lower mean Rep Test scores for graduates engaged in teaching than for graduates engaged in clinical practice.

10. There will be significant differences in mean Rep Test scores between the faculty and those graduates engaged in teaching.

Mann-Whitney U Tests were computed from the data collected to test Hypotheses 8, 9, and 10. For Hypothesis 8, which stated that the faculty members would be significantly more cognitively complex than would be those graduates engaged in clinical practice, the observed U = 49 failed to reach significance and, therefore, this hypothesis was rejected. The data are shown in Table 4.

Hypothesis 9, stating that graduates engaged in teaching would be more cognitively complex than would be those graduates in clinical practice, was not supported by the observed U of 34, as shown in Table 5. Therefore, this hypothesis was rejected.

Hypothesis 10, stating that differences would be found in mean cognitive complexity scores between faculty and graduates, was tested. The observed U of 35 between faculty and graduates engaged in teaching was not significant. Therefore, this hypothesis was not supported. The data are shown in Table 6.

DISCUSSION OF THE RESULTS

Studies cited in the review of the literature indicated that the more constructs or available alternatives a person possesses in the interpersonal realm, the more likely he is to be relatively high in cognitive complexity. This relationship was not demonstrated by the data used to test Hypotheses 1, 2, or 3. To determine whether total group scores were obscuring possible relationships between cognitive complexity and interpersonal activity, the Rep Test scores of each group were divided at the means. A Pearson Product-Moment Correlation Coefficient was computed between Rep Test scores and IAS scores for each subgroup. One subgroup consisted of subjects whose Rep Test scores were above the mean and the

other of those whose scores were below the mean. The computed relationships presented in Tables 7 and 8 showed no association between the two variables, cognitive complexity and frequency of interpersonal activity, in each subgroup.

The rejection of Hypotheses 4 and 5, in effect, states that these three groups, whose scores do not differ among themselves, came from the same population. This follows the assumption that Ss in those groups share many attributes and characteristics. While this result may, to some extent, be a function of training, the part played by the motivation and orientation guiding those individuals toward similar goals cannot be discounted. The choice of an occupation is considered to be a function of those determinants. Therefore, the general thesis of this study was, in part, supported.

The significant association observed in Hypothesis 6 between ratings assigned to students and prediction of colleague's ratings of those students confirms the common-sense observation that colleagues working together toward shared goals can predict fairly accurately how their colleagues perceive certain events. While full agreement is not usually achieved, or even necessary, each can, in general, subsume the others' constructs to the extent of understanding as well as anticipating how each will react to a particular event. This result also lends support to the general thesis that similar stylistic tendencies exist within a professional group.

According to Hypothesis 7, a positive association was predicted between students' self-ratings and ratings the faculty as a whole assigned to those students. The lack of a relationship between ratings suggests that faculty, as a group, do not perceive students as they perceive themselves. This descrepancy between faculty and students, which undoubtedly can be generalized to other academic programs, may, in fact, be the basis of personal conflict and anxiety. This result does not necessarily mean that either faculty and/or the students are correct in their perceptions. Neither does it mean that faculty will not change their perceptions nor that students will not modify theirs over time.

The rejection of Hypothesis 8, suggesting that faculty would be relatively more cognitively complex than graduate clinicians, prompted further analysis. Since studies, cited previously, have indicated the presence of sex differences in perception, an additional Mann-Whitney U Test was computed after eliminating scores of male faculty members. The observed U of 23 was not significant. Therefore, the variance attributed to sex differences caused no appreciable difference in the results.

Analysis of the data used to test Hypothesis 9 failed to show differences between graduates engaged in teaching and graduates engaged in clinical practice. This may be due, in part, to the fact that many of the graduate clinicians have had teaching experiences in clinical situations. A very recent survey of all graduates from the GPTC, who have been working for a year or more, has indicated that 25 of 31

TABLE 7

Correlations Between High Cognitive Complexity and Frequency of Interpersonal Activity for Faculty, Students and Graduates

Group	N	df	CC	IAS	r
Students	5	4	139.2	58	.15
Faculty	4	3	100	57.5	.36
Graduates	15	13	130.2	62	.38

TABLE 8

Correlations Between Low Cognitive Complexity and Frequency of Interpersonal Activity for Faculty, Students and Graduates

Group	N	df	CC	IAS	r
Students	10	9	169.8	59.1	.50
Faculty	6	5	170.9	57	.27
Graduates	17	16	163.4	60	.02

graduates have had either full-time or part-time teaching responsibilities at some time. It can probably be assumed that some Ss in the group used for comparison have taught, although they classify themselves as clinicians. Therefore, the anticipated differences did not occur because subjects in this group probably classified themselves erroneously. More than likely, the two groups should be considered a homogeneous group, i.e., teachers.

The lack of confirmation of Hypothesis 10, stating differences between faculty and graduates in teaching, was not too surprising. The effects of modeling, as discussed by Bronfenbrenner (1958), can certainly be assumed. In this instance, the term modeling refers to a motivated attempt of an individual to achieve similarity to another person. If one wants to be the very best physical therapist, then one selects the best model one can from those who are available, the teachers. The modeling effect appeared to be so strong that those who identified themselves as clinicians were, as stated earlier, in reality, teachers.

Additional Analyses

The affective responses of those subjects to the role models considered to evoke either negative or positive affect were analyzed by t-test. The subjects in this study differed in age and professional training from those in the studies reported by Miller and Bieri (1956), Irwin et al (1967), and Turner and Tripodi (1968). The data and results are shown in Table 9.

The subjects in this study also showed a variation of the degree of cognitive complexity when judging different role models. They were significantly more complex when judging those considered to be socially distant (i.e., person disliked, person you would like to help, person with whom you feel most uncomfortable, boss) than when judging those who are less distant (i.e., self, mother, father, friend of the same sex, friend of the opposite sex).

To test for differences between groups in cognitive complexity as a function of the stimulus object (model) judged, t-tests were computed. The groups paired for comparison were : (1) female and male graduates, (2) faculty and students, and (3) female graduates and faculty. The results are shown in Table 10.

The data suggest that, although the groups differ in the relative degree of cognitive complexity when judging models evoking positive affect, the differences were not significant. However, when judging models evoking negative affect, female graduates differed significantly from male graduates, being relatively more highly complex. The same group of females also showed a higher degree of complexity than faculty in judging models of negative affect, significant at the $p<.10$ level. That result was less than the set level of significance but was noted as a trend.

As can be noted in Table 9, the differences within groups in relative degree of cognitive complexity between role models assumed to be positively regarded and those persons negatively regarded is highly significant. Sex differences are apparent also in this study. The female subjects showed relatively

TABLE 9

t-Test for Differences Between Means of Cognitive Complexity Scores Between Positive and Negative Role Constructs

Group	N	CC(+)		CC(-)		
		Mean	s.d.	Mean	s.d.	t
Students	15	91.1	11.4	68.4	12.3	5.9**
Faculty	10	79.1	20.5	62.7	38.1	3.8*
Graduates (F)	26	81.9	14.2	43.8	14.2	9.6**
Graduates (M)	6	90.8	13.9	66.3	11.3	3.3*
All Males	11	92.4	11.5	72.5	13.3	3.8*

Note: * $p < .01$
** $p < .001$

TABLE 10

t-Test for Differences Between Means of Cognitive Complexity Scores of Groups for Positive and Negative Role Constructs

Group	N	CC(+)			CC(-)		
		Mean	s.d.	t	Mean	s.d.	t
Graduates (F)	26	81.9	14.2	-1.4	43.9	14.2	-3.6*
Graduates (M)	6	90.8	13.9		66.3	11.3	
Faculty	10	79.1	20.5	-1.7	62.7	38.1	- .6
Students	15	91.1	11.4		68.4	13.3	
Faculty	10	79.1	20.5	- .5	62.7	38.1	2.2**
Graduates (F)	26	81.9	14.2		43.9	13.2	

Note: * $p < .01$
** $p < .10$ ns

higher complexity than male subjects in differentiating role models of negative value. As contrasted to cited studies, however, female subjects also tended to differentiate more than males among positive role models, as well, although not significantly.

Data in Table 10, comparing the relative degree of cognitive complexity between groups in judging positive and negative role models, showed that faculty differentiated more among positive models, although not significantly. The graduate-female group, however, was significantly more complex in judging negative role models than either their male counterparts or the faculty. This seems to be reasonable and adaptive, particularly for women in our society, since they are establishing themselves in their professional careers and probably feel a need to be alert to negative professional influences.

Since the expected outcome of the quantitative data on the IAS was not manifested, and since one of the underlying assumptions of this study was that life antecedents of the selectors would bear similarity to those selected, an item analysis of the IAS was performed. Each item in every question was analyzed for each group in terms of the number of responses recorded for that item. If 50 percent or more of the subjects in each group checked an item, then that item was considered to be representative of that group. If two items were checked by the majority, then these, too, were retained. A descriptive profile of the faculty was prepared from those items which were answered by 50 percent or more of faculty. The other two groups (i.e., students and graduates were described only in terms of those items to which they responded differently.

The descriptive profiles of all groups utilized biographical items incorporating events dealing with families, childhood, and teens. Also included were those events indicating ways in which others were dealt with in the social environment, preference for leisure activities, preference for medical specialty, and perception of life's major motive.

In the descriptive profiles which follow, based on an item analysis of the Interpersonal Activity Scale, an attempt was made to record related items within the appropriate time period, e.g., childhood, adolescence, college years, etc. Also noted were responses from male subjects which differed from those of female subjects within each group. The other groups were described only in terms of those items which differed from the faculty, since many items were responded to in a similar manner. The profiles are based on the responses from the majority of subjects in each group.

Descriptive Profile of Faculty. In this group of 10, ages ranged from 28 to 55; three are married; the others, single. The majority came from intact families, that is, both parents were present in the early years; male and female siblings were present; they were the youngest in their respective families; and both parents were educated at the high school level.

These subjects perceived their parents as in agreement with each other most of the time and as

very strict in their discipline. The subjects were required to receive permission from both parents for various outside activities. Their parents apparently were pleased with their school performance. In general, they got along well with their parents and considered their family situation to be similar to that of others. They did not usually take part in family leisure activities. Leaving home was somewhat difficult because their families did not want them to go. Although they received help from their families in making decisions, they stated that personal plans and problems were discussed with others. None considered their parents to be influential in their vocational choices and most made their own vocational plans.

During childhood, the majority did not attend nursery school. Their mothers never worked outside the home and they felt their mothers were most understanding of them. While 40 percent stated they went to their mothers for sympathy when hurt, 40 percent responded "no-one". In their early school years, most made attempts to be friendly with their class teacher. They also felt that they received adequate recognition from their teachers for their academic efforts.

The high schools they attended had a population of less than 1,000 students. They found their studies to be very interesting and considered academic achievement and close friendships to be the most positive experiences in their school life. Comparing themselver to their peers, they thought that they made friends with equal effort and that their physical growth was average. However, they saw themselves as progressing through school more rapidly and thought that their athletic ability was much better than that of their peers. Most were actively engaged in team sports during this time.

In terms of others in their social environment, they think that most people are sensitive to their feelings and they would be most unhappy if a friend ignored them. They are willing to help friends in trouble, offering both sympathy and suggestions. If they think they have been treated unfairly, they would attempt to find the reason. A fellow worker with annoying habits would be dealt with differently: the women would use a variety of ways, the men would try to help by pointing out the bad habit. Neither anger nor grudges are harbored for any length of time. All like to please people and do so if it is not contrary to their feelings.

Leisure time finds the majority of the women engaged in sedentary activities, i.e., puttering around, reading, and listening to records. The men, on the other hand, look forward to being outdoors and engaged in competitive sports.

This group believes their major motivation force to be that of helping people and would readily extend help to those in need. Almost all had contact with handicapped persons prior to professional training. On the question of a choice of medical speciality, women would choose to be general practitioners and men, surgeons.

Descriptive Profile of Students. The age range in this group of 15 was between 21 and 30 years;

three are married, two are divorced, and 10 are single. One-third of these subjects are the youngest and one-third, the oldest in their families. Their responses to other items on the questionnaire were similar to those of the faculty group. Exceptions are related below.

Parental discipline was seen as being consistent rather than strict; half of the subjects thought their mothers understood them better and the other half, their fathers. They valued their parents' praise highly. The majority went to their mother for sympathy when hurt. During their teen years, they frequently were included in parental leisure activities. Most tended to talk about their plans and problems with peers and they stated that they had no difficulty leaving home for school.

These subjects usually found academic studies interesting. By comparison with their peers, they were above average in academic achievement and better in sports. Responses concerning physical growth were divided, one-third being about average and the remainder considering their growth as being faster than that of their peers. The majority of this group attended summer camp at least twice or more.

Leisure activities consist of outdoor activities for both males and females. In addition, females prefer being with other people in social kinds of activities while males prefer competitive sports. Their choices of medical specialities were varied for female subjects; males chose surgeon.

Descriptive Profile of Graduates. The age range in this group of 32 was from 25 to 45 years of age; 14 are single; 18 are married. Fourteen subjects are the oldest in their families and the majority have only one sibling. Fathers' educational background was at the college and graduate school level, while mothers' education was at the high school, business or technical school level. The responses to other items on the questionnaire were similar to those of the faculty. As stated earlier, responses discussed here will be those which differ.

Parental discipline was perceived as kindly, but firm. Most attended summer camp more than twice. Leaving home for school was considered easy.

In terms of others in their environment, if they think they have been treated unfairly, one-half of this group would attempt to find the reason, the other half would talk over the situation with a trusted person. They would deal with an annoying fellow worker by being friendly and hoping he would improve.

Preference for leisure time activities consists of being active outdoors. Females prefer social activities with others; males prefer competitive sports. Their choice of medical speciality is: a majority (19) of the female subjects would choose to be either general practitioners or pediatricians; four of the six men would choose surgery or radiology.

CONCLUSIONS

There are differences apparent in the life experiences among the individuals in these three groups in terms of their interpersonal activities. However, there are also marked similarities in terms of factual events (i.e., high schools, team sports, mothers not working, etc.), in terms of interpreted events (i.e., parents pleased with them, parents agree with each other, parent who understood them, etc.), and in terms of interpersonal motives (i.e., desire to please others, desire to help others, etc.).

The similarity in responses by the majority, not only among groups, but also within each group, strongly suggests, as does the statistical treatment of other data, that these three groups can indeed be considered a homogeneous group. These findings also appear to be consistent with the restricted range of scores on the IAS. As shown in Table 2, the range of IAS scores was restricted to less than one-quarter of the possible range of 1 to 109. This appears to reflect the homogeneity of the group.

According to personal construct theory, the factors entering psychological similarity need not be similar experiences per se, but, rather, the similarity of construing, or the manner in which one "takes stock" of, his experiences. The biographical questionnaire strongly suggests that similarity of construing is shared among these individuals to a marked extent. It can reasonably be expected that, during an interpersonal exchange, such as an interview, elements of contexts from which constructs are formed may be communicated either verbally or behaviorally, invoking previously established constructs. This tends to produce effective communication and facilitates understanding which leads to acceptance.

The underlying thesis of this study was based on the assumption that the learning associated with experiences in living provides the framework and guidelines for perceiving events and for directing behavior toward goals. Results basic to this assumption indicate that biographical antecedents of selectors do bear marked similarity to those whom they have selected and that interpersonal experiences are perceived and interpreted similarly. The life style, seen as the motive directing one's behavior, is shared markedly by the majority of these individuals. Although the stylistic tendencies, as measured, show expected variations among individuals in terms of relative degrees of cognitive complexity, the overall style of perceiving is sufficiently common as to obscure differences so that these subjects can be considered an homogeneous group. Despite varying self-classifications, the professional identifications of the graduates is similar to that of their selectors. The same seems to be true of the students. Therefore, the thesis that construct systems are shared appeared to be supported.

The question of whether a relationship does, in fact exist between interpersonal activities and the relative degree of cognitive complexity cannot be ascertained now. Both the biographical measure used and the small, rather restricted size of the sample are factors which necessitate leaving the question open at this time. Although the effects of modeling and identification remain as unmeasured input, the role of these

two processes cannot be discounted.

The faculty of the Graduate Physical Therapy Curriculum identified the end product of the educational program as an individual sufficiently flexible and independent in thinking to assume and carry out the responsibilities in the multi-faceted role of the physical therapist. The ultimate goal of the educational program was articulated as the preparation of individuals competent to participate in service, research, and education. The function common to each of those areas is teaching. In other words, implicit in the ultimate goal of this educational program was the preparation of teachers.

The Graduate Physical Therapy Curriculum achieved its stated goal. The graduates who are employed (47) including those who failed to respond and the recent graduates (15), occupy the following positions in the field of Physical Therapy: ten hold university appointments in educational programs in Physical Therapy; four have administrative positions in hospital departments of Physical Therapy; two have primary responsibility for research activities; three provide consultation in health-related agencies; and 28 are staff clinicians. Subjects who are clinicians include as part of their responsibilities: supervisory duties, consultation to other departments, clinical teaching, teaching of assistants, reserach activities, etc. All together, graduates have presented 15 papers at various professional conferences and have published 19 articles in professional journals. The positions that graduates hold and the professional activities in which they participate indicate that their primary role is teaching.

In the process of selecting candidates for educational programs in Physical Therapy, the combination of the actuarial method and the clinical method can be used with a high degree of success. Basic to this success is a clear definition of educational goals and a description of the desired end-product.

Possibilities for Further Study

In addition to a clearly identified end-product, the use of biographical antecedents can be a valuable asset to the selection of students for a specific educational program. Factual information is provided as well as the individual's interpretation of experiences and his way of coping with them. The selection of items for this instrument would depend on the goals to be met and can usually be derived by an empirical analysis of the situation by experts in the field. Using this technique in research would enable the identification of those life history antecedents predicated to produce certain desired behaviors. Further validation could be provided by factor analysis which could identify the characteristics common to those individuals. However, the sample size should be large and should include a sufficient number of male and female subjects so that results could be interpreted with confidence.

The versatility of the Rep Test lends itself to a wide variety of situations. Assessment of personal constructs appears to be a useful measure of stylistic tendencies. In an educational program,

constructs could be assessed at regular intervals by use of a modified Rep Test in shich the student provides his own constructs in response to stimulus models, objects or situations presented to him. This would provide information to both student and faculty as to whether constructs are changing. If a student's constructs are changing, it is important to know how they are being restructured and if those changes are a function of the educational process.

Appropriate and effective methods for selecting students can be devised. In order to meet the changing needs of our highly complex society, it is imperative that talent be channeled properly. This implies that opportunities be afforded to the individuals with certain capabilities, thus meeting his need for challenge, growth, and fulfillment.

This investigation showed that the faculty of the Graduate Physical Therapy Curriculum achieved their goals by use of appropriate methods of selecting students. That is, they produced individuals whose capacities and potential for meeting challenges and accepting responsibilities were enhanced. A well-planned and executed educational program creates a spiraling effect which, in turn, produces individuals who serve themselves, their profession, and their society.

APPENDICES

APPENDIX A

ROLE CONSTRUCT REPERTORY TEST

Instructions

On the following page, you will find a 10 x 10 grid. Across the top, are ten role constructs or short descriptions of people; on the side, are ten character dimensions, or descriptions of the ways people may tend to think of others. To complete the grid, you are asked to list names or initials of each of ten people who, for you, best correspond to the role type or descriptions heading the columns. After you have listed ten names, one for each description, then rate them on the character dimensions. These may be written in pencil and then erased.

For example, note that each character dimension ranges from very descriptive (+3) on the left to very descriptive (-3) on the right, with varying degrees in between.

In rating, consider which adjective of the two best describes person #1, i.e., "outgoing-shy". Then place that number with the appropriate sign (+ or -) in the first square under person #1.

When you have finished rating all ten people on the first dimension (outgoing-shy), then continue to the next dimension (adjusted-maladjusted) and rate each person in a similar manner. Proceed in this manner until you have completed the grid. Be sure each square contains a number with a + or - sign in front of it.

APPENDIX A - Continued

ROLE CONSTRUCT REPERTORY TEST

1. Yourself									
2. Person you dislike									
3. Mother									
4. Person you would like to help									
5. Father									
6. Friend of same sex									
7. Friend of opposite sex (or spouse)									
8. Person with whom you feel most uncomfortable									
9. Boss (or person in similar position)									
10. Person difficult to understand									

(Start here)

(Zero may not be used in grid.)

Top

+3 +2 +1 -1 -2 -3

Outgoing - Shy

Adjusted - Maladjusted

Decisive - Indecisive

Calm - Excitable

Interested in Others - Self-Absorbed

Cheerful - Illhumored

Responsible-Irresponsible

Considerate-Inconsiderate

Independent-Dependent

Interesting-Dull

+3 +2 +1 -1 -2 -3

APPENDIX B

INTERPERSONAL ACTIVITY SCALE

Code No._____

Answer every question with only one response. Choose the most accurate response available by placing a check mark in the space provided to the left.

1. I am:
   ___ a. male
   ___ b. female

2. My age is:
   ___ a. 21-25
   ___ b. 26-30
   ___ c. 31-40
   ___ d. 41-50
   ___ e. 51-or older

3. I am:
   0 a. single
   2 b. married
   1 c. separated
   2 d. widow
   1 e. divorced

4. With how many brothers and sisters did you grow up:
   1 a. one/more brothers, no sisters
   1 b. one/more sisters, no brothers
   2 c. both brothers and sisters
   0 d. none

5. Of the children in my family, I was:
   2 a. oldest
   3 b. youngest
   2 c. next to the youngest
   1 d. the middle child
   0 e. no siblings

6. During my teens, I lived with:
   0 a. both parents
   1 b. one parent
   2 c. with relatives
   3 d. with foster parents or non relatives
   3 e. in a boarding school or institution

7. The last grade my father completed was:
   0 a. grade school or less
   1 b. high school or less
   1 c. business or technical school
   2 d. college
   3 e. graduate or professional school

8. When I was growing up, my mother was employed outside of our home:
   0 a. never
   1 b. before I started school
   2 c. when I was in grammer school
   2 d. when I was in high school

APPENDIX B - Continued

9. My mother completed her education to:
   0 a. grade school or less
   1 b. high school or less
   1 c. business or technical school
   2 d. college
   3 e. graduate or professional school

10. When I was growing up, my parents agreed with each other:
   0 a. all of the time
   1 b. most of the time
   1 c. not very often
   0 d. almost never

11. During my teens, the parent who understood me most was:
   ___ a. father
   ___ b. mother

12. By age 20, the number of times I have been to a summer camp was:
   0 a. none
   1 b. 1
   1 c. 2
   2 d. 3
   3 e. 4 or more

13. When I first left home for school or a job, parting from my family was:
   2 a. easy
   1 b. somewhat difficult- my family did not want me to go
   1 c. somewhat difficult- I was reluctant to go
   0 d. I have never left home

14. When I was growing up, my parents' discipline was:
   0 a. very strict in everything
   2 b. consistent in all things
   1 c. kindly but firm
   0 d. inconsistent
   0 e. very lenient in everything

15. I received most help in making decisions from:
   2 a. my friends
   0 b. my family
   1 c. people I worked with
   3 d. teachers or counselors

16. When I was a child, when I was hurt or worried, the person I usually went to for sympathy was:
   1 a. an older brother or sister
   1 b. my mother
   1 c. my father
   2 d. someone else
   0 e. no one

17. In my early teens, when I wanted to do something like go swimming or go to a movie, I usually got permission from:
   1 a. mother only
   1 b. father only
   2 c. both parents
   1 d. someone else
   0 e. no one

APPENDIX B - Continued

18. When I earned my first money on a steady job, my age was:
   2 a. less than 12
   2 b. 13 to 15
   2 c. 16 to 18
   1 d. 19 to 21
   0 e. over 21

19. The number of students in the high school I attended for the longest period was:
   1 a. less than 300
   1 b. 300 to 500
   1 c. 500 to 1000
   1 d. 1000 to 2000
   2 e. 2000 to 5000
   3 f. more than 5000

20. When I was in high school, I was most active in:
   0 a. individual sports competing against myself (e.g. archery, golf, bowling, swimming)
   1 b. individual competitive sports (e.g. tennis, badminton, boxing)
   2 c. team sports (e.g. baseball, volleyball, basketball, football)
   0 d. I was not very active in sports

21. During my teens I was most likely to talk over personal, religious, or political problems which bothered me with:
   0 a. parents
   2 b. other relatives
   1 c. teachers, ministers, or counselors
   3 d. friends of my own age
   0 e. none of these
   0 f. I had no questions which bothered me

22. In comparison with most of my high school classmates I was able to make friends:
   1 a. much easier
   1 b. a little easier
   2 c. with the same effort
   1 d. a little harder
   0 e. a great deal harder

23. As a young person, when I did something well, I valued most the praise of:
   2 a. a friend
   1 b. a teacher
   1 c. my parents
   2 d. someone else
   0 e. I did things well for my own satisfaction

APPENDIX B - Continued

24. With respect to the marks I made in school, my parents:
   1 a. were very pleased
   2 b. were satisfied but thought I should do better
   2 c. did not care about marks as long as I did my best
   0 d. did not care about marks as long as I passed
   0 e. paid very little attention to my marks

25. The factor that was most responsible for my vocational choice:
   1 a. guidance from counselors, teachers, or local businessmen
   0 b. information from school courses
   2 c. job opportunities available to me
   0 d. advice from parents or guardians
   0 e. personal plans made on my own
   2 f. influence of friends

26. As a young adult, I felt that the thing I would like best in a job would be:
   1 a. promotion and pay according to ability
   2 b. satisfactory vacations
   2 c. good supervision
   0 d. freedom to make decisions
   0 e. working for myself

27. Which one of the following do you look forward to most in your leisure time activities?
   0 a. a chance to be alone with your thoughts
   0 b. a chance to putter around
   1 c. a chance to get outdoors or be active
   0 d. a chance to rest and relax
   2 e. a chance to be with other people

28. From your own observations in order for people to be successful which one of the following is most necessary?
   0 a. to be creative
   0 b. to keep one jump ahead of others
   0 c. to keep plugging
   2 d. to get along with others
   1 e. to conform
   1 f. to be concerned with others
   2 g. all of the above are essential

29. When someone around me is disturbed by a problem, I usually:
   0 a. leave them alone and offer no advice
   1 b. try to make some suggestions
   2 c. sympathize with them
   1 d. try to work out a solution for them
   0 e. try to change the subject

APPENDIX B - Continued

30. I consider the major motivating force in my life to be:
   1 a. prestige
   0 b. material gains
   0 c. to come up with something new
   0 d. to gain a position of security
   2 e. to help people
   0 f. something else

31. I attend church:
   2 a. regularly
   1 b. occasionally
   0 c. on special occasions
   0 d. never

32. Which of the following is most likely to make you feel most uncomfortable or unhappy?
   -2 a. having a friend not speak to you
   0 b. making a mistake in your work
   -1 c. being laughed at when some circumstance makes you look silly (accident, practical joke)
   -1 d. having to introduce yourself to someone you don't know

33. I have found my studies in school to be:
   ___ a. very interesting
   ___ b. usually interesting
   ___ c. interesting occasionally
   ___ d. boring

34. If I were in a position of power in my school, I would:
   ___ a. maintain present policies
   ___ b. change present policies somewhat
   ___ c. make drastic changes in policy

35. If I were to become an M.D., I would prefer to be a(n)
   0 a. pathologist
   1 b. surgeon
   2 c. pediatrician
   0 d. radiologist
   3 e. general practitioner
   0 f. anesthesiologist
   1 g. obstetrician

36. I found the work I do:
   ___ a. is far below what I could be doing
   ___ b. doesn't give me a chance to use quite all my ability
   ___ c. is about equal to my ability
   ___ d. sometimes requires too much of me
   ___ e. is a little too difficult for me most of the time

APPENDIX B - Continued

37. When I feel that I have been treated unfairly, I usually:
   - 2 a. attempt to find out why
   - 0 b. shrug it off
   - 0 c. do not thereafter trust the person or persons responsible
   - 0 d. develop an interest in something else
   - 2 e. talk it over with someone I trust
   - 1 f. I have never been treated unfairly
   - 0 g. worry about it for a long while but never mention it to anyone

38. I find that most of the people around me are:
   - 3 a. quite sensitive to my feelings
   - 2 b. fairly sensitive to my feelings
   - 1 c. indifferent to my feelings
   - 0 d. deliberately offensive
   - 0 e. none of these

39. Of the following, what kind of recreation do you like most and engage in most often:
   - 2 a. participation in competitive team sports
   - 1 b. participation in competitive individual sports
   - 0 c. being a sports event spectator
   - 2 d. social relaxation with others, such as, parties, dances, etc.
   - 1 e. attending performances of plays, concerts, or other art events
   - 0 f. reading, listening to records or other things of this sort where you can be alone

40. Which one of the following qualifications do you feel is most important for a supervisor in an occupation such as physical therapy?
   - 2 a. ability to deal effectively with people
   - 1 b. knowledge of effective administrative procedures
   - 1 c. ability to size up a situation and act accordingly
   - 0 d. technical knowledge
   - 0 e. none of these

APPENDIX B - Continued

41. Of the following, I would most enjoy:
   0 a. doing a difficult job well
   2 b. sharing something with a friend
   1 c. winning others over to my point of view in an important decision
   1 d. helping someone who is less fortunate than I am

42. Of the following, I would most enjoy:
   2 a. forming a new friendship
   0 b. solving a problem or puzzle that others found difficult
   2 c. helping a friend who is in trouble
   2 d. settling a dispute between two of my friends

43. When I get very angry at someone:
   ___ a. it takes me a long time to get over it
   ___ b. I never get over it
   ___ c. it takes me a short time to get over it and I resent the person for a while
   ___ d. I get over it quickly and hold no grudge

44. When I see someone who is bleeding profusely, vomiting or sick I:
   1 a. feel ill
   0 b. walk away
   2 c. help the person
   1 d. ask someone else to help the person
   0 e. none of these

45. In the past, before any training, I have had contact with physically handicapped people:
   0 a. never
   1 b. occasionally
   2 c. frequently

46. My childhood family situation was:
   2 a. unusually happy
   1 b. average
   0 c. not particularly happy

47. During my teens my parents and I got along:
   0 a. very well; we agreed on almost everything
   1 b. better than most
   1 c. about average; as well as other family groups
   2 d. not very well; we had many disagreements
   2 e. not at all; we almost never agreed

APPENDIX B - Continued

48. During my teens my parents included me in their leisure time or hobby activities:
   0 a. most of the time
   1 b. frequently
   2 c. occasionally
   1 d. rarely
   0 e. almost never

49. In thinking about my career in the professional world and my abilities in administrative and supervisory activities on the one hand and in clinical and scientific activities on the other, I believe that I have or would have the greatest chances for success in positions which are:
   1 a. entirely administrative and supervisory
   1 b. primarily administrative with some clinical work
   2 c. about equally divided between administrative and clinical work
   2 d. primary clinical with some administrative work
   1 e. entirely clinical and scientific

50. During my teens, as compared with others of my own sex, my rate of progress through school was:
   1 a. much more rapid than most
   1 b. just a little faster than most
   2 c. about the same as most
   1 d. just a little slower than most

51. During my teens, in comparison with most of the other fellows my age, my general athletic ability was:
   1 a. near the top
   1 b. above the average
   2 c. about average
   1 d. a little poorer than most
   0 e. much poorer than most
   0 f. I don't know or never gave it much thought

52. During my teens, my rate of physical growth, in comparison with most others of my sex, was:
   0 a. very much faster
   1 b. a little faster
   2 c. about the same
   1 d. a little slower
   0 e. very much slower

APPENDIX B - Continued

53. What have you done, or would you do, if a fellow worker had personal habits which you disliked?
   2 a. be friendly and hope he would improve
   1 b. ask him directly to stop, if he were annoying you
   1 c. try to help him to improve his bad habits by pointing this out to him
   0 d. ignore him and his habits as much as possible
   0 e. try to get one of you transferred

54. In your relations with other people do you try to:
   1 a. please other people if it doesn't go against your own feelings
   2 b. please other people at any cost
   0 c. act according to your own feelings without regard to others feelings

55. When you have a chance, how do you lead people?
   0 a. by driving them
   1 b. by showing them
   2 c. by kidding them into going along
   1 d. by setting an example
   0 e. some other way

56. Which do you feel has been your most outstanding positive experience in your school life?
   1 a. popularity with boys
   1 b. popularity with girls
   1 c. popularity with teachers
   2 d. close friendships
   0 e. achievement in sports
   0 f. achievement in school

57. About how often did you change your mind about future vocational plans since the time you entered high school?
   0 a. have not changed them
   1 b. only once
   2 c. two or three times
   3 d. too many to remember

58. To what extent did you pay your own way in school?
   ___ a. paid your own way in high school
   ___ b. paid your own way in college
   ___ c. paid part of your expenses in high school
   ___ d. paid part of your expenses in college and graduate school
   ___ e. never worked much while you were going to school

APPENDIX B - Continued

59. When you were a child, did you feel that you received adequate recognition from your teachers for your work in school?
___ a. almost always
___ b. sometimes, but not usually
___ c. yes, in a moderate amount
___ d. almost never

60. When you were a child, did you go out of your way to be friendly with teachers of classes?
2 a. yes, frequently
1 b. yes, occasionally
0 c. very seldom

61. Did you ever attend a nursery school?
2 a. yes
0 b. no

APPENDIX C

ROLE CONSTRUCT REPERTORY GRID (FACULTY)

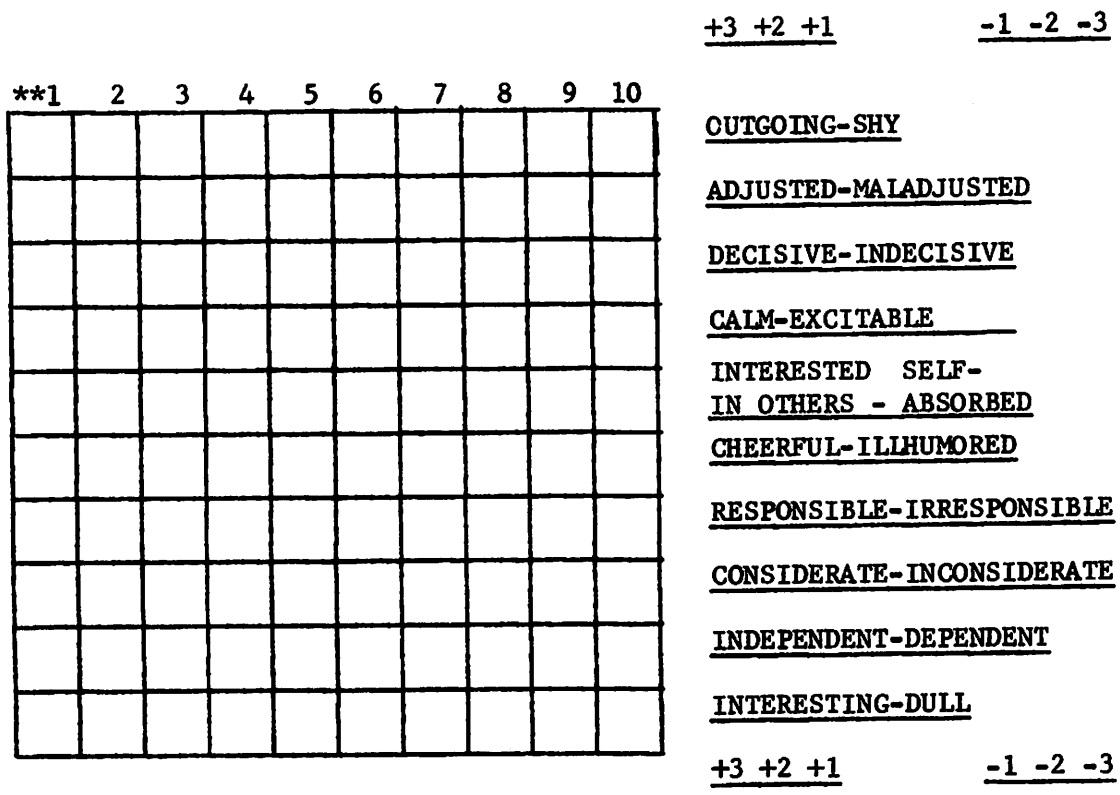
These grids are concerned with your present students (class of 1971). Across the top of each grid, you will find the names of ten students who were selected randomly. Would you please rate each of the ten students in light of the ten character dimensions in the following manner. Consider which adjective best describes person #1 (outgoing-shy) and the degree to which that particular adjective applies, then place that number with the appropriate sign "+" or "-" in the first square under person #1. Next, consider person #2, using the same dimension, rate him and proceed to the next person. After you have rated all ten persons on the first dimension, continue to the next dimension, etc. Continue in this manner until you have completed the grid. Be sure each square contains a number with a "+" or "-" sign in front of it.

Upon completion of Grid #1 proceed to the next grid. Using the same procedure, rate each student again. But this time, rate each one as you believe another faculty member _____, would do this rating.

Would you please place your initials on both of these grids. All information received will be held in confidence.

APPENDIX C - Continued

Role Construct Repertory Test
(Grid for Faculty)*



*Each faculty member received two grids for completion.
**Names of ten students were placed next to each number.

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