

INFORMATION TO USERS

The most advanced technology has been used to photograph and reproduce this manuscript from the microfilm master. UMI films the original text directly from the copy submitted. Thus, some dissertation copies are in typewriter face, while others may be from a computer printer.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyrighted material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is available as one exposure on a standard 35 mm slide or as a 17" × 23" black and white photographic print for an additional charge.

Photographs included in the original manuscript have been reproduced xerographically in this copy. 35 mm slides or 6" × 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



Accessing the World's Information since 1938

300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA

Order Number 8729426

Nursing diagnosis: A perceptual study

Warren, Judith Judd, Ph.D.

University of Hawaii, 1987

Copyright ©1987 by Warren, Judith Judd. All rights reserved.

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

NURSING DIAGNOSIS:

A PERCEPTUAL STUDY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN EDUCATIONAL PSYCHOLOGY
August 1987

By

Judith Judd Warren

Dissertation Committee:

Peter Dunn-Rankin, Chairman
Daniel D. Blaine
Morris Lai
Jean L. J. Lum
David Sherrill

c Copyright by Judith J. Warren 1987
All Rights Reserved

ACKNOWLEDGEMENTS

To Ed who supported, understood, pushed a little,
and loved a lot;

Pete who taught the fun and challenge of research;

Jean who demonstrated standards of excellence;

David who shared a creative view of the world;

Dan who demystified statistics; and

Morris who empathized with studenthood.

ABSTRACT

This descriptive study identified the three dimensions of the nursing diagnostic process and the attitudes of five major groups of nurses concerning the process. The dimensions of the nursing diagnostic process identified were (a) professional nursing and clinical knowledge, (b) commitment to professional nursing practice and nursing diagnosis, and (c) skill in cue clustering and patient assessment. The groups of nurses studied were nursing faculty, nursing students, nursing administrators, staff nurses, and expert nursing diagnosticians. Questionnaires were mailed to a national sample of 500 nurses. There was a return rate of 48%.

A major premise of the investigation was that group membership determined perceptions or attitudes of its individual members. These perceptions focus what people see in a situation, what they value, what they reward, and what they practice. Multiple regression analysis was used to test the hypothesis that there were no differences among the groups on their judgments as to the importance of the requisites and the dimensions of the nursing diagnostic process in determining an accurate nursing diagnosis. This null hypothesis was not rejected.

Preferences for these requisites and dimensions were then explored using multidimensional preference mapping (MDPREF). All five groups demonstrated strong preferences for four requisites as being critical for determining accurate nursing diagnoses: seeing relationships (clustering or chunking), analysis, interpretation, and verification. These are cognitive skills used in problem solving and critical thinking. As the preferences that were unique or shared with one or two other groups were analyzed, a continuum of responses began to emerge. The continuum appeared to correlate with the work done by Benner (1984) on novice to expert development. Students preferred requisites of the diagnostic process that reflected practical clinical knowledge, whereas, experts preferred requisites of the process that reflected critical thinking skills. These two groups defined the ends of this continuum. The remaining three groups of nurses had preferences between the two ends of this continuum. Further investigation of these similarities and differences will be important to the work of identifying efficient diagnostic strategies, developing new nursing diagnoses, and implementing a nursing diagnostic taxonomy.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	ix
LIST OF ILLUSTRATIONS.	xii
CHAPTER I. INTRODUCTION	1
Organization of the Study.	3
CHAPTER II. REVIEW OF THE LITERATURE.	4
Requisites of the Nursing Diagnostic Process	4
Theoretical Frameworks of Perception.	19
Studies of Perception	26
Summary	33
Statement of the Problem.	34
CHAPTER III. METHODOLOGY.	36
Instrument Development	36
Selection of Items.	37
Scaling of Items.	41
Establishment of Validity	55
Determination of Reliability.	62
Participants	63
Procedure.	70
Data Analysis.	72
Multiple Regression	73
Multidimensional Preference Mapping.	75
Assumptions of the Study	76
Limitations.	77
Summary.	77
CHAPTER IV. ANALYSIS OF DATA.	78
Analysis of Judgment Data	79
Testing of the Hypotheses.	80
Exploring Demographic Variables as Predictors/Descriptors.	85
Final Regression Model	94
Further Analysis	99
Analysis of Preference Data	102
Nursing Faculty Preferences.	103

TABLE OF CONTENTS (continued)

	Nursing Student Preference	109
	Nursing Administrator Preferences.	115
	Staff Nurse Preferences.	122
	Expert Nursing Diagnostician Preferences	126
	Unidimensional Preference Analysis	132
	Summary	136
CHAPTER V.	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	139
	Summary.	139
	Conclusions.	144
	Judgments	144
	Preferences	145
	Recommendations.	153
APPENDIX A.	Questionnaire	156
APPENDIX B.	Letter of Introduction: Nursing Faculty.	165
APPENDIX C.	Letter of Introduction: Nursing Students	170
APPENDIX D.	Letter of Introduction: Nursing Administrators	175
APPENDIX E.	Letter of Introduction: Staff Nurses	178
APPENDIX F.	Letter of Introduction: Expert Nursing Diagnosticians	183
APPENDIX G.	Letters Used as Reminders for Questionnaire Return	186
APPENDIX H.	Correlation Matrix of the Questionnaire Items.	191
APPENDIX I.	Stepwise Regression of Dimension One: Professional Nursing and Clinical Knowledge	194
APPENDIX J.	Assumptions of Regression Analysis of Dimension One Model	196
APPENDIX K.	Stepwise Regression of Dimension Two: Commitment to Professional Practice and Nursing Diagnosis	199

TABLE OF CONTENTS (continued)

APPENDIX L. Assumptions of Regression Analysis of Dimension Two Model	202
APPENDIX M. Multidimensional Preference Plots for the Five Groups of Nurses.	205
REFERENCES	226

LIST OF TABLES

Table	Page
1 List of Nursing Diagnoses Accepted for Clinical Testing by the North American Nursing Diagnosis Association.	6
2 Components of a Client Assessment According to a Medical Model	12
3 Gordon's Functional Health Patterns for the Nursing Domain	13
4 A Nursing Diagnostic Category with Defining Characteristics.	14
5 Questionnaire Items as Referenced in the Literature.	40
6 Dimensions of the Nursing Diagnostic Process. .	54
7 Means and Standard Deviations for Dimension Scores Reported by Group	82
8 Simple Regression Analysis of Dimension One Scores by Group Membership	83
9 Simple Regression Analysis of Dimension Two Scores by Group Membership	83
10 Simple Regression Analysis of Dimension Three Scores by Group Membership	84
11 Simple Regression Analysis of the Combined Dimensions by Group Membership	85
12 Years in Nursing (YEARS).	87
13 Highest Formal Educational Preparation (EDUC) .	87
14 Use of Nursing Diagnoses in Practice (USEDX). .	88
15 Agency's Recommendation to Use Nursing Diagnoses (AGENCY)	88
16 Affiliation with Schools of Nursing Teaching Nursing Diagnosis (SCHOOL)	89

LIST OF TABLES (continued)

Table		Page
17	Source of Learning about Nursing Diagnoses (LEARN)	89
18	Utilization of the Approved List of Nursing Diagnoses (LIST)	90
19	Multiple Regression Analysis of Dimension One- Professional Nursing and Clinical Knowledge.	91
20	Multiple Regression Analysis of Dimension Two- Commitment to Professional Practice and Nursing Diagnoses	92
21	Multiple Regression Analysis of Dimension Three- Skill in Cue Clustering and Patient Assessment	93
22	Multiple Regression Analysis of the Combined Dimensions by the Expanded Model	94
23	Multiple Regression Analysis of Dimension One by SCHOOL, LIST, LIST*SCHOOL	96
24	Multiple Regression Analysis of Dimension Two by LEARN, LIST and LEARN*LIST.	98
25	Analysis of the Combined Dimensions by LIST	99
26	Unidimensional Scale Scores of the Nursing Faculty Preferences for the Requisites of the Nursing Diagnostic Process.	107
27	Unidimensional Scale Scores of the Nursing Student Preferences for the Requisites of the Nursing Diagnostic Process.	113
28	Unidimensional Scale Scores of the Nursing Administrator Preferences for the Requisites of the Nursing Diagnostic Process.	119
29	Unidimensional Scale Scores of the Staff Nurse Preferences for the Requisites of the Nursing Diagnostic Process	127

LIST OF TABLES (continued)

Table		Page
30	Unidimensional Scale Scores of the Expert Nursing Diagnostician Preferences for the Nursing Diagnostic Process	133
31	Correlation Matrix of the Five Groups of the Five Groups of Nurses Based on Unidimensional Preference Scale Scores. . .	135
32	Correlation Matrix of Questionnaire Items . . .	192
33	Stepwise Regression Analysis Using the SAS Information.	195
34	Stepwise Regression Analysis Using the SAS Information.	200

LIST OF ILLUSTRATIONS

Figure		Page
1	KYST-2 Analysis: Dimension One by Dimension Two.	48
2	KYST-2 Analysis: Dimension One by Dimension Three.	50
3	KYST-2 Analysis: Dimension Two by Dimension Three.	52
4	Pilot Preferences: Dimension One by Dimension Two.	56
5	Pilot Preferences: Dimension One by Dimension Three.	58
6	Pilot Preferences: Dimension Two by Dimension Three.	60
7	Waern's Graphic Similarity Analysis of the Nursing Diagnostic Process Data.	100
8	Nursing Faculty Preferences: Dimension One by Dimension Two	104
9	Student Preferences: Dimension One by Dimension Three.	110
10	Nursing Administrator Preferences: Dimension One by Dimension Two	116
11	Staff Nurse Preferences: Dimension One by Dimension Two.	124
12	Expert Nurse Diagnostician Preferences: Dimension One by Dimension Two	130
13	Waern Graphic Analysis of Similarities Among the Five Groups of Nurses.	135
14	Unidimensional Scale of the Combined Five Groups of Nurses.	137
15	Profiles Grouped According to Correlations Among Item Profiles Across Respondents.	152

LIST OF ILLUSTRATIONS (continued)

Figure	Page
16 Plot of Residuals by Estimate for Dimension One.	197
17 Normal Probability Plot for Residuals from Dimension One.	198
18 Box Plots for Dimension One	198
19 Plot of Residuals by Estimate for Dimension Two.	203
20 Normal Probability Plot for Dimension Two	204
21 Box Plots for Dimension Two	204
22 Nursing Faculty Preferences: Dimension One by Dimension Three	206
23 Nursing Faculty Preferences: Dimension Two by Dimension Three	208
24 Student Preferences: Dimension One by Dimension Two.	210
25 Student Preferences: Dimension Two by Dimension Three.	212
26 Nursing Administrator Preferences: Dimension One by Dimension Three	214
27 Nursing Administrator Preferences: Dimension Two by Dimension Three	216
28 Staff Nurse Preferences: Dimension One by Dimension Three	218
29 Staff Nurse Preferences: Dimension Two by Dimension Three.	220
30 Expert Nurse Diagnostician Preferences: Dimension One by Dimension Three	222
31 Expert Nurse Diagnostician Preferences: Dimension Two by Dimension Three	224

CHAPTER I

Introduction

Today's professional nurses must manage complicated therapies that require sophisticated health care technology, advanced clinical knowledge, and specialized training. These demands require the assessment and identification of health problems. High level clinical decision making skills are essential to the performance of professional nursing (Gordon, 1982c).

The American Nurses' Association (1980) has recognized that professional nurses make clinical decisions. Their definition of nursing embraces nursing diagnosis, a form of clinical decision making within the domain of nursing, in addition to nursing treatments. Nursing diagnosis as a taxonomy, cognitive skill, and legitimate nursing activity began to receive recognition in 1973 when a group of nurses formed the National Conference Group for the Classification of Nursing Diagnoses (Gebbie & Lavin, 1975). As nurses began to develop nursing diagnostic labels and to use nursing diagnoses in their practices, a dialogue began as to what was really involved in the activity. The perceptions of different groups of nurses--educators, administrators, students, staff nurses, and expert nursing diagnosticians--

have influenced how this competency is being developed, taught, and implemented in nursing.

A major component of the professional role is decision making. This decision making is based on the perspective and the knowledge base of the discipline (Carnevali, 1981). Based on this belief, many states are revising their nursing practice acts to include nursing diagnosis as a responsibility of the nurse (Guzzetta & Dossey, 1983). Nursing diagnoses can document the autonomy and accountability of nurses in their practice (Warren, 1983a). The diagnoses identify the domain of nursing; i.e., the service that nurses provide and the conditions that nurses may treat. Many nurses believe that through the use of nursing diagnosis, true professional status for nursing will be achieved (Gordon, 1982c). Identification of the requisites of the nursing diagnostic process is important as it identifies content and skills to be reflected in curricula, job descriptions, and professional performance evaluation programs.

The nature of nursing diagnoses is still ambiguous. Is it a cognitive process or just a list of phenomena nurses may treat independently of doctors? If it is a process, what are the requisites of the process and can the underlying dimensions of the process be determined? The language and concepts of nursing diagnosis and the process of diagnosing need to be developed to facilitate inquiry.

The purposes of this study were (a) description of the requisites of the nursing diagnostic process, (b) identification of the relevant dimensions of the nursing diagnostic process, and (c) identification of the perceptions that major groups of nurses hold in diagnosing patients' responses to actual or potential health problems. This was a descriptive study of the nursing diagnostic process and nurses' perceptions of the process.

Organization of the Study

This report is organized into five sections. Chapter I presents an overview of the problem and states the purpose of the study. Chapter II provides a review of the literature that identifies the common requisites and skills involved in the nursing diagnostic process. The theoretical framework of the role of perception in diagnostic reasoning is then discussed. Finally, studies that used analysis techniques similar to the ones used in this research or measured nurses attitudes about nursing diagnosis are presented. Chapter III discusses the method used for the development of the instruments; the source, selection, and description of the sample; the collection of the data; and the analytic methods. Chapter IV provides a presentation and analysis of data. Chapter V discusses the results, provides conclusions, and makes recommendations based on the findings of this study.

CHAPTER II

Review of the Literature

The review of the literature is divided into three parts: (a) Requisites of the Nursing Diagnostic Process, (b) Theoretical Frameworks of Perception, and (c) Studies of Perception. A review of current nursing literature generated a list of behaviors that are thought to be required in identifying a correct nursing diagnosis. The authors in the review are nursing educators and expert diagnosticians. Their perspectives have been reflected in their writing. As Dreyfus (1979) stated, "the person will experience his or her situations at all times through a perspective, but rather than consciously calculating this perspective or plan, it will simply present itself to him" (p. 19). Since the perspective of the nurse concerning diagnostic reasoning is important, a theoretical framework of perception is presented and discussed. Finally, a review of related studies--studies that support the use of the selected analysis techniques and studies that report nurses' attitudes about nursing diagnoses--is provided.

Requisites of the Nursing Diagnostic Process

Since 1973, nurses have engaged in an organized effort

to discuss the development of nursing diagnoses. Some believe that nursing diagnosis is a process that involves cognitive, affective, and psychomotor skills. A review of the literature identified skills and requisites in the cognitive process of nursing diagnosis. The selection of items for the measurement instrument created in this study was based on this section of the review of the literature.

First, a nurse must be able to differentiate between medical and nursing diagnoses. Gordon (1976) defines nursing diagnoses as clinical judgments, made by professional nurses, that "describe actual or potential health problems which nurses, by virtue of their education and experience, are capable and licensed to treat" (p. 1299; see Table 1 for a list of accepted diagnoses). The phrase "capable and licensed to treat" specifically excludes medical diagnoses. One difference between medical and nursing diagnoses is the interventions that are required. The nurse diagnoses and treats only those problems that can be treated independently (Hausman, 1980). A nursing diagnosis excludes problems that are treated with prescription drugs, surgery, radiation, or other modalities legally defined by the practice of medicine (Guzzetta & Dossey, 1983). These distinctions are needed so that nurses do not err and diagnose medical problems (Potter & Perry, 1985).

Table 1

List of Nursing Diagnoses Accepted for Clinical Testing by
the North American Nursing Diagnosis Association

Activity Intolerance
 Airway Clearance, Ineffective
 Anxiety
 Bowel Elimination, Alterations in: Constipation
 Bowel Elimination, Alterations in: Diarrhea
 Bowel Elimination, Alterations in: Incontinence
 Breathing Patterns, Ineffective
 Cardiac Output, Alterations in: Decreased
 Comfort, Alterations in: Pain
 Communication, Impaired Verbal
 Coping, Ineffective Individual
 Coping, Ineffective Family: Compromised
 Coping, Ineffective Family: Disabling
 Coping, Family: Potential for Growth
 Diversional Activity, Deficit
 Family Processes, Alteration in
 Fear
 Fluid Volume, Alteration in: Excess
 Fluid Volume Deficit, Actual
 Fluid Volume Deficit, Potential
 Gas Exchange, Impaired
 Grieving, Anticipatory
 Grieving, Dysfunctional
 Health Maintenance Alteration
 Home Maintenance Management, Impaired
 Injury, Potential for
 Knowledge Deficit (specify)
 Mobility, Impaired Physical
 Noncompliance (specify)
 Nutrition, Alterations in: Less than Body Requirements
 Nutrition, Alterations in: More than Body Requirements
 Nutrition, Alterations in: Potential for More than Body
 Requirements
 Oral Mucous Membrane, Alterations in
 Parenting, Alterations in: Actual
 Parenting, Alterations in: Potential
 Powerlessness
 Rape-Trauma Syndrome

(table continues)

Table 1 (continued)

List of Nursing Diagnoses Accepted for Clinical Testing by
the North American Nursing Diagnosis Association

Self-Care Deficit (specify level; Feeding,
Bathing/hygiene, Dressing/grooming, Toileting)
Self-concept, Disturbance in
Sensory Perceptual Alterations
Sexual Dysfunction
Skin Integrity, Impairment of: Actual
Skin Integrity, Impairment of: Potential
Sleep Pattern Disturbance
Social Isolation
Spiritual Distress (Distress of the Human Spirit)
Thought Processes, Alterations in
Tissue Perfusion, Alteration in
Urinary Elimination, Alteration in
Violence, Potential for

Note. From Classification of Nursing Diagnoses:
Proceedings of the Fifth National Conference (p. 470) by M.
J. Kim, G. K. McFarland and A. M. McLane (Eds.), 1984, St.
Louis: C. V. Mosby.

Gordon (1976) stated, "The process of clinical diagnosis involves collecting, clustering, weighing, and validating information" (p. 1300). Isolated signs and symptoms must be analyzed so that inferences about properties not observed or further cue searches can occur. From analysis of clusters of cues and isolated signs and symptoms, the nurse begins to consider alternative hypotheses to test in order to arrive at a diagnosis. The nurse uses inductive and deductive reasoning in this probabilistic task of diagnosis (Gordon, 1982c). This clinical reasoning is the process underlying strategies,

hypotheses, and decisions about the collection and use of information based on inferences from these cues and from the nurse's knowledge base. Thus, perceptual and propositional inferences guide the analysis of the meaning of the cues which then leads to interpretation (Gordon, 1982c). Without this analysis of signs and symptoms, there is fragmentation of nursing care and a lack of identification of patient problems (Perry, 1982). When nurses recognize changes in patients that call for interventions but fail to understand what conditions cause the changes or what other signs and symptoms to observe, diagnosis of the patient's responses will not occur. Without the accurate nursing diagnosis, treatment may vary from inadequate to unsafe (Aspinall, 1976). Analysis of the signs and symptoms is imperative for diagnosis to occur (Hausman, 1980).

Another point of view is that the nurse categorizes pertinent data that reflect alterations. When these alterations have been grouped and labeled (interpreted), they constitute the nursing diagnosis (Perry, 1982). Interpretation of the data must be based on the confidence the nurse has in the validity and reliability of the cues that define the nursing diagnostic category. Since diagnosis is probabilistic, attention to critical cues supported by the patient's verbal report and interpretation lead to a propositional inference based on reasoning skills. Interpretation is the logical step following analysis. The

nurse must identify or label what has been observed and analyzed (Gordon, 1982c).

Information clustering or the ability to see relationships among the patient's signs and symptoms is part of the diagnostic process (Gordon, 1982c). The clustering is a cognitive process in which pertinent data are categorized to reflect alterations (Perry, 1982). Not only are signs and symptoms grouped together, but relationships among them are noted (Hausman, 1980). Once this step has been taken, the nurse is ready to analyze them to see if they fit a pattern that will lead to a diagnosis (Shoemaker, 1979). Based upon data collection and analysis, an interpretation is made about the meaning of the cues. The interpretation leads to the identification of the nursing diagnosis (Hausman, 1980).

Data collection is not enough for diagnosis, the nurse must also have knowledge about disease processes in order to focus the cue search and to cluster the data. This knowledge is complex and includes theories concerning patient responses to health problems (Aspinall & Tanner, 1981; Hausman, 1980). Some of the basic tools used in determining a nursing diagnosis are perception, memory, and use of abstractions (Gordon, 1982c). Knowledge of disease processes contributes to the ability to identify the etiology of the diagnosis--part of the total statement.

Education provides this knowledge base (Carnevali, Mitchell, Woods, & Tanner, 1984; Gordon, 1976).

Carnevali (1983) has identified five different ways that this knowledge is used in clinical diagnostic decisions. First, knowledge can arouse attention to certain cues that are present in the situation and no attention to other cues. It also assists in assigning significance or urgency to some cues. Second, knowledge assists the diagnostician in beginning to cluster or "chunk" cues that appear to be related. Third, the knowledge network can be activated when the diagnostician recognizes certain cues or patterns of cues. Fourth, knowledge provides a model to guide cue searches to determine if a problem or condition exists. Fifth, knowledge provides a profile of closely related phenomena so that the diagnostician can test alternate hypotheses. This testing facilitates the person's ability to check for closeness of fit of the cues to the alternate hypotheses.

Nursing concepts describe patient responses to health and illness and nurse-patient interactions. Knowledge of these concepts is necessary for interpretation of a patient's signs and symptoms. In this respect, the knowledge of patient responses is used in the same way as knowledge of disease processes: to focus cue searches and provide a model for analysis and interpretation. Furthermore, data collection must be based on a model of

nursing in order to generate nursing diagnoses. Many nurses, however, base their data collection on the components of the medical model. If the medical model is used (see Table 2), medical diagnoses will be generated and the nurse will become frustrated in the effort to identify nursing diagnoses (Guzzetta & Dossey, 1983). The medical model was designed, after all, to serve this purpose--to identify the medical diagnosis and to select treatment. "A basic competency in nursing diagnosis is the knowledge and ability to use a nursing model to guide collection of a nursing data base" (Gordon, 1982a, p. 49). To this end, Gordon (1982c) has developed an assessment tool (see Table 3) that focuses on the nursing domain when collecting data. A unified nursing model has yet to be accepted by all nurses; however, Gordon has tried to develop an assessment tool that could be used by nurses who believe in a variety of nursing theories that describe the nursing model. There is even some argument as to whether or not there should be one nursing model at this stage of development in the nursing profession (Chinn & Jacobs, 1983; Kim, 1983; Meleis, 1985).

To practice nursing, an effective nurse would have knowledge about the diagnostic categories (Perry, 1982). Knowledge of the categories creates an expectancy (as defined by Neisser, 1976) in the nurse concerning cue relationships and cue presence. Another way of describing

Table 2

Components of a Client Assessment According to a Medical Model

Chief Complaint and Present Illness
 Past, Family, Social, and Occupational History
 Mental Status
 Integumentary System
 Head, Face, and Neck
 Eyes
 Ears, Nose, and Throat
 Pulmonary System
 Cardiovascular System
 Gastrointestinal System
 Genitourinary System
 Nervous System
 Musculoskeletal System
 Hematological System
 Endocrine System

Note. From Physical Diagnosis: The History and Physical Examination of the Patient (p. 12, 20, 36, 64, 71, 99, 149, 189, 242, 304, 330, 378, 429) by J. A. Prior and J. S. Silberstein, 1977, St. Louis: C. V. Mosby.

the development of an expectancy phenomenon is to say that a schemata has been activated. The nurse is able to match the signs and symptoms observed in the patient with the signs and symptoms in each diagnostic category to check for fit. When a nurse categorizes signs and symptoms, analysis and interpretation follow. This activates a category network (an information processing model), or knowledge about the components of that diagnostic category which leads to the ascription of meaning and the development of appropriate nursing interventions (Gordon, 1982b, 1982c).

Table 3

Gordon's Functional Health Patterns for the Nursing Domain

Health-Perception-Health-Management Pattern
 Nutritional-Metabolic Pattern
 Elimination Pattern
 Activity-Exercise Pattern
 Cognitive-Perceptual Pattern
 Sleep-Rest Pattern
 Self-Perception-Self-Concept Pattern
 Role-Relationship Pattern
 Sexuality-Reproductive Pattern
 Coping-Stress-Tolerance Pattern
 Value-Belief Pattern

Note. From Nursing Diagnosis: Process and Application (p. 81) by M. Gordon, 1982, New York: McGraw Hill.

This knowledge is the category's or diagnosis' defining characteristics (see example in Table 4). Since diagnosis is a probabilistic task, the nurse must learn the most reliable and distinctive signs and symptoms (defining characteristics of the diagnosis) in order to diagnose and place confidence in the diagnosis (Gordon, 1976; Matthews & Gaul, 1979). Each of these critical defining characteristics must be present for the nursing diagnosis to be made (Guzzetta & Dossey, 1983).

Another set of skills underlying the diagnostic process is the ability to collect data. The nurse needs skills in interpersonal relationships in order to establish trust relationships that enhance the ability to collect valid and reliable data from the patient. The collection of a

Table 4

A Nursing Diagnostic Category with Defining Characteristics

ACTIVITY INTOLERANCE

Etiology

- Bed rest/immobility
- Generalized weakness
- Sedentary life-style
- Imbalance between oxygen supply/demand

Defining characteristics

- Verbal report of fatigue or weakness*
- Abnormal heart rate or blood pressure response to activity
- Exertional discomfort of dyspnea
- Electrocardiographic changes reflecting anhythmias or ischemia

Note. From Classification of Nursing diagnoses: Proceedings of the Fifth National Conference (p. 472) by M. J. Kim, G. K. McFarland and A. M. McLane (Eds.), 1984, St. Louis: C. V. Mosby.

*Critical defining characteristic.

patient's psychosocial data, history of chief complaint, and activities of daily living is followed by a physical examination (Gordon, 1982c; Hausman, 1980; Shoemaker, 1979). The data base that is developed by using these assessment skills is further enhanced by the validation of the diagnostic interpretation with the results of laboratory data (Guzzetta & Dossey, 1983). These skills-- communication, interviewing, physical examination, establishing trust, and interpretation of laboratory results--are important in the diagnostic process since this process encompasses information gathering, judgment, and labeling of the health problem (Gordon, 1982a).

Another requirement in the diagnostic process is collaboration with the patient to determine the validity of the diagnosis. The diagnosis is not only based on the nurse's perception of the patient's problem, but also on the patient's perception of the problem (Hausman, 1980). The patient's motivation must be considered if the outcome of care is to be positive (Gordon, 1982c).

Once diagnostic statements have been developed, priorities must be considered. Patients admitted into hospitals today are more critically ill than in the past. They have many needs that require nursing care. The nurse must determine which diagnosis is critical and which diagnosis may be addressed later (Stevens, 1985). Without this step, care of the patient may end in failure and frustration because the nurse did not consider what was important and what could realistically be achieved (Shoemaker, 1979). Nurses functioning in critical care units have an increased need to be able to state diagnoses in levels of acuity to enhance their specificity and to account for their interrelationships (Guzzetta & Dossey, 1983).

Most resistance to using the nursing diagnosis taxonomy comes from lack of knowledge and skill (Brooks, 1983; del Bueno, 1983). Brooks (1983) and del Bueno (1983) recommend that successful use comes with experience and support from clinical experts/consultants (Brooks, 1983; del Bueno,

1983). Pocket-sized manuals are available that list and define the nursing diagnoses. Defining characteristics are identified for each diagnostic category, and some manuals even have examples and case studies (Carpenito, 1983, 1984; Doenges & Moorehouse, 1985; Gordon, 1982c; Kim, McFarland, & McLane, 1984; Loxley & Cress, 1983). Use of the manuals, vignettes, and case studies in teaching nurses to diagnose increases their familiarity and reliability with the diagnostic process. The exercises alone do not increase skill; therefore, supervised clinical practice needs to occur. In this way the diagnostic process is taught and experience and confidence are gained (De Gasperis, 1983; Fredette & O'Connor, 1979; Gordon, 1982a).

Forms of record keeping may also facilitate the use of nursing diagnoses. An example of this is Weed's (1970) Problem-Oriented Record System model which documents the patients' treatment and progress in notes organized according to the acronym SOAP (subjective data, objective data, assessment of condition, and plan). The subjective and objective data collected for each problem are charted under the subjective (S) and objective (O) categories of the SOAP format. The diagnostic statement and etiology--analysis and interpretation of the data--are charted under the assessment (A) category. The final category is the nurse's plan (P) of care. This format clusters the data and cognitive processes the nurse uses to diagnose the problems.

There is one note for each separate diagnosis. Each successive note, pertaining to that diagnosis, documents the patient's responses since the last documentation period. This method organizes the notes and allows a quick review of the course of each problem, which assists the nurse's ongoing evaluation of the patient's responses (Gordon, 1976; Merkel, 1982).

When the realm of nursing is clearly identified, the accountability for the process and outcomes of nursing practice can be determined. When nursing diagnoses are used, within the context of nursing process (scientific problem solving process), it is suggested that the quality of nursing care improves because the focus is on problems that nurses can treat (Hausman, 1980). The nursing diagnostic label provides the framework for developing and measuring standards of nursing care instead of using medical diagnoses to cluster patient populations for these activities (Gordon, 1982c; Warren, 1983a). Commitment to quality nursing care includes the use of nursing diagnosis and, by placing value on that activity, increases the nurse's willingness to learn the diagnostic process and taxonomy.

Since attempts to formalize what constitutes a nursing diagnosis began a relatively short time ago, participation in professional development activities is crucial in developing these skills. Many methods have been suggested

for this skill development. Case studies with diagnostic exercises are published for nurses to use in self-directed study (Shoemaker, 1979). Inservice programs with individual follow-up have been proposed (Brooks, 1983; Morris, 1982). Seminars and workshops for practicing nurses and students have been designed and evaluated for effectiveness (Gordon & Sweeney, 1979). The use of change theory and clinical consultation has been developed to decrease resistance and to increase capabilities in the diagnostic process (Warren, 1983b). The nurse's personal commitment to learning and willingness to risk new behaviors are critical to learning and practicing nursing diagnoses.

Finally, a professional commitment to using nursing diagnosis is needed before nurses will engage in this activity. Labeling what nurses do and defining legal accountability describe professional practice (Brooks, 1983). The taxonomy facilitates identification and documentation of activities that nurses perform that require the specialized body of knowledge called nursing. If this information is not communicated to others, nursing's scope of practice will decline and become technical in orientation (Hausman, 1980). Unless nurses can name the phenomena they treat, nursing will remain a vague entity to the public, to other health professionals, and to nurses themselves (Gordon, 1976). Professionalism and labeling of phenomena are highly linked. Professional values influence clinical

decision making and professional practice (Lancaster & Beare, 1982).

Based on the above literature review, a list of requisites involved in the nursing diagnostic process was derived. A questionnaire was developed to be used in identifying the underlying dimensions of the nursing diagnostic process (see Appendix A). Subsequently, a pilot study was conducted to establish the reliability and validity of the questionnaire.

Theoretical Frameworks of Perception

The concept of perception is viewed in terms of two theories--Neisser (1976) and Forgas and Melamed (1976). These theorists are similar in their views and have a cognitive aspect to their theories. They describe how perceptions can influence cognition, values, and performance.

Neisser (1976) stated, "Perception is an activity that takes place over time during which the anticipatory schemata of the perceiver can come to terms with the information offered by his environment" (p. 9). Discovering what the environment is really like and adapting to it is facilitated by perception. While cognition is the activity of knowing, perception is where cognition and reality meet. Perception and cognition together inform and transform the perceiver. Perception depends on the skill and experience of the

perceiver, in other words, what is known in advance. Schemata, or pre-existing cognitive structures, direct perceptual activity and are modified as the activity occurs (Neisser, 1976, p. 13). Thus, perceiving changes the perceiver. The schemata undergo accommodation and the perceiver is altered or developed by what has been perceived. Perceptions are unique to the individual due to the perceptual process. The perceiver attends only to events for which there are schemata and ignores everything else (Neisser, 1976, p. 80). According to Neisser (1976), "We choose what we will see by anticipating the structural information it will provide" (p. 87). Thus, perceptions of individuals are similar only to the extent that schemata, past experiences, and skills are similar. Individuals with different schemata, experiences, and skills perceive the environment differently, and therefore, adapt or behave differently. The perception of what is required for accurate diagnostic activity is a function of the perceptual set of the perceiver or groups of perceivers.

Forgus and Melamed (1976) consider perception "within the context of man's general need to adapt to his environment so that he can cope effectively with the demands of life" (p. 1). It is a process of receiving and extracting information from the environment. Learning, memory, and thinking are subsets in the perceptual process. Learning is the process of acquiring information through

experience. This information is stored in memory. Results of learning facilitate more acquisition of information since the stored sets of information become the models against which cues are judged. Thinking is the activity that occurs when the individual is problem solving. Forgas and Melamed (1976) summarize these relationships by stating:

As the perceptual set is broadened and becomes more complex and richly patterned with experience, the individual becomes capable of extracting more information from the environment. The process starts with simple reflexive action at birth and grows through maturation and learning to produce more powerful sets, which are mediated by concepts; hence thinking becomes more expert.
(p. 3)

The individual, when exposed to a stimulus, learns. This learning is then stored in memory and modifies the individual. When the individual is exposed to the same stimulus again, the perception is different due to the modification. Thinking, as a result of learning, also modifies the individual so that perception of the same stimulus is different. This process is bidirectional. Exposure, learning, and thinking all modify the individual and the way that the stimulus is perceived across time.

Forgas and Melamed (1976) have developed a model that describes a hierarchy of perceptual levels arranged from the simple to the complex. Level 1 is the detection of stimulus energy and a discrimination of change in stimulus energy. Level 2 is the discrimination of a unified brightness, figural unity, and orientation as separate from the

background. Level 3 is the resolution of finer details, resulting in a more differentiated figure. Level 4 is the identification and recognition of a form or pattern. Level 5 is the manipulation of an identified form which happens, for example, in problem solving, social perception, and where perception is related to values and motivation. As the levels are ascended, more time is required to complete the task and the role of memory becomes greater. The increased time required for the task is explained by the time needed to process the stored information, not the need for increased stimulus exposure.

Using the model of the cognitive, psychomotor, and affective domain taxonomies, Moore (1970) developed a taxonomy for the perceptual-motor domain. She defines perception:

As a process of information extraction, and its domain may be considered to comprise all forms and products of behavior concretely related to information extraction and to be distinguished from the cognitive domain since the latter refers mainly to judgments made from memory and to mental operations performed in the absence of the stimulus. (Moore, 1970, p. 382)

The domain, partially based on Forgas' earlier work, consists of five levels. Level five, perceptive performance, is of interest to this study. Moore (1970) defines it as:

Behavior that demonstrates sensitive and accurate observation, ability to make complex decisions where many factors are involved, and ability to change ongoing behavior in response to its

effectiveness: (a) demonstration of a successful analytical or global approach to problem solving in all areas of endeavor; (b) diagnostic ability with respect to mechanical or electrical systems, medical (nursing) problems, artistic products, etc.; (c) insight into personal, social, and political situations where awareness of attitudes, needs, desires, moods, intentions, perceptions, and thoughts of other people and oneself is indicated; (d) demonstration of artistry and creativity in any medium; (e) other. (p. 386)

High levels of perceptual functioning are required to be able to diagnose patient responses to actual or potential health problems. Awareness of attitudes in conjunction with personal situations--nursing diagnostic reasoning activities--is also included in this level, thus indicating its importance to the task of diagnosis.

Individuals are subject to a variety of forces that affect the way in which decision making is approached. Two of these forces are perception of the problem and personal value systems. Lancaster and Beare (1982) state, "a person's perception often affects what is observed" (p. 163). This perception is influenced by physiological and psychological status; cultural, social, and philosophical background; the accuracy of sense organs; past experience; and interests, attitudes, and knowledge. Lancaster and Beare (1982) further state, "Values refer to a person's set of beliefs, attitudes, and opinions about the worth or significance of a thought, object, or behavior" (p. 163). The value system is learned through interactions with family, peer groups, and teachers. The role of decision

making in nursing and its requisites is affected by the individual's values.

Culture also affects the direction of perception. Hallowell (1951) states that the "human organism becomes selectively sensitized to certain arrays of stimuli rather than others as a function of the individual's membership in one cultural group rather than another whatever other factors are involved" (p. 168). Forgas and Melamed (1976) agree and further add that group experience/membership provides different sets (schemata, using Neisser's term) against which incoming information is always coded or interpreted. They further state that the "relevant dimensions are shifted in the direction of the perceiver's bias which might be situationally or experimentally determined" (p. 350). Membership in a specific group may lead to differences in perceptions about what is required during accurate diagnostic activity in nursing. Differences in experience, maturation, learning, problem solving, ability, values, and motivation (variables in Forgas and Melamed's model) may also lead to differences in perceptions across individuals and groups.

Eiser and Stroebe (1972) state that an individual's behavior is not determined by stimuli or situations as they "really" are but depends on how the individual interprets them. This interpretation is based on the individual's perception of the stimuli or situation. Furthermore, the

individual seeks to simplify the perceptual world by categorizing stimuli. Existing schemata are modified so as to enable the individual to anticipate and to predict the relationship of one element in the cognitive structure to another. The process facilitates social judgments, which are based on the individual's perception of the stimuli or situation.

Groups share common perceptions or social attitudes. These are obtained during the socialization process that occurs while becoming and remaining a group member. Sherif and Sherif (1956) state that "attitudes are formed in relation to situations, persons, or groups with which the individual comes into contact in the course of his development" (p. 490). These attitudes, once formed, lead the individual to respond in a characteristic way to these or related situations, persons, or groups. This is the function of the socialization process. These social attitudes (group perceptions) define what is preferred, expected, and desired. They also define what is undesirable and what is to be avoided. Social attitudes of a group member formed as a result of a socialization process are shared by members of the reference group. They are consistent responses by the members of the group to social stimulus situations. Group members will have similar attitudes (perceptions) toward the same stimulus set. The perception of an event, concept, or activity influences how

the individual will value and interpret the phenomena. Members of a group, due to the socialization process, tend to have similar perceptions about the phenomena in question. Exploration and description of perception and the effects of group membership on perception are noteworthy when trying to discover or define the dimensions of a cognitive process.

Studies of Perception

Various researchers have studied perception and how it has influenced evaluation, program development, job descriptions, reward systems, and so forth. They have used a variety of methods and analyses. While studies of nurses' perceptions of the nursing diagnostic process have not been conducted, the following studies support the approach for this study to describe the underlying dimensions of the process and the perceptions held by five different groups of nurses.

Crawford and Bradshaw (1968) studied the perceptions of faculty, university administrators, and university students about effective university teachers. First, 300 students were asked to describe the characteristics they considered to be most essential to teaching effectiveness. Thirteen statements were produced that corresponded closely with the literature. These statements were arranged for a random paired comparison analysis and presented to 158 undergraduate students, 50 faculty members, and 30

university administrators. The completed questionnaires were sorted into ten groups; dividing students by sex and grades, faculty by rank, and administrators by level designation. There was significant agreement between judges in each of the ten groups. The judgments for each group, though, differed significantly from the combined judgments of the population. Crawford and Bradshaw (1968) state, "Not only do different levels of faculty view the teacher performance differently, but the students as well as administrators and deans, differ in their judgment of the characteristics presumed essential to effective teaching" (p. 1083). This poses a problem for the faculty member who tries to please students, to be judged favorably by associates, and to qualify for promotion since all three groups have different perceptions of teaching effectiveness. Characteristics of effective teachers may be quantified and studied, but interpretation should be made with reference to who the judging group is, as perceptions of a characteristic's importance differ.

Montenegro (1978) investigated student perceptions of college faculty to see if they could be used as predictors of teacher effectiveness. The tool, Student Evaluation of Teacher Effectiveness Questionnaire, was administered to 20 randomly selected undergraduate classes (315 students) at the University of Hawaii. An intercorrelation matrix depicted the relationships of variables (five subscale

scores) with each other and with the criterion, the instructor's overall effectiveness. McQuitty's (1957) elementary linkage analysis, a clustering methodology, was used to explore the relationships in the correlation matrix. The general linear model was used to test the hypotheses of the study. Montenegro (1978) found that the actual perceptions of the teacher on certain characteristics accurately predicted the students' perception of overall teacher effectiveness while other hypotheses were not supported. The scaling method, McQuitty's (1957) elementary linkage analysis, assisted in interpreting the findings by revealing clusters and correlation patterns of the characteristics in the questionnaire.

Perceptions of individuals have also contributed to the confirmation of the use of psychological models in the domain of affiliative behavior (Michela, Peplau, & Weeks, 1982). In testing the applicability of Weiner's Attribution Model to lay explanations for the causes of loneliness, 180 college students were asked to make judgments on various items. The items judged were developed from the three dimensions of the attribution model: internality, stability, and controllability. By using multidimensional scaling analysis, Michela et al. (1982) found that the dimensions of internality and stability were perceived by the students. The dimension of controllability was not perceived, but was embedded in the other two dimensions.

This confirmation of the two dimensions supported the use of Weiner's model in the domain of affiliative behaviors. Multidimensional scaling was used in this example to test hypotheses generated by the model.

Shoemaker (1984) used a different technique to identify nurses' perceptions. She proposed to identify (a) the essential characteristics of a definition for the term nursing diagnosis, (b) features that were nonessential to the term but explained its meaning, and (c) features that were not appropriate. The purpose was to develop a consensual definition of a nursing diagnosis among a large group of nurses. She felt that the work of the National Group for the Classification of Nursing Diagnoses could be facilitated if there was agreement on the definition of nursing diagnosis. A review of the literature identified 70 characteristics. The Delphi technique was used to seek consensus. One-hundred-two nurses (92% return rate) completed three Delphi rounds. The resultant definition was:

A nursing diagnosis is a clinical judgment about an individual, family, or community that is derived through a deliberate, systematic process of data collection and analysis. It provides the basis for prescriptions for definitive therapy for which the nurse is accountable. It is expressed concisely and includes the etiology of the condition when known. (Shoemaker, 1984, p. 109)

This definition has assisted many nurses in determining what a nursing diagnosis is and in providing direction for

further research on diagnostic labels. The definition is based on the consensus of the perceptions of the 102 participants in the study.

Halfman and Pigg (1984) examined the perceptions of nurses of the problems that patients with rheumatic disease have. The researchers reviewed 51 plans of care to identify nursing diagnoses, etiologies, defining characteristics, expected outcomes of care, and nursing interventions. These were used to determine the nurses' perceptions of problems. All of the nurses on a 32-bed rheumatology unit participated. All were given a list of nursing diagnoses accepted at the Fourth National Conference for the Classification of Nursing Diagnoses (Kim & Moritz, 1982), and data were collected over a 30-day period. The nurses perceived that the most common/important nursing diagnoses were (a) alterations in comfort, (b) knowledge deficit, (c) sleep-pattern disturbance, (d) self care deficit, (e) impaired skin integrity, (f) impaired mobility, and (g) noncompliance. The nurses also identified the most common etiologies, defining characteristics, expected outcomes, and nursing interventions for each diagnosis. The results of this study affected the practice of nursing by becoming the determinant of staff development activities, of quality assurance programs, and of standards of nursing care. The researchers applied this information, as committee members,

to the writing of the American Nurses' Association Standards of Practice for Rheumatic Disease Nursing (in press).

Meade and Kim (1984) studied nurses' perceptions of the problems associated with documentation of nursing diagnoses. Sixteen nurses, in one hospital, were asked to respond to a questionnaire in which they were asked to rate their perceptions of difficulties in documentation. All felt they did not have enough time for documentation, 14 felt that short staffing was the problem, and 10 felt that provision of care was more important than documentation. Yet all 16 nurses took the time to complete the questionnaire (documentation). Subsequent recommendations were to develop policies to hold the individual nurse accountable for documentation, to increase emphasis on documentation in educational programs, to develop staffing patterns to insure that quality care can be given, and to develop hospital philosophies that value documentation as well as care. Thus, perceptions of nurses and interpretations of their perceptions have had direct impact on the policies, implementation, and development of nursing care delivery.

Martin and York (1984) measured nurses' "valuing" of care plans. The index of the perception or valuing was the incidence of nursing diagnoses on care plans and how useful the nurses perceived the care plans to be in care, communications, and charting. In one hospital, 156 nurses and their care plans were studied in two samplings that were

two months apart. The six diagnoses to have the highest incidence were alteration in comfort, ineffective breathing pattern, knowledge deficit, impaired mobility, potential for injury, and impaired skin integrity. These suggest the areas of the highest priority in the hospital. The list was used to provide guidelines for development of educational programs, problems/structures of the quality assurance program, and development of research questions. In the second part of the study, 87% of the nursing diagnoses used were drawn from the national conference list. The nurses' perceptions of usefulness were as follows: 82% found care plans helpful, 68% used them when they charted, 85% used them when they communicated with other health team members, and 82% used them as part of giving patient care. Some diagnoses from the conference list never appeared in the plans of care. It was thought that they might represent complex problems that exceeded the staff nurses' assessment and identification skill or that they lacked understanding of the label. Again, perceptions of these nurses influenced major decisions regarding the provision of nursing care.

A study identifying the perceived competency behaviors for the clinical nurse specialist role was conducted by Wyers and Grove (1983; Wyers, Grove, & Pastorino, 1985). They were concerned that there was much disagreement among the educators of clinical nurse specialists, practicing clinical nurse specialists, and the administrators of

clinical nurse specialists concerning these behaviors and the practice role. They wanted to identify the areas of agreement and disagreement among the groups concerning the behaviors and the role. A list of 40 essential behaviors was sent to 160 nurse administrators with a 38% rate of return, 233 graduate nurse educators with a 49% return, and 110 clinical nurse specialists with a 61% return. Factor analysis generated a four factor solution. The subroles identified were practitioner, teacher, researcher, and consultant. No significant differences were found among the groups with respect to subrole identification. Wyers and Grove (1983) stated:

These behaviors can guide the nurse administrators in effectively utilizing and evaluating clinical nurse specialists. Graduate nurse educators can use these behaviors in curriculum development. Clinical nurse specialists can clarify their role and develop a job description for clinical settings. (p. 5)

The identification of individual and group perceptions concerning the various phenomena in nursing practice is critical for nursing's growth and the ability to describe nursing's domain of practice.

Summary

The review of the literature was organized in three major sections. First, the nursing literature concerning requisites of the nursing diagnostic process was explored to identify behaviors/requisites that were essential in

determining a nursing diagnosis. The review was limited to nursing literature. The literature of decision making theory and research was reviewed. The review supported the selection of items included on the measurement instrument used in this study. Second, the theoretical frameworks of perception were discussed: the parameters that affect the perception of an event or task and the way that perception can influence cognition, values, and performance. Third, studies of perception research were presented. This supported the selection of analysis techniques and reported nurses' perceptions/attitudes concerning nursing diagnosis and nursing diagnostic reasoning.

The literature revealed many studies designed to measure nurses' perceptions concerning the definition of nursing diagnosis or of the defining characteristics of a particular nursing diagnosis. No studies, however, were found that investigated what nurses perceived to be involved in the nursing diagnostic process. Identification of the nurses' perception of the nursing diagnostic process was the purpose of this study.

Statement of the Problem

Although research concerning concept attainment strategies and the process of clinical judgment has been conducted, the present investigation was significant because no one had identified what nurses perceive is important in

the process. The identification of these perceptions is important for the development of curriculum, staff education programs, job performance evaluation tools, and consensus within the profession about the required skills, knowledge, and values involved in identifying nursing diagnoses.

Specifically, the following problems were investigated:

1. What are the underlying dimensions of the diagnostic process for nurses?
2. What are the preferences of the different groups of nurses for the requisites of the nursing diagnostic process?
3. Using the derived dimensions, can the orientation of the different groups of nurses to the diagnostic process be predicted?

CHAPTER III

Methodology

The three purposes of this study were (a) identification of the requisites or items in the nursing diagnostic process, (b) identification of the structures in the nursing diagnostic process, and (c) identification of the perceptions of this process held by five different groups of nurses--nursing faculty, nursing students, nursing administrators, staff nurses, and nursing diagnostic experts. The discussion is presented under the following headings: Instrument Development, Participants, Procedure, Data Analysis, Assumptions, and Limitations.

Instrument Development

The requisites of the nursing diagnostic process were discussed in Chapter II. No studies were found that had identified them, nor were any instruments found that measured nurses' perceptions about the diagnostic process. A method of measurement of nurses' perceptions of the nursing diagnostic process was needed.

Social judgments (perceptions of group members) have been studied via attitude scaling (Dunn-Rankin, 1983; Eiser & Stroebe, 1972; Schiffman, Reynolds, & Young, 1981; Sherif & Hovland, 1965; Thurstone, 1959). Dunn-Rankin (1983)

described scaling as being concerned with classes of psychological objects about which people can have some attitude or perception. Scaling may be used to assist in constructing questionnaires and identifying their subscales, to describe the relationships of the objects directly, or to test research hypotheses (Dunn-Rankin, 1983; Schiffman, Reynolds, & Young, 1981). If scales are to be constructed, then judgments about the similarities of the objects to be scaled must be determined. If a description of the relationships of the objects instead of a scale is required, then preferences must be determined. Judgments and preferences require different types of tasks. In a judgment task, the participant must determine how much of an attribute an object has. This is then converted to similarity data for analysis. A preference task requires making a choice between two objects or rank ordering a set of objects. Using scaling techniques, a questionnaire was developed and tested in a pilot study. The steps in developing a measurement instrument or questionnaire will be discussed: Selection and Scaling of Items, Establishment of Validity, and Determination of Reliability.

Selection of Items.

Selection of psychological objects is determined by the attitude that is to be measured--in this case, the attitudes or perceptions of nurses concerning the nursing diagnostic

process. The items for the questionnaire were obtained by three methods. First, a list of requisites of the nursing diagnostic process based on the researcher's personal experience and knowledge was constructed. This expertise was developed during eight years of teaching nursing diagnoses to students and practicing staff nurses, consulting with hospitals on implementation of nursing diagnoses, conducting workshops on nursing diagnoses, writing articles, and conducting research on nursing diagnoses. This list helped to focus the review of the literature by determining alternate categories/labels to be used in conducting computerized literature searches. Second, items were selected from major textbooks and professional journal articles written about the nursing diagnostic process. Third, a list was derived by asking eight graduate students in nursing to describe the nursing diagnostic process and to identify the skills needed to engage in the process. These eight graduate nursing student had between three and twelve years of clinical experience and had completed a graduate level course on nursing diagnosis. Four of the eight graduate nursing students had begun teaching and consulting on nursing diagnosis. During this process, duplicate items were eliminated as they were discovered. The list was then condensed further by using a criterion of two references in the literature for inclusion. When items appeared to overlap, the broader or more

inclusive requisite was retained. This resulted in a list of 22 requisites presented in Table 5.

In the pilot study, the participant was asked to make judgments about and to indicate preferences for each of the items on the questionnaire. For the task of judgment in part one of the questionnaire, the participant chose a number between one and nine to indicate how much of the skill, ability, knowledge, or commitment a nurse needed in order to be able to determine a nursing diagnosis. The second task of indicating preferences required that the items be presented in a paired comparison format which asks that choices be made as to which one is more important. With 22 items, this would require the participant to respond to 231 pairs of objects. After responding to 15 or more objects fatigue becomes a problem (Dunn-Rankin, 1983). To offset this problem, Cochran and Cox (1957) developed the balanced incomplete block design to obtain the same information and yet have the participant respond a fewer number of times. The most effective Balanced Incomplete Block design was composed of 21 items and five ranks. Since the original list comprised 22 items, one item needed to be deleted. The procedure used to delete the item is discussed in the following section--Scaling of Items.

Table 5

Questionnaire Items as Referenced in the Literature

-
1. Ability to see relationships between the patient's signs and symptoms (Gordon, 1976, 1982c; Hausman, 1980; Hickey, 1984; Perry, 1982)
 2. Knowledge of disease processes (Brooks, 1983; De Gasperis, 1983; Fredette & O'Connor, 1979; Hickey, 1984; Warren, 1983b)
 3. Skill in techniques of physical assessment (Fredette & O'Connor, 1979; Gordon, 1982c; Hausman, 1980; Perry, 1982)
 4. Experience in using nursing diagnoses (Aspinall, 1976; Gordon, 1976, 1982c; Hausman, 1980; Perry, 1982; Shoemaker, 1979)
 5. Ability to determine priorities between different diagnoses (Gordon, 1976; Merkel, 1982; Shoemaker, 1979)
 6. Ability to write "SOAP" notes (Field, 1979; Gordon, 1982c; Guzzetta & Dossey, 1983; Hausman, 1980; Merkel, 1982; Shoemaker, 1979)
 7. Skill in psychosocial assessments (Aspinall, 1976; Fredette & O'Connor, 1979; Gordon, 1982a; Guzzetta & Dossey, 1983)
 8. Commitment to furthering quality nursing care (Gordon, 1976; Guzzetta & Dossey, 1983; Mundinger & Jauron, 1975)
 9. Ability to analyze the patient's signs and symptoms (Aspinall, 1976; Gordon, 1976, 1982c; Hausman, 1980; Hickey, 1984; Shoemaker, 1979)
 10. Participation in professional development activities, e.g., reading, workshops (Brooks, 1983; Field, 1979; Gordon, 1976, 1982c; Hickey, 1984; Morris, 1982; Warren, 1983b)
 11. Knowledge about the different diagnostic categories (Gordon, 1976, 1982c; Guzzetta & Dossey, 1983; Hausman, 1980; Shoemaker, 1979)
 12. Skill in interpersonal relationships (Field, 1979; Guzzetta & Dossey, 1983)
 13. Ability to interpret the patient's signs and symptoms (Gordon, 1976, 1982c; Guzzetta & Dossey, 1983; Hausman, 1980; Shoemaker, 1979)
 14. Knowledge of nursing concepts (De Gasperis, 1983; Guzzetta & Dossey, 1983; Hickey, 1984; Shoemaker, 1979)

(table continues)

Table 5 (continued)

Questionnaire Items as Referenced in the Literature

-
15. Ability to interpret laboratory and/or diagnostic studies (Dossey & Guzzetta, 1981; Gordon, 1982a, 1982c; Shoemaker, 1979)
 16. Commitment to collaborating with the patient to confirm the nursing diagnosis (Brooks, 1983; Gordon, 1976; Hausman, 1980; Shoemaker, 1979)
 17. Knowledge of the defining characteristics of each diagnostic category (Fredette & O'Connor, 1979; Gordon, 1982c; Hausman, 1980; Matthews & Gaul, 1979)
 18. Ability to differentiate nursing practice from medical practice (Aspinall & Tanner, 1981; Gordon, 1982a, 1982c; Guzzetta & Dossey, 1983; Hickey, 1984; Perry, 1982)
 19. Professional commitment to using nursing diagnoses (Field, 1979; Gordon, 1982b; Hausman, 1980)
 20. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category (Brooks, 1983; Gordon, 1976, 1982a; Gordon & Sweeney, 1979; Shoemaker, 1979; Warren, 1983b)
 21. Ability to verify the signs and symptoms for sufficiency and accuracy (Fredette & O'Connor, 1979; Gordon, 1976; Guzzetta & Dossey, 1983; Hausman, 1980; Shoemaker, 1979)
 22. Skill in establishing a therapeutic nurse patient relationship (Field, 1979; Guzzetta & Dossey, 1983; Murray, 1982))
-

Scaling of Items

Since the underlying dimensions of the nursing diagnostic process are not well identified, a multidimensional scaling technique, the Kruskal-Young-Shepard-Torgerson program (KYST-2), was used to determine the dimensions (Dunn-Rankin, 1983; Kruskal & Wish, 1978;

the dimensions (Dunn-Rankin, 1983; Kruskal & Wish, 1978; Schiffman, Reynolds, & Young, 1981). The technique also facilitated a decision regarding the deletion of one item so that a balanced incomplete block design could be used in ordering the items for presentation in part two of the questionnaire.

Multidimensional scaling (MDS) facilitates the discovery of underlying dimensions without the experimenter identifying the attributes upon which judgments are being made. The input to KYST-2 is a proximity matrix. Since similarity is a measure of proximity, a correlation matrix may be analyzed as was done in this study (Dunn-Rankin, 1983; Kruskal & Wish, 1978). The output of the statistical technique is a spatial representation of points (see Figure 1, for an example). Each point corresponds to an item on the questionnaire. This spatial representation reflects the underlying dimensions or "hidden structure" of the data (Kruskal & Wish, 1978; Schiffman, Reynolds, & Young, 1981). Usually this type of analysis is done by factor analysis; however, MDS does not have to meet the assumptions of factor analysis (Schiffman, Reynolds, & Young, 1981). Factor analysis assumes a normal distribution, linear relationships between variables, and a large sample size (Nunnally, 1978; Schiffman, Reynolds, & Young, 1981; Tabachnick & Fidell, 1983). These assumptions are not required of MDS. With a small sample, an MDS analysis can generate large amounts of

information and present stable spaces that reflect dimensions relevant to the subjects (Schiffman, Reynolds, & Young, 1981).

The MDS solution is obtained by the method of steepest descent. This is similar to the solution of a least squares fit in regression analysis. Iterations continue until a configuration is reached which has a minimum stress value. Stress is a numerical value that represents the difference between the calculated similarity and the judged similarity among objects taken two at a time (Dunn-Rankin, 1983). Stress is analogous to the standard error of estimate calculated in regression analysis. Interpretation of this value is based on the fact that stress is a normalized sum of squared deviations around a monotonic line. The line is fitted to the scatter plot of the corresponding distances and proximity values. Normalization allows stress to be expressed as a percentage; therefore, the lower the stress, the more accurate the interpretation (Dunn-Rankin, 1983). The final solution in this study had a stress value of 0.113. The formula for stress, where d =distance, is

$$\text{Stress} = S = \sqrt{\frac{\sum (d_{ij} - d_{ij})^2}{\sum d_{ij}^2}}$$

(Dunn-Rankin, 1983, p.194).

To determine the number of dimensions, several criteria may be used: (a) there must be at least twice as many stimulus pairs as dimensions (Kruskal & Wish, 1978, p. 34); (b) for a three dimensional solution, there must be 18 stimuli (Schiffman, Reynolds, & Young, 1981, p. 24); (c) the Shepard scattergram is inspected and the "elbow" is used as a cut off point (Dunn-Rankin, 1983; Kruskal & Wish, 1978); and (d) the number of dimensions that gives the most interpretable solution is selected (Dunn-Rankin, 1983; Kruskal & Wish, 1978; Schiffman, Reynolds, & Young, 1981). This study used all four criteria to determine the number of dimensions in the KYST-2 solution. A three dimensional solution was selected based on the four following criteria. First, there were 10-11 stimulus pairs, more than twice the number needed to support the identification of three dimensions. Second, there were 21 stimuli which is more than the 18 stimuli needed for a three dimensional solution. Third, there was a slight "elbow bend" in the scattergram between the plot of three and four dimensions, similar to the "scree" test (Cattell, 1962). Fourth, three dimensions were more interpretable than either two or four dimensions. The three dimensional solution created dimensions that correlated with knowledge, skill, and values. The two and four dimensional solutions did not appear to have organizing concepts that could facilitate interpretation.

A pilot study was conducted to test the questionnaire and to identify the underlying dimensions of the nursing diagnostic process. Twenty-five faculty members of the School of Nursing of the University of Hawaii agreed to be a part of the study. First, the participants responded to the original questionnaire that consisted of 22 items. In the KYST-2 analysis, one pair of items was found in which the pair behaved the same way; therefore, one item from the pair was deleted from the instrument. The eight graduate nursing students and two clinical nurse specialists who were expert nursing diagnosticians were asked to select the item from the pair that should be deleted. The two items selected were: (a) skill in interpersonal relationships and (b) skill in establishing a therapeutic nurse patient relationship. The latter was deleted as it was thought to be a specific form of the first item and was considered to be more of a nursing intervention than a knowledge or skill concerned with identifying a nursing diagnosis. The 21 items were then arranged in random order for part one of the questionnaire (see Appendix A) and in the format devised by Cochran and Cox (1957) to ensure an objective partial ranking presentation for part two of the questionnaire (see Appendix A).

The first part of the questionnaire is the list of 21 requisites that were identified from the literature as being highly desirable in identifying correct nursing diagnoses.

By responding to ordered categories, the participant rates how much of the skill, knowledge, or commitment is required by the nurse to diagnose a patient's response to a health problem (a nursing diagnosis). A Likert scale format was chosen for the rating scale designating one as the value for very little agreement and nine as the value for a great degree of agreement. This offered some latitude for interpretation by the responder. The items were analyzed using KYST-2 to look for underlying structures that define the dimensions of the nurses' perceptions.

One problem with MDS is that different researchers may view the same solution and interpret it differently. Interpretation of the dimensions, therefore, can be assisted by using cluster analysis. The Nonmetric Hierarchical Clustering (HICLUST) program was used in this study to assist in interpreting the KYST-2 solution (Dunn-Rankin, 1983). This clustering technique was used to determine how the nurses linked or clustered the items in the questionnaire. The two solutions were then superimposed (see Figures 1, 2, and 3). The clusters were drawn in the multidimensional space as loops around relevant stimulus points. Characteristics common to the objects in a cluster were then subjectively identified. The HICLUST technique should be used to supplement and clarify the interpretation of the KYST-2 solution rather than compete with it (Kruskal & Wish, 1978). The final interpretation was made on the

basis of both solutions. This analysis, combined with the researcher's own knowledgeable interpretation, yielded the best results.

A three dimensional solution was generated. These three dimensions could be explained as: (a) knowledge, items which tended to contain elements of either clinical or professional nursing knowledge; (b) commitment, items which tended to contain elements of a commitment to professional nursing practice and commitment to nursing diagnosis; and (c) skill, items which tended to contain elements of patient assessment and cue clustering. Each of these three dimensions were bipolar. First, the dimension of knowledge (items 2, 4, 8, 11, 13, 15, 16, 18, and 21; see Table 6; D, I, R, G, C, U, T, K, and S in Figures 1, 2, and 3) had items concerning professional nursing knowledge at one pole and items concerning clinical knowledge at the other pole. Second, the dimension of commitment (items 5, 10, 12, 14, 17, and 19; see Table 6; F, V, O, E, H, and Q in Figures 1, 2, and 3) had items concerning commitment to professional nursing practice at one pole and items concerning commitment to nursing diagnosis at the other pole. Third, the dimension of assessment skills (items 1, 3, 6, 7, 9, and 20; see Table 6; A, M, L, N, B, and J in Figures 1, 2, and 3) had items concerning skill in cue clustering at one pole and items concerning skill in patient assessment at the other pole. It is of interest to note that the three

Figure 1.

This is a KYST-2 analysis of dimension one, professional nursing and clinical knowledge, plotted against dimension two, commitment to professional practice and nursing diagnosis. A cluster analysis is superimposed. The clusters are not identical to the dimensions, but only assist in their interpretation. The clusters, therefore, are not specifically identified. See Table 6 for the components of each dimension.

Legend:

- A. Ability to see relationships between the patient's signs and symptoms
- B. Ability to analyze the patient's signs and symptoms
- C. Ability to interpret the patient's signs and symptoms
- D. Knowledge of disease processes
- E. Knowledge of nursing concepts
- F. Ability to determine priorities between different diagnoses
- G. Knowledge about the different diagnostic categories
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Experience in using nursing diagnoses
- J. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- K. Ability to differentiate nursing practice from medical practice
- L. Ability to write "SOAP" notes
- M. Skill in techniques of physical assessment
- N. Skill in psychosocial assessments
- O. Skill in interpersonal relationships
- Q. Professional commitment to using nursing diagnoses
- R. Commitment to furthering quality nursing care
- S. Ability to verify the signs and symptoms for sufficiency and accuracy
- T. Commitment to collaborating with the patient to confirm the nursing diagnosis
- U. Ability to interpret laboratory and/or diagnostic studies
- V. Participation in professional development activities, e. g., reading, workshops

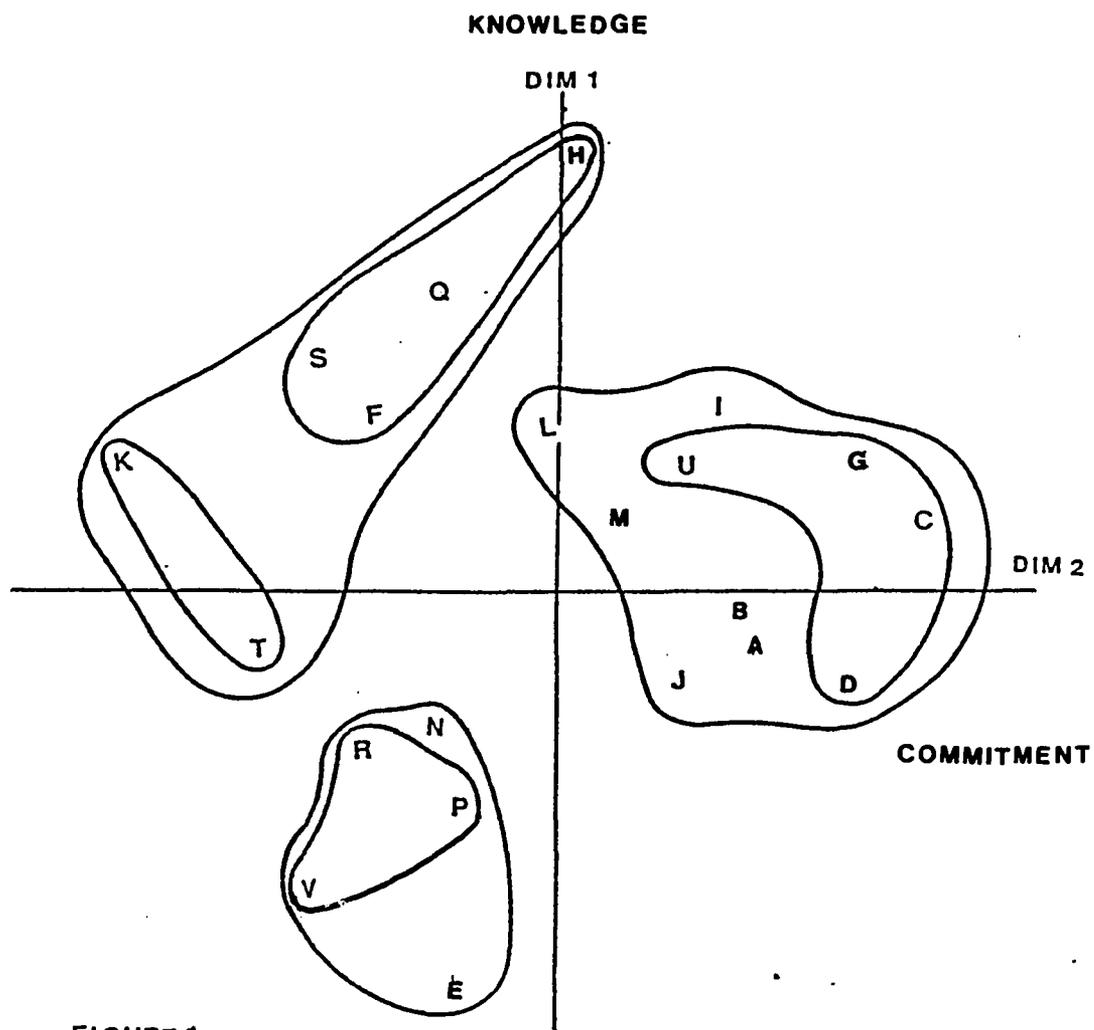


FIGURE 1.

Figure 2.

This is a KYST-2 analysis of dimension one, professional nursing and clinical knowledge, plotted against dimension three, skill in cue clustering and patient assessment. A cluster analysis superimposed. The clusters are not identical to the dimensions, but only assist in their interpretation. The clusters, therefore, are not specifically identified. See Table 6 for the components of each dimension.

Legend:

- A. Ability to see relationships between the patient's signs and symptoms
- B. Ability to analyze the patient's signs and symptoms
- C. Ability to interpret the patient's signs and symptoms
- D. Knowledge of disease processes
- E. Knowledge of nursing concepts
- F. Ability to determine priorities between different diagnoses
- G. Knowledge about the different diagnostic categories
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Experience in using nursing diagnoses
- J. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- K. Ability to differentiate nursing practice from medical practice
- L. Ability to write "SOAP" notes
- M. Skill in techniques of physical assessment
- N. Skill in psychosocial assessments
- O. Skill in interpersonal relationships
- Q. Professional commitment to using nursing diagnoses
- R. Commitment to furthering quality nursing care
- S. Ability to verify the signs and symptoms for sufficiency and accuracy
- T. Commitment to collaborating with the patient to confirm the nursing diagnosis
- U. Ability to interpret laboratory and/or diagnostic studies
- V. Participation in professional development activities, e. g., reading, workshops

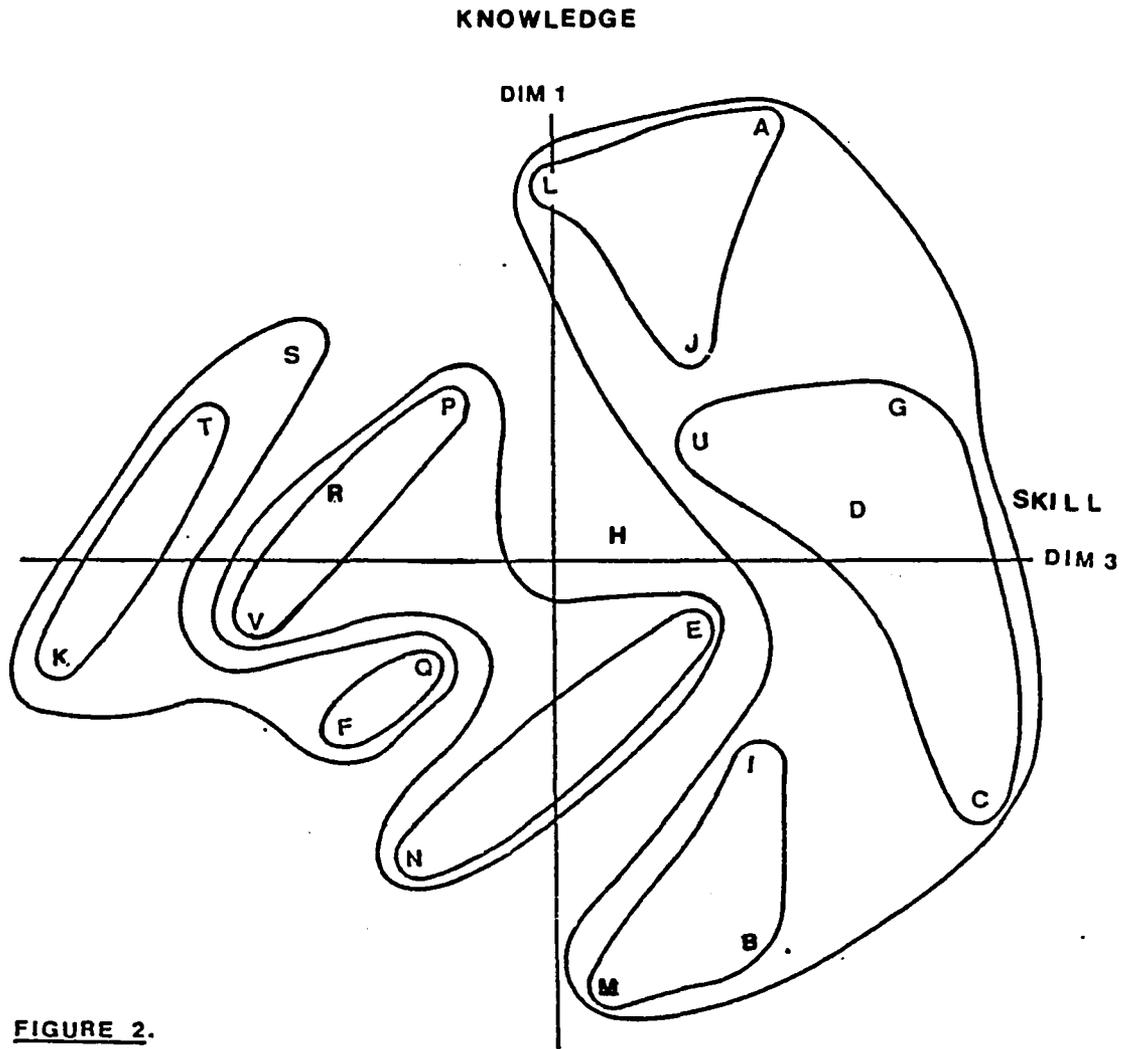


FIGURE 2.

Figure 3.

This is a KYST-2 analysis of dimension two, commitment to professional practice and nursing diagnosis, plotted against dimension three, skill in cue clustering and patient assessment. A cluster analysis superimposed. The clusters are not identical to the dimensions, but only assist in their interpretation. The clusters, therefore, are not specifically identified. See Table 6 for the components of each dimension.

Legend:

- A. Ability to see relationships between the patient's signs and symptoms
- B. Ability to analyze the patient's signs and symptoms
- C. Ability to interpret the patient's signs and symptoms
- D. Knowledge of disease processes
- E. Knowledge of nursing concepts
- F. Ability to determine priorities between different diagnoses
- G. Knowledge about the different diagnostic categories
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Experience in using nursing diagnoses
- J. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- K. Ability to differentiate nursing practice from medical practice
- L. Ability to write "SOAP" notes
- M. Skill in techniques of physical assessment
- N. Skill in psychosocial assessments
- O. Skill in interpersonal relationships
- Q. Professional commitment to using nursing diagnoses
- R. Commitment to furthering quality nursing care
- S. Ability to verify the signs and symptoms for sufficiency and accuracy
- T. Commitment to collaborating with the patient to confirm the nursing diagnosis
- U. Ability to interpret laboratory and/or diagnostic studies
- V. Participation in professional development activities, e. g., reading, workshops

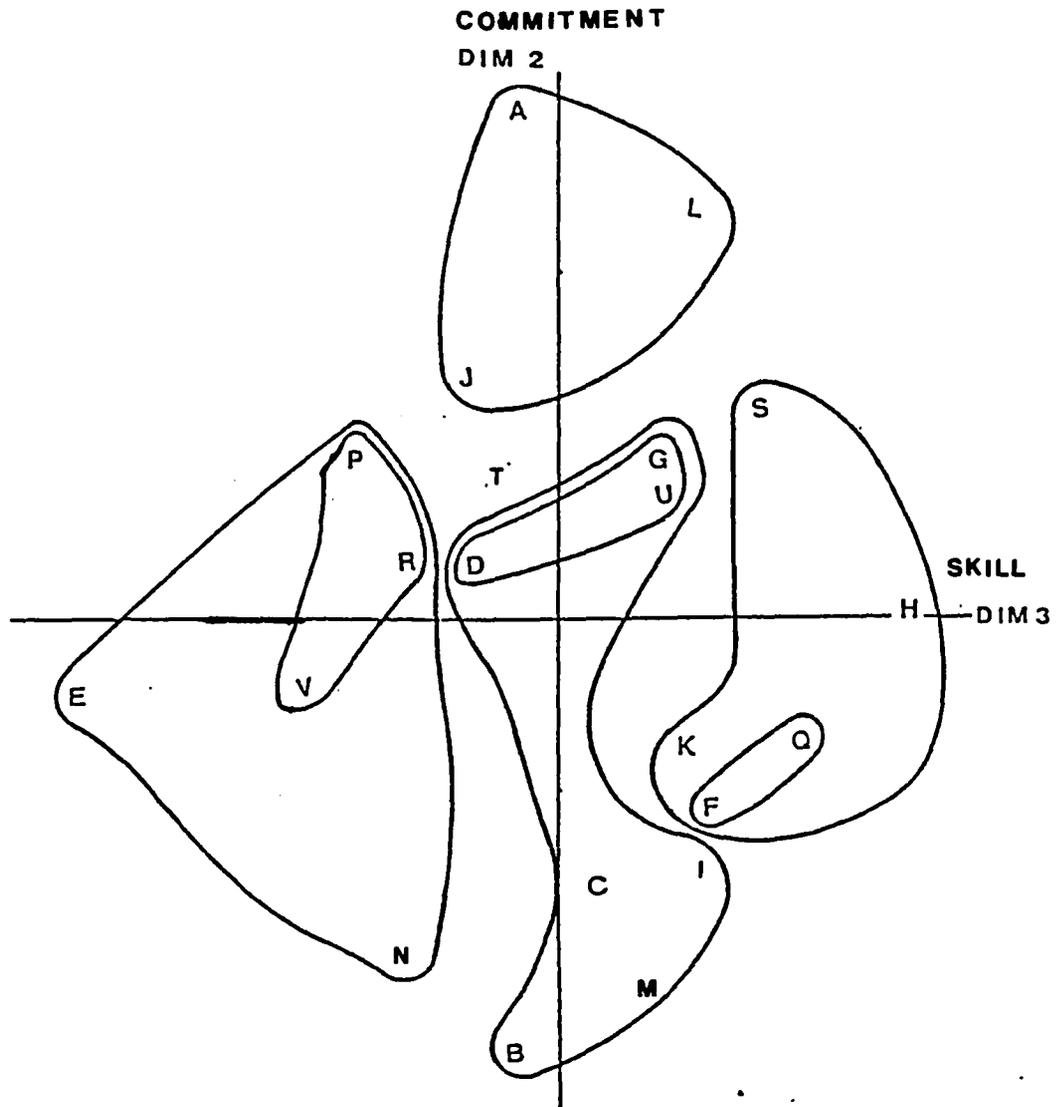


FIGURE 3.

Table 6

Dimensions of the Nursing Diagnostic Process

Dimension One: Professional Nursing and Clinical Knowledge

- 2. Knowledge of disease processes
- 4. Experience in using nursing diagnosis
- 8. Commitment to furthering quality nursing care
- 11. Knowledge about the different diagnostic categories
- 13. Ability to interpret the patient's signs and symptoms
- 15. Ability to interpret laboratory and/or diagnostic studies
- 16. Commitment to collaborating with the patient to confirm the nursing diagnosis
- 18. Ability to differentiate nursing practice from medical practice
- 21. Ability to verify the signs and symptoms for sufficiency and accuracy

Dimension Two: Commitment to Professional Practice and Nursing Diagnosis

- 5. Ability to determine priorities between different diagnoses
- 10. Participation in professional development activities, e.g., reading, workshops
- 12. Skill in interpersonal relationships
- 14. Knowledge of nursing concepts
- 17. Knowledge of the defining characteristics of each diagnostic category
- 19. Professional commitment to using nursing diagnoses

Dimension Three: Skill in Cue Clustering and Patient Assessment

- 1. Ability to see relationships between the patient's signs and symptoms
 - 3. Skill in techniques of physical assessment
 - 6. Ability to write "SOAP" notes
 - 7. Skill in psychosocial assessment
 - 9. Ability to analyze the patient's signs and symptoms
 - 20. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
-

Note. Numbers correspond to the questionnaire items.

dimensions roughly correspond to the three taxonomies used in education: cognitive, affective, and psychomotor (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956; Harrow, 1972; Krathwohl, Bloom, & Masia, 1964).

The second part of the questionnaire is a ranking task of the same 21 items that uses a balanced incomplete block design (Cochran & Cox, 1957). There are 21 objects and five ranks to which the participant responds (see Appendix A). This part of the questionnaire was prepared for Multidimensional Analysis of Preference (MDPREF) by using the Balanced Incomplete Block Data program (BIB) to transform the partial rankings from the questionnaire into paired comparison data preference scores (Dunn-Rankin, 1983). The MDPREF program plots both the objects and the subjects so that the subjects' preferences for objects can be determined. The analysis of the data from the pilot study revealed a strong preference for items that reflect activities of critical thinking--interpreting, seeing relationships, analyzing, matching, and verifying (see Figures 4, 5, and 6).

Establishment of Validity

For a measurement instrument to be useful in research, it must have validity. Content validity is the degree to which an instrument measures the intended domain. This type of validity is determined by using a panel of experts to

Figure 4.

The preference vectors for the 25 faculty members of the School of Nursing of the University of Hawaii on the dimension of problem solving vs. the dimension of knowledge from a three dimensional solution of preference data from the pilot study. The faculty revealed preferences for items concerning interpretation, seeing relationships, analysis, matching, and verification.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Ability to analyze the patient's signs and symptoms
3. Ability to interpret the patient's signs and symptoms
4. Knowledge of disease processes
5. Knowledge of nursing concepts
6. Ability to determine priorities between different diagnoses
7. Knowledge about the different diagnostic categories
8. Knowledge of the defining characteristics of each diagnostic category
9. Experience in using nursing diagnoses
- A. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- B. Ability to differentiate nursing practice from medical practice
- C. Ability to write "SOAP" notes
- D. Skill in techniques of physical assessment
- E. Skill in psychosocial assessments
- F. Skill in interpersonal relationships
- G. Professional commitment to using nursing diagnoses
- H. Commitment to furthering quality nursing care
- I. Ability to verify the signs and symptoms for sufficiency and accuracy
- J. Commitment to collaborating with the patient to confirm the nursing diagnosis
- K. Ability to interpret laboratory and/or diagnostic studies
- L. Participation in professional development activities, e. g., reading, workshops

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

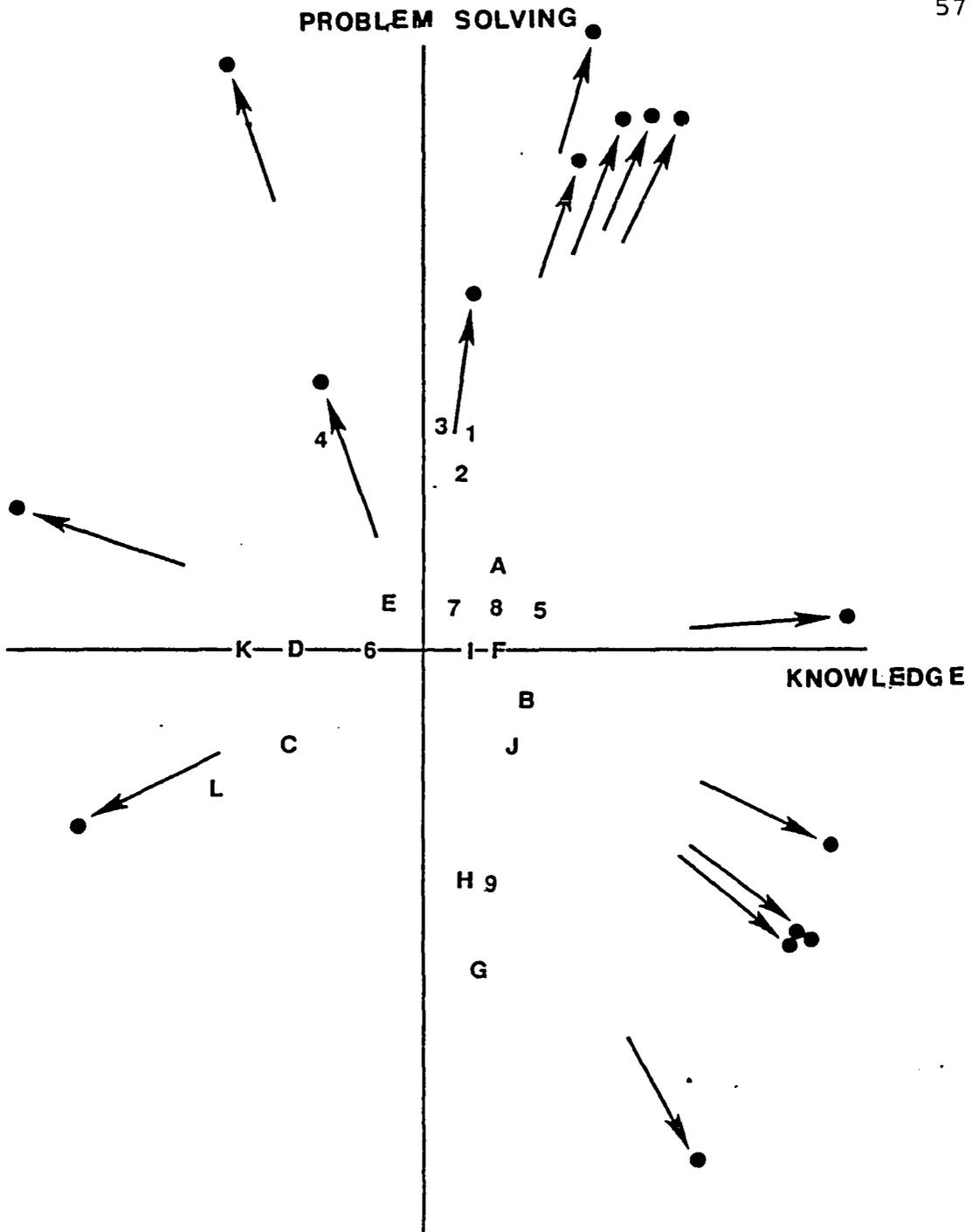


FIGURE 4.

Figure 5.

The preference vectors for the 25 faculty members of the School of Nursing of the University of Hawaii on the dimension of problem solving vs. the dimension of professional nursing role from a three dimensional solution of preference data from the pilot study. The faculty revealed preferences for items concerning interpretation, seeing relationships, analysis, matching, and verification.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Ability to analyze the patient's signs and symptoms
3. Ability to interpret the patient's signs and symptoms
4. Knowledge of disease processes
5. Knowledge of nursing concepts
6. Ability to determine priorities between different diagnoses
7. Knowledge about the different diagnostic categories
8. Knowledge of the defining characteristics of each diagnostic category
9. Experience in using nursing diagnoses
- A. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- B. Ability to differentiate nursing practice from medical practice
- C. Ability to write "SOAP" notes
- D. Skill in techniques of physical assessment
- E. Skill in psychosocial assessments
- F. Skill in interpersonal relationships
- G. Professional commitment to using nursing diagnoses
- H. Commitment to furthering quality nursing care
- I. Ability to verify the signs and symptoms for sufficiency and accuracy
- J. Commitment to collaborating with the patient to confirm the nursing diagnosis
- K. Ability to interpret laboratory and/or diagnostic studies
- L. Participation in professional development activities, e. g., reading, workshops

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

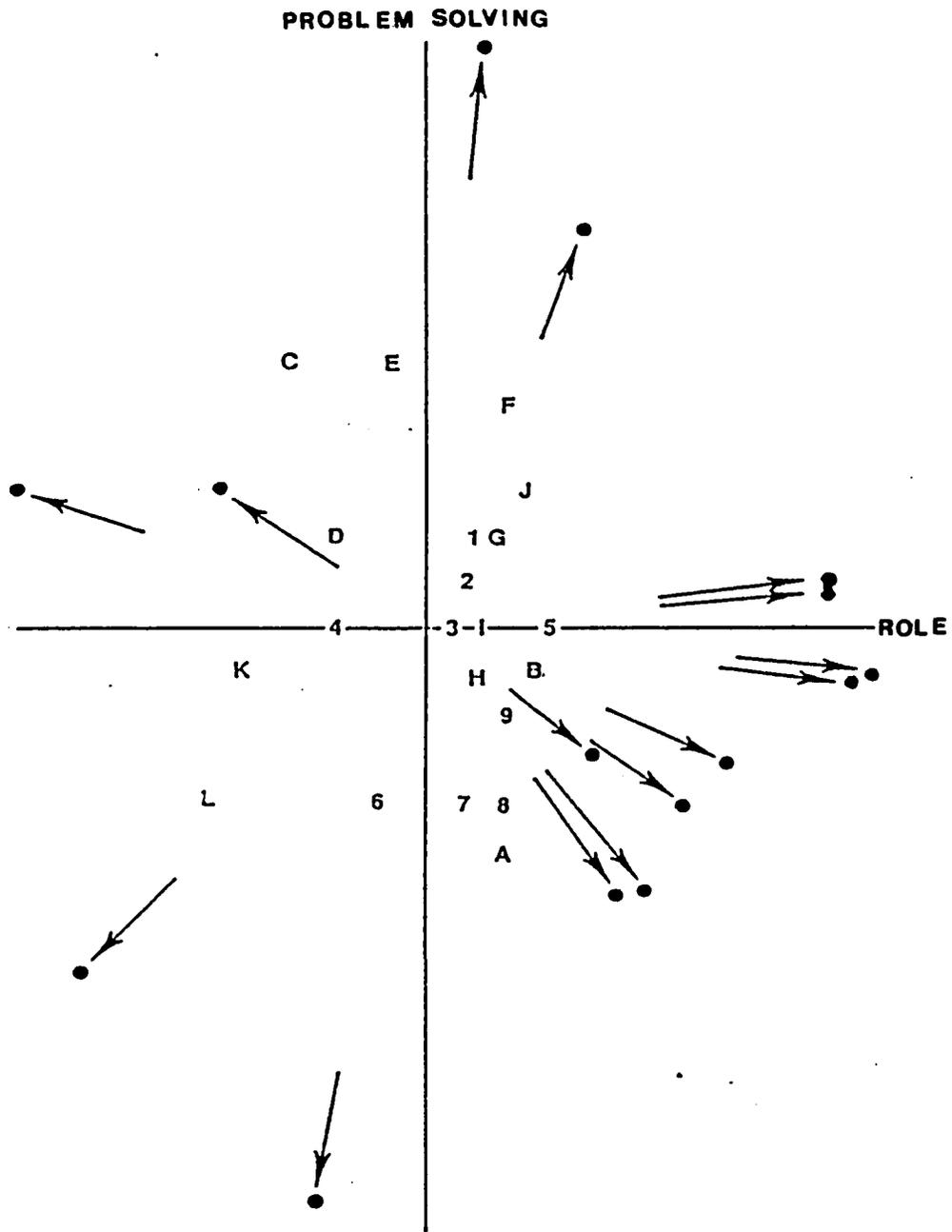


FIGURE 5.

Figure 6.

The preference vectors for the 25 faculty members of the School of Nursing of the University of Hawaii on the dimension of knowledge vs. the dimension of the professional nursing role from a three dimensional solution of preference data from the pilot study. The faculty revealed preferences for items concerning interpretation, seeing relationships, analysis, matching, and verification.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Ability to analyze the patient's signs and symptoms
3. Ability to interpret the patient's signs and symptoms
4. Knowledge of disease processes
5. Knowledge of nursing concepts
6. Ability to determine priorities between different diagnoses
7. Knowledge about the different diagnostic categories
8. Knowledge of the defining characteristics of each diagnostic category
9. Experience in using nursing diagnoses
- A. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- B. Ability to differentiate nursing practice from medical practice
- C. Ability to write "SOAP" notes
- D. Skill in techniques of physical assessment
- E. Skill in psychosocial assessments
- F. Skill in interpersonal relationships
- G. Professional commitment to using nursing diagnoses
- H. Commitment to furthering quality nursing care
- I. Ability to verify the signs and symptoms for sufficiency and accuracy
- J. Commitment to collaborating with the patient to confirm the nursing diagnosis
- K. Ability to interpret laboratory and/or diagnostic studies
- L. Participation in professional development activities, e. g., reading, workshops
- *. The asterisk indicates that items 3, 4, 5, 7, 8, and I occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

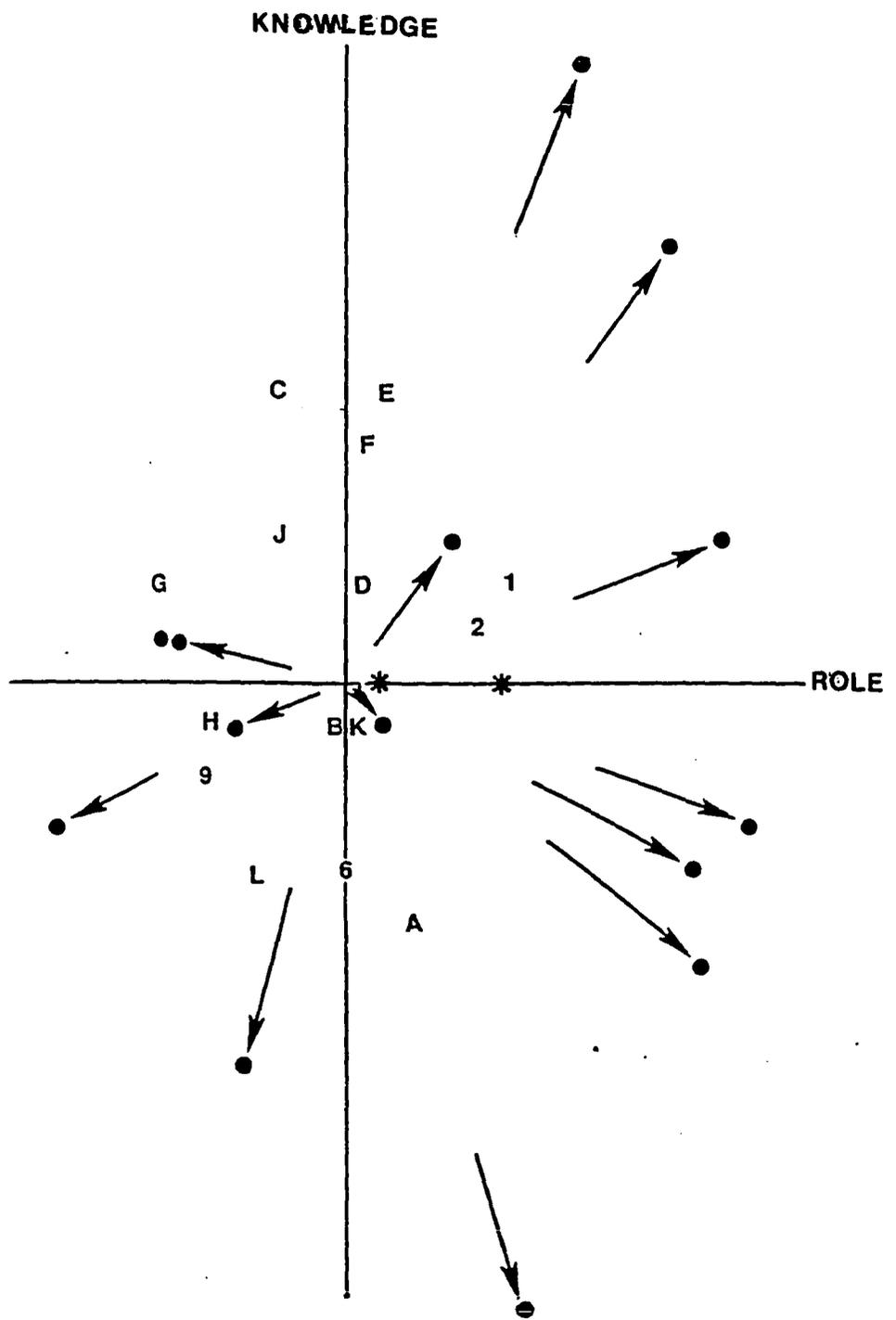


FIGURE 6.

review the instrument (Carmines & Zeller, 1979; Gay, 1976; Nunnally, 1978). Implicit in this discussion of validity is that "one validates not a measuring instrument but rather some use to which the instrument is put" (Nunnally, 1978, p. 87). Selecting the items from the literature concerning the nursing diagnostic process contributed toward establishing content validity. Then the instrument was reviewed by two clinical nurse specialists who were experts in clinical nursing, had studied nursing diagnosis in graduate school, and were identified as expert nursing diagnosticians from peer and employer evaluations. The items were reviewed for clarity, appropriateness of the items, and adequacy of items to represent the domain. An educational psychologist with expertise in research methodology reviewed the items for clarity and response format and the questionnaire for clarity of directions and presentation style. The judgment of this expert panel established the content validity of the questionnaire.

Determination of Reliability

Reliability is the proportion of the total variance that is systematic. Twenty-five nursing faculty members of the University of Hawaii School of Nursing agreed to be participants in a pilot study. They were asked to respond to both parts of the questionnaire and to give the researcher feedback concerning completion time, clarity of

directions, and presentation style. The feedback led to clarification of the directions and refinement of the visual presentation of the questionnaire. The time required to complete the questionnaire was 20-30 minutes. Using Cronbach's alpha, the internal consistency of each dimension on the questionnaire was determined to be 1.10 for the dimension of professional nursing and clinical knowledge, 1.17 for the dimension of commitment to professional practice and nursing diagnosis, and 1.17 for the dimension of skill in cue clustering and patient assessment (TESTAT was used to determine Cronbach's alpha; due to the algorithm used, alpha can exceed 1.0; see Dunn-Rankin, 1983, p. 362). The test-retest reliability of the questionnaire was determined to be .95 (Veldman, 1967).

Participants

One of the purposes of this study was to determine the orientation of different groups of nurses to the nursing diagnostic process. Five major groups were identified: nursing faculty, nursing students, nursing administrators, staff nurses, and expert nursing diagnosticians. A decision was made to select a national sample to increase generalizability. Ideally, 10% of the population should be selected when a descriptive study is done (Gay, 1976). The expense of obtaining an ideal sample size was beyond the resources of this study; therefore, 100 nurses were selected

from each group. Sources for sample selection were then identified. The National League for Nursing (1984) was selected since it is the accrediting body for schools of nursing in the United States and publishes its list of accredited schools. The American Nurses' Association has a Council of Nurse Administrators which is one of several organizations that nursing administrators may join. This group was selected since it was part of the major professional organization in nursing. The selection of staff nurses posed the biggest problem. It was decided to select them from hospitals that met two criteria--bed capacity and accreditation by the Joint Commission on Accreditation of Hospitals (JCAH). Since nursing diagnosis is a relatively new concept, hospitals that were large enough to have inservice departments and/or clinical nurse specialists needed to be selected. Second, hospital accreditation by JCAH mandates certain standards of practice--specifically the use of nursing process of which nursing diagnosis is a step/part. The American Hospital Association (1984) publishes a list of hospitals that meet these two criteria. Finally, a sample of expert nursing diagnosticians needed to be selected. Since the nurses who attended the National Conferences for the Classification of Nursing Diagnoses have played a major role in the development and implementation of these diagnoses, this group was selected as a source of expert nursing

diagnosticians (Gebbie & Lavin, 1975; Hurley, 1986; Kim, McFarland, & McLane, 1984; Kim & Moritz, 1982).

Questionnaires were sent to this national sample of 500 nurses--100 from each of the five groups listed above.

Twenty schools that offer nursing studies leading to the bachelor of science degree were randomly selected from the schools that are accredited by the National League for Nursing (1984). Five sets of questionnaires with letters of introduction (see Appendix B) were mailed to each school with a request to participate in the study by distributing the sets randomly to five full time faculty members. Directions for selection and a table of random numbers were included for the dean or the research committee to use in the selection of a proposed sample of 100 nurse educators. Forty-three faculty members agreed to participate by returning the questionnaire, thus yielding a 43% return rate. The range of years in nursing was 7-30 years, with a mean of 18.4 years in nursing. Of the faculty members responding, 65% had attained a master's degree in nursing, 19% had attained a master's degree not in nursing, and 16% had attained a doctoral degree not in nursing. All respondents (100%) taught in schools that include nursing diagnosis in their curriculum. The respondents represented the following specialty areas in nursing: medical-surgical nursing, 49%; pediatric nursing, 7%; mental health nursing,

16%; community health nursing, 21%; maternal-child nursing, 5%; and administration, 2%.

The same procedure was followed for selecting student nurses. Twenty accredited schools of nursing that offer nursing studies leading to the bachelor of science degree were randomly selected (National League for Nursing, 1984). The dean of each school was contacted, asked to participate, and to distribute the instruments to five randomly selected senior nursing students (see Appendix C). This resulted in a proposed sample of 100 nursing students. Forty-three senior nursing students agreed to participate by returning the questionnaire, thus yielding a 43% return rate. The range of years in nursing was 0-31 years. Some of the students were registered nurses who had returned to school to earn their degree. The mean for the 31 generic students was 2.95 years and the mean for the twelve RN students was 10.5 years in nursing with a median of 6.5 years. The RN students comprised 28% of the sample. Since the teaching of nursing diagnosis in schools is a relatively recent phenomena, these students were included in the sample. Of the senior nursing students responding, 98% attended a school that taught nursing diagnosis.

One hundred nursing administrators were randomly selected from the membership of the American Nurses' Association Council of Nurse Administrators. A questionnaire was mailed to each of them with a request to

participate (see Appendix D). Fifty-seven nursing administrators agreed to participate by returning the questionnaire, thus yielding a 57% return rate. The range of years in nursing was 6-40 years, with a mean of 19.5 years. The highest level of education attained was a nursing diploma, 4%; a bachelor's degree in nursing, 29%; a bachelors degree not in nursing, 5%; a master's degree in nursing, 49%; a master's degree not in nursing, 14%; and a doctoral degree not in nursing, 3%. Of the administrators responding, 72% worked in agencies that recommended the use of nursing diagnosis and 65% used nursing diagnosis in their practice.

Staff nurses were selected from ten randomly selected hospitals that were accredited by the Joint Commission for the Accreditation of Hospitals (American Hospital Association, 1984). The hospitals, located in the continental United States, were acute care facilities with a capacity of 250-400 beds. The director of nursing at each hospital was asked to participate and to distribute the questionnaires to ten randomly selected staff nurses. Directions for selection and a table of random numbers were included for the director of nursing or the research committee to use (see Appendix E). This resulted in a proposed sample of 100 staff nurses. A letter of request accompanied each questionnaire that was given to a staff nurse (see Appendix E). Twenty-five staff nurses agreed to

participate by returning the questionnaire, thus yielding a 25% return rate. The range of years in nursing was 2-40 years, with a mean of 15.2 years. Of the staff nurses responding, 32% had attained a nursing diploma, 12% had attained an associate degree in nursing, 32% had attained a bachelor's degree in nursing, 16% had attained a bachelor's degree not in nursing, 4% had attained a master's degree in nursing, and 4% had attained a master's degree not in nursing. Of the staff nurses responding, 76% worked in hospitals that recommend the use of nursing diagnosis. The respondents represented the following speciality areas in nursing: medical-surgical nursing, 84%; maternal-child nursing, 4%; and other, 12%.

One hundred expert nursing diagnosticians were randomly selected from individuals who attended two or more National Conferences for the Classification of Nursing Diagnoses, one conference of which was the fifth or sixth conference. Recent experience and commitment were desired. The participants in these conferences have been very active in the development and implementation of the nursing diagnosis taxonomy. They have provided the leadership in the training of nurses to diagnose and in conducting research about the diagnostic process. A questionnaire was mailed to each selected expert with a request to participate (see Appendix F). Seventy-one expert nursing diagnosticians agreed to participate by returning the questionnaire, thus yielding a

71% return rate. The range of years in nursing was 10-40 years, with a mean of 22.2 years. Of the respondents 1% had attained an associate degree in nursing, 3% had attained a bachelor's degree not in nursing, 59% had attained a master's degree in nursing, 4% had attained a master's degree not in nursing, 14% had attained a doctoral degree in nursing, and 17% had attained a doctoral degree not in nursing. Of the experts responding, 97% worked in agencies or schools of nursing that recommended the use of nursing diagnosis. The respondents represented the following specialty areas in nursing: medical-surgical nursing, 68%; pediatric nursing, 1%; mental health nursing, 10%; maternal-child nursing, 3%; administration, 4%; community health nursing, 11%; and other, 3%. Areas or positions of employment were staff nurse, 4%; faculty member, 48%; administrator, 25%; clinical nurse specialist, 15%; and other, 8%.

The validity of any conclusions based on less than a 70% return rate is suspect (Gay, 1976). The only group to meet this criterion was the expert nursing diagnosticians. Babbie (1973) disagrees and states that a 50% return rate is adequate for interpretation while a 70% return rate is very good for validity of interpretation. This criterion would also include the nursing administrator group. The overall return of the questionnaires was 239 of 500 mailed, a 48% return rate.

Procedure

A two part instrument was mailed to each participant. An introductory letter with a statement of consent, a demographic sheet, and a stamped, return envelope was included so that each participant could mail the completed instrument and demographic sheet to the researcher (see Appendix A). Followup postcards were mailed four weeks later to encourage return of the questionnaire (see Appendix G). In those cases where an agency was contacted, a letter was sent to the contact person requesting their assistance in reminding participants to return the questionnaire. Postcards were included for their use.

A code book was kept in an effort to determine responders from non-responders by using group codes and postal marks. Each questionnaire had been coded by using colored dots to indicate group membership in the event that the demographic sheet might not clearly indicate this membership. Four categories of nonresponders were identified: (a) three participants did not receive the questionnaire in time, (b) four schools of nursing refused to participate, (c) seven questionnaires were returned as not deliverable, and (d) no identifiable characteristics.

Three problems were identified in the procedure. First, ten questionnaires were returned with errors in responding to the ranking task in Part Two of the

questionnaire. The most common error was that of identifying rank one and rank two but leaving the other three items blank. The second error was that of assigning a rank of one or two to all five items in the set. (The directions to part two need to be clarified and have an example included.)

The second problem identified occurred on nine questionnaires, again on Part Two. Part Two was left blank with notes written in the margin indicating: "can't rank order parts of a process", "don't understand how this can be used", and "don't feel this will contribute to your study." One possible solution to these problems would be a brief discussion of the differences between measuring judgments and preferences. This would have to be done very carefully so as not to bias the participant's responses.

Finally, the return rate was very low in those groups where specific individuals were not identified. In addition, the experimenter had no control over the selection of those participants. A recommendation would be to determine ways to identify individuals in those three groups--nursing faculty, nursing students, and staff nurses. One method for selecting the nursing faculty and the nursing students would be to randomly select 100 schools of nursing. Then randomly select one nursing faculty member from the catalog of each school. A letter could then be sent requesting that the faculty member participate and randomly

select one senior nursing student to also participate. Determination of participation and nonparticipation would become much easier. Participation from the organizations, though, was satisfactory: (a) 75% of the schools of nursing from which faculty were sampled, (b) 75% of the schools of nursing from which students were sampled, and (e) 80% of the hospitals from which staff nurses were sampled.

Identification of a random, national sample of staff nurses is still a problem. It is very difficult to identify this population for adequate sampling. Possible sources would be intact groups in hospitals or a selection from the membership of a nursing organization. But these solutions have considerable bias in selection.

Upon receipt of the questionnaires the data were prepared for analysis. The demographic data were dummy coded according to guidelines developed by Pedhazur (1986). Part One of the questionnaire was scored using a program developed by Warren (1985). The scores on the items of each dimension were averaged to produce a dimension score. The three dimension scores were then added together for a total dimension score. Part Two of the questionnaire was prepared for analysis using the Balanced Incomplete Block program (Dunn-Rankin, 1983).

Data Analysis

Multiple regression and multidimensional preference

mapping were the two statistical procedures utilized in this study. The selection, description, and assumptions of each will be discussed.

Multiple Regression

The purpose of this analysis was primarily description. The five major groups of nurses were asked to make judgments about the importance of various phenomena involved in the determination of a nursing diagnosis. What part did group membership play in determination of responses? Would other variables such as education, experience, and use of approved diagnoses affect this judgment? Multiple regression can be used in descriptive studies to assess the relationship between one dependent variable and several independent variables (Pedhazur, 1986; Tabachnick & Fidell, 1983). Furthermore, since regression techniques allow some correlation to exist between the independent variables, regression analysis is a very useful tool in research that is conducted in the real-world where orthogonal designs are difficult or impossible to construct (Tabachnick & Fidell, 1983). Finally, both qualitative and quantitative variables may be analyzed. Nominal data are coded for analysis by a procedure called dummy coding (Pedhazur, 1986). Multiple regression analysis was selected as the appropriate statistical procedure for this study since it facilitates the exploration of the relationship between nominal and

interval variables and allows for some correlation among the independent variables.

The principle of least squares is used to derive a solution in multiple regression. A set of weights, regression coefficients, is derived for the independent variables so that the sum of the squared errors of prediction is minimized (Pedhazur, 1986). The regression equation takes the form of the general linear model:

$$Y' = a + b_1X_1 + b_2X_2 + \dots + b_kX_k$$

where Y' is the predicted value of the dependent variable, a is the intercept constant, b 's are regression coefficients of the independent variables, and X 's are scores on the independent variables. The statistic of major interest in multiple regression is the squared multiple correlation, R^2 . This is the proportion of variation in the dependent variable that is explained by the combination of independent variables.

Multiple regression analysis is based on the following assumptions: random sampling, normality, linearity, and homoscedasticity (Pedhazur, 1986; Tabachnick & Fidell, 1983). Tabachnick and Fidell (1983) recommend that "examination of residuals scatterplots provides a test of assumptions of normality, linearity, and homoscedasticity between predicted DV (dependent variable) scores and errors of prediction" (p. 93). A fifth concern is multicollinearity and singularity. The existence of a

singularity prevents a solution by prohibiting matrix inversion. Multicollinearity occurs when two independent variables are highly correlated and have a similar pattern of correlation with the remaining variables. Singularity occurs when one variable score is a linear combination of others (the individual scores may not be highly correlated). A major indicator of multicollinearity is a high correlation between two variables. Inspection of the correlation matrix can identify these (Tabachnick & Fidell, 1983). The multiple regression techniques are generally robust so that compliance with all assumptions need not be stringent (Pedhazur, 1986).

Multidimensional Preference Mapping

Since description was the major purpose of this study, preferences of the participants as well as their judgments were obtained. For every phenomenon an individual has a preference for one of the elements of the set. Within the domain of analyzing preferences, multidimensional preference mapping (MDPREF) was particularly appropriate for this study. Dunn-Rankin (1983) states that "individual differences in preference are of interest to the behavioral scientist because the interaction between attitude and treatment has not been fully explored" (p. 206). People and/or groups may react differently to the same stimuli. Most scales present the average response. Even an MDS map

of objects is the presentation of the average participant's preference between pairs of objects. It is important, however, to look at individual participant's preferences. Chang (1968) developed MDPREF to specifically look at individual preferences and object spaces together. The program performs a linear factor analysis of the stimuli/objects and then fits individual preference vectors to the object configuration. The preference vectors are determined by using an unfolding model. This model determines an individual's ideal point from his/her rank ordering of previously ordered objects. When analyzing the data, the researcher looks for a pleasing solution using the same criteria as in KYST-2 (discussed earlier in this chapter under the heading, Instrument Development) and considers the amount of variance accounted for by the solution.

Assumptions of the Study

It was assumed that perceptions of events are held in common by individuals with similar experiences; therefore, each of the identified groups of nurses may have different perceptions about the activity of nursing diagnosis. Second, a psychometric approach assumes that perceptions are psychological constructs that can be measured by responses to scale stimuli.

Limitations

Three major limitations were identified in this study. First, the sample of the population was small for a descriptive study, less than 10% of the population of practicing nurses. Second, the response rate, 48% was less than that required to make inferential interpretations of the data. Finally, measuring perceptions through written responses to questions and arbitrarily quantifying the answers was artificial and indirect. The degree to which the data measured perceptions is partially dependent on how frank and honest the participants were in responding to the items.

Summary

The procedures followed in this descriptive study were presented in detail in this chapter. The instrument development, sampling methodology, and data analysis techniques also were discussed. The next chapter reports the results of the regression analysis of the variables affecting the nurses' responses to the dimensions of the nursing diagnostic process and of the preference analysis of the individual nurses for the various knowledges, skills, and attitudes required for the determination of a nursing diagnosis.

CHAPTER IV

Analysis of Data

The purposes of this descriptive study were (a) description of the requisites of the nursing diagnostic process, (b) identification of the relevant dimensions of the nursing diagnostic process, and (c) identification of the perceptions that five major groups of nurses hold concerning the phenomena involved in diagnosing patient responses to actual or potential health problems. Results of the study are based on responses to a questionnaire mailed to a national sample of nurses. The questionnaire contained the identified requisites of the nursing diagnostic process and asked the participant to respond in two ways: (a) make a judgment concerning the importance of each requisite to the whole process and (b) indicate a preference for one requisite over another when compared in importance to the whole process.

The first two purposes were achieved during the pilot study when the questionnaire was developed and tested. This process and these data were described in Chapter III. In order to investigate the final purpose, two research questions were framed to guide the analysis and interpretation of the data: (a) knowing group membership,

can the nurses' judgments concerning the dimensions of the nursing diagnostic process be predicted and (b) knowing the nurses' preferences for the requisites for the nursing diagnostic process, do the groups have similar preferences? These questions focus on the judgments and the preferences that the nurses were asked to make concerning the importance of the identified requisites of the nursing diagnostic process. One overall hypothesis was formulated to reflect the first question: there are no differences among groups on the dimensions of professional nursing and clinical knowledge, commitment to professional practice and nursing diagnosis, skill in cue clustering and patient assessment, nor the combined dimensions. Since the analysis is at the descriptive level only, no hypotheses were formulated to reflect the second question.

The discussion in Chapter IV is organized under the following headings: Analysis of Judgment Data, Analysis of Preference Data, and Summary.

Analysis of Judgment Data

The Statistical Analysis Systems (SAS) programs and the System of Statistics (SYSTAT) programs were used to investigate the relationships present in the data and to test the hypotheses (SAS Institute, 1985; SYSTAT, Inc., 1985).

The hypotheses were tested for significance at the .05 level of significance. Simple regression and multiple regression analysis were used to test for differences among the groups and to explore the contribution of other variables in the explanation of variation of the dimension scores of the nursing diagnosis process. The discussion of this section is organized under four sections: Testing the Hypotheses, Exploring Demographic Variables as Predictors/Descriptors, Final Regression Model, and Further Analysis.

Testing the Hypotheses

The analysis of the data used in testing the hypotheses is presented in the following format: (a) the means and standard deviations of the responses of the five groups of nurses on each dimension of the nursing diagnostic process, (b) the statistical results derived from testing the hypotheses, and (c) the statement of the hypotheses with conclusions.

Descriptive data were compiled on each group's responses to the dimensions of the nursing diagnostic process. Group means and standard deviations were summarized for each of the five groups (nursing faculty, nursing students, nursing administrators, staff nurses, and expert nursing diagnosticians) for scores on the dimension of professional nursing and clinical knowledge (DML), the dimension of commitment to professional practice and nursing

diagnosis (DM2), the dimension of skill in cue clustering and patient assessment (DM3), and the combined dimension (DMT). These data are reported in Table 7.

The scores on each dimension, the dependent variables, were subjected to simple regression analysis with group membership as the independent variable. Dimension one was professional nursing and clinical knowledge. Dimension two was commitment to professional practice and nursing diagnosis. Dimension three was skill in cue clustering and patient assessment. The combined dimension was a sum of the three dimensions. Group membership was dummy coded according to Pedhazur (1986). The results of these analyses are reported in Tables 8, 9, 10, and 11.

Hypothesis 1a. There is no difference among groups on the dimension of professional nursing and clinical knowledge. The difference among the means of the groups was not statistically significant ($R^2=.011$, $F<1.0$, $df=4,234$, $p=.609$, see Table 8). Therefore, hypothesis 1a was not rejected.

Hypothesis 1b. There is no difference among groups on the dimension of commitment to professional nursing practice and nursing diagnosis. The difference among the means of the groups was not statistically significant ($R^2=.148$, $F=1.308$, $df=4,234$, $p=.268$, see Table 9). Therefore, hypothesis 1b was not rejected.

Table 7

Means and Standard Deviations for Dimension Scores Reported
by Group

Means					
Group	N	DM1	DM2	DM3	DMT
Expert Nursing Diagnosticians	71	7.43	7.23	7.06	21.71
Staff Nurses	25	7.56	7.34	7.31	22.22
Nursing Faculty	43	7.46	7.33	7.25	22.05
Nursing Students	43	7.64	7.48	7.23	22.35
Nursing Administrators	57	7.39	7.02	7.12	21.53

Standard Deviations					
Group	N	DM1	DM2	DM3	DMT
Expert Nursing Diagnosticians	71	.83	1.13	.99	2.58
Staff Nurses	25	.96	1.24	.89	2.58
Nursing Faculty	43	.79	1.02	.95	2.51
Nursing Students	43	.77	.92	.91	2.22
Nursing Administrators	57	.90	1.08	.91	2.61

Table 8

Simple Regression Analysis of Dimension One Scores,
Professional Nursing and Clinical Knowledge, by Group
Membership

Source	Sum of Squares	DF	Mean Square	F Ratio	PR>F
Group	1.925	4	.481	.676	.609
Error	166.528	234	.712		
Total	168.453	238			

Note. $R^2=.011$

Table 9

Simple Regression Analysis of Dimension Two Scores,
Commitment to Professional Practice and Nursing Diagnosis,
by Group Membership

Source	Sum of Squares	DF	Mean Square	F Ratio	PR>F
Group	6.070	4	1.518	1.308	.268
Error	271.416	234	1.160		
Total	277.486	238			

Note. $R^2=.022$

Hypothesis 1c. There is no difference among groups on the dimension of skill in cue clustering and patient assessment. The difference among the means of the groups

was not statistically significant ($R^2=.010$, $F<1.0$, $df=4,234$, $p=.682$, see Table 10). Therefore, hypothesis 1c was not rejected.

Hypothesis 1d. There is no difference among groups on the combined dimensions that is the sum of dimension one, dimension two, and dimension three. The difference among the means of the groups was not statistically significant ($R^2=.015$, $F<1.0$, $df =4,234$, $p=.462$, see Table 11). Therefore, hypothesis 1d was not rejected.

Since none of the hypotheses were supported, further analysis of group membership alone and calculation of regression weights for the regression equation were not done. Exploration of the contribution of other variables,

Table 10

Simple Regression Analysis of Dimension Three Scores, Skill in Cue Clustering and Patient Assessment, by Group Membership

Source	Sum of Squares	DF	Mean Square	F Ratio	PR>F
Group	2.030	4	.508	.574	.682
Error	206.213	234	.884		
Total	208.243	238			

Note. $R^2=.010$

Table 11

Simple Regression Analysis of the Combined Dimensions by Group Membership

Source	Sum of Squares	DF	Mean Square	F Ratio	PR>F
Group	22.881	4	5.720	.905	.462
Error	1478.225	234	6.317		
Total	1501.106	238			

Note. $R^2 = .015$

identified by Forgas and Melamed (1976), was determined to be the next concern.

Exploring Demographic Variables as Predictors/Descriptors

Groups share common perceptions or social attitudes. Sherif and Sherif (1956) stated that these are obtained during the socialization process that occurs while becoming and remaining a group member. Yet using group membership as the only independent variable produced no significant differences in responses as reflected in the dimension scores. Neisser (1976) stated that common past experiences, schemata, and skills resulted in individuals perceiving situations, values, and so forth in similar ways. Forgas and Melamed (1976) identified the variables in their theory as learning, experience, maturation, problem solving,

ability, values, and motivation. The questions on the demographic sheet were designed to capture as much of the above information as possible in an effort to identify some of the specific components of group membership that may influence the group's perception or the individual's perception of the requisites of the nursing diagnostic process (see Appendix A). In a descriptive study, the researcher may select other related variables to study when the original ones do not perform as expected (Pedhazur, 1986; Tabachnick & Fidell, 1983). This was done in this study. Seven variables were selected from the demographic sheet to be analyzed, along with group membership. Descriptive data were compiled on each group for each variable. The variables selected were years in nursing (YEARS; see Table 12), highest formal educational preparation (EDUC; see Table 13), the use of nursing diagnoses in practice (USEDX; see Table 14), the clinical agency's recommendation to use nursing diagnosis in documentation (AGENCY; see Table 15), the teaching of nursing diagnosis in school (SCHOOL; see Table 16), source of knowledge of nursing diagnosis (LEARN; see Table 17), and use of an accepted list of nursing diagnoses (LIST; see Table 18).

The scores on each dimension, the dependent variable, were subjected to multiple regression analysis with group membership, years in nursing, highest formal educational

Table 12

Years in Nursing (YEARS)

Group	Min	Max	Mean	Mode	Standard Deviation
Expert Nursing Diagnosticians	10	40	22.2	20	7.65
Staff Nurses	2	40	15.2	2,12,18	11.25
Nursing Faculty	7	30	18.4	20	6.27
Nursing Students (includes RN students)	1	31	5.5	4	5.46
Nursing Administrators	6	40	19.5	10,11,12	9.03

Table 13

Highest Formal Educational Preparation (EDUC)

Group	n	Degree In Nursing					Degree Not Nursing		
		Dip.	AD	BS	MS	PhD	BS	MS	PhD
Expert Nursing Diagnosticians	71	0	1	0	43	10	2	3	12
Staff Nurses	25	9	3	8	1	0	3	1	0
Nursing Faculty	43	0	0	0	29	0	0	7	7
Nursing Students	43	0	0	43	0	0	0	0	0
Nursing Administrators	57	2	0	12	29	9	2	9	3

Table 14

Use of Nursing Diagnoses in Practice (USEDX)

Group	Yes	No	Other
Expert Nursing Diagnosticians	64(90%)	5(7%)	2(3%)
Staff Nurses	20(80%)	5(20%)	0
Nursing Faculty	43(100%)	0	0
Nursing Students	34(79%)	8(19%)	1(2%)
Nursing Administrators	37(65%)	19(33%)	1(2%)

Note. The "Other" category included no response or a comment that could not be classified as a yes or no.

Table 15

Agency's Recommendation to Use Nursing Diagnoses (AGENCY)

Group	Yes	No	Other
Expert Nursing Diagnosticians	65(92%)	1(1%)	5(7%)
Staff Nurses	19(76%)	6(24%)	0
Nursing Faculty	42(98%)	1(2%)	0
Nursing Students	36(84%)	4(9%)	3(7%)
Nursing Administrators	41(72%)	16(28%)	0

Note. The "Other" category included no response or a comment that could not be classified as yes or no.

Table 16

Affiliation with Schools of Nursing Teaching Nursing
Diagnosis (SCHOOL)

Group	Yes	No	Other
Expert Nursing Diagnosticians	56(79%)	2(3%)	13(18%)
Staff Nurses	10(40%)	0	15(60%)
Nursing Faculty	43(100%)	0	0
Nursing Students	41(96%)	1(2%)	1(2%)
Nursing Administrators	23(40%)	3(5%)	31(55%)

Note. The "Other" category included no response, no affiliation with a school of nursing, or a comment that could not be classified as yes or no.

Table 17

Source of Learning about Nursing Diagnoses (LEARN)

Group	School of Nursing	Work- shops	Hospital Inservices	Self- study	Other
Expert Nursing Diagnosticians	4(6%)	3(4%)	0	8(11%)	56(79%)
Staff Nurses	2(8%)	1(4%)	8(32%)	1(4%)	13(52%)
Nursing Faculty	7(16%)	3(7%)	1(2%)	8(19%)	24(56%)
Nursing Students	36(84%)	1(2%)	0	1(2%)	5(12%)
Nursing Administrators	9(16%)	4(7%)	0	9(16%)	35(61%)

Note. The "Other" category included responses that two or more sources were utilized.

Table 18

Utilization of the Approved List of Nursing Diagnoses (LIST)

Group	Only List Used	Primarily Used List	Part of a Master List	Not Used at All
Expert Nursing Diagnosticians	12(17%)	44(62%)	15(21%)	0
Staff Nurses	4(16%)	5(20%)	6(24%)	10(40%)
Nursing Faculty	2(4%)	17(39%)	9(21%)	15(36%)
Nursing Students	2(3%)	17(39%)	9(21%)	15(36%)
Nursing Administrators	2(3%)	23(40%)	18(32%)	14(25%)

Note. The nursing diagnosis list was approved by the National Conference for the Classification of Nursing Diagnoses.

preparation, the use of nursing diagnosis in practice, the clinical agency's recommendation to use nursing diagnosis in documentation, the teaching of nursing diagnosis in school, source of knowledge of nursing diagnosis, and use of an accepted list as the combination of independent variables. The results of these analyses are reported in Tables 19, 20, 21, and 22.

Hypothesis 2a. All correlations between dimension one and the combination of independent variables are zero. Dimension one is the dimension of professional nursing and clinical knowledge. The multiple correlation (R) was not significantly different from zero ($R^2=.106$, $F=1.01$,

df=25,213, $p=.459$, see Table 19). The data do not provide enough evidence to discredit the null hypothesis; therefore, hypothesis 2a was not rejected.

Hypothesis 2b. All correlations between dimension two and the combination of independent variables are zero. Dimension two is the dimension of commitment to professional practice and nursing diagnoses. The multiple correlation (R) was not significantly different from zero ($R^2=.125$, $F=1.22$, $df=25,213$, $p=.227$, see Table 20). The data do not provide enough evidence to discredit the null hypothesis; therefore, hypothesis 2b was not rejected.

Table 19

Multiple Regression Analysis of Dimension One--Professional Nursing and Clinical Knowledge

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	17.789	25	.712	1.01	.459
Group	2.097	4	.524	.74	.565
Years	.745	1	.745	1.05	.306
Educ	2.482	7	.355	.50	.833
Usedx	.479	2	.240	.34	.713
Agency	1.311	2	.655	.93	.397
School	2.999	2	1.500	2.12	.123
Learn	3.302	4	.826	1.17	.326
List	4.374	3	1.458	2.06	.106
Error	150.582	213	.707		
Total	168.371	238			

Note. $R^2 = .106$

Table 20

Multiple Regression Analysis of Dimension Two--Commitment to Professional Practice and Nursing Diagnosis

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	34.856	25	1.394	1.22	.227
Group	5.909	4	1.498	1.29	.276
Years	1.599	1	1.599	1.40	.239
Educ	7.509	7	1.073	.94	.479
Usedx	.058	2	.029	.03	.975
Agency	1.476	2	.738	.64	.526
School	2.863	2	1.432	1.25	.289
Learn	9.854	4	2.463	2.15	.076
List	5.587	3	1.862	1.62	.185
Error	244.198	213	1.146		
Total	279.054	238			

Note. $R^2 = .125$

Hypothesis 2c. All correlations between dimension three and the combination of independent variables are zero. Dimension three is the dimension of skill in cue clustering and patient assessment. The multiple correlation (R) was not significantly different from zero ($R^2=.069$, $F<1.0$, $df=25,213$, $p=.913$, see Table 21). The data do not provide enough evidence to discredit the null hypothesis; therefore, hypothesis 2c was not rejected.

Hypothesis 2d. All correlations between the combined dimensions and the combination of independent variables are

Table 21

Multiple Regression Analysis of Dimension Three--Skill in Cue Clustering and Patient Assessment

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	13.952	25	.558	.63	.913
Group	1.687	4	.422	.48	.752
Years	1.075	1	1.975	1.22	.271
Educ	2.324	7	.332	.38	.915
Usedx	1.073	2	.537	.61	.545
Agency	.839	2	.420	.48	.622
School	2.926	2	1.463	1.66	.193
Learn	2.049	4	.512	.58	.677
List	1.978	3	.659	.75	.525
Error	187.763	213	.882		
Total	201.715	238			

Note. $R^2 = .069$

zero. The multiple correlation (R) was not significantly different from zero ($R^2 = .104$, $F < 1.0$, $df = 25, 213$, $p = .476$, see Table 22). The data do not provide enough evidence to discredit the null hypothesis; therefore, hypothesis 2d was not rejected.

Since none of the alternate hypotheses were supported, the calculations of the regression weights for the regression equations were not done. The independent variables, though, were further explored. This process is discussed in the following section.

Table 22

Multiple Regression Analysis of the Combined Dimensions by the Expanded Model

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	156.212	25	6.248	.99	.476
Group	22.072	4	5.518	.88	.478
Years	10.018	1	10.018	1.59	.208
Educ	18.510	7	2.644	.42	.889
Usedx	3.287	2	1.643	.26	.770
Agency	8.903	2	4.452	.71	.494
School	23.610	2	11.755	1.87	.157
Learn	38.002	4	9.501	1.51	.199
List	31.909	3	10.636	1.69	.169
Error	1338.687	213	6.285		
Total	1494.899	238			

Note. $R^2 = .104$

Final Regression Model

The extended multiple regression model provided no significant results nor cues as to what was influencing the participant's responses as reflected in the dimension scores. The SAS program, however, gives information concerning the sums of squares and F ratios for each variable in the combination. The SAS analyses were inspected to see if there were any variables that may approach a statistically significant contribution. Then a

stepwise regression analysis was conducted to assist in identification of a final regression model.

Volicer (1984) describes a procedure for this approach. The first step is to select from the independent variables the best single predictor of the dependent variable. This variable is the one that has the highest zero-order correlation with the dependent variable or, in this case, variables from the SAS analysis that approached statistically significant contributions. The second step is to select from the remaining independent variables the one that will improve the prediction the most when combined with the variable selected in the first step. This procedure is repeated until a satisfactory solution is achieved. The object is to select variables that will result in the largest increase in R^2 for the prediction equation. The F statistic is used to determine whether the addition of a new variable has met this criterion. The equation for this F statistic is:

$$F = \frac{\text{Regression sum of squares (2 var)} - \text{Regression sum of squares (1 var)}}{\text{Mean square deviations (2 var)}}$$

(Volicer, 1984, p. 158).

If the F statistic is significant, then the variable is retained in the equation.

The SAS analysis of dimension one revealed two variables that might have some explanatory significance:

SCHOOL, SS=2.999, F ratio=2.12, PR>F=.122; and LIST, SS=4.374, F ratio=2.06, PR>F=.106. These two variables were explored (see Appendix I) and a final model was developed. This model had the lowest mean square error (.671) and the largest R^2 (.096) and is reported in Table 23. The regression coefficients were calculated according to Pedhazur (1986). The regression equation for this model was as follows:

$$\begin{aligned} \text{Dimension one} = & 7.139 + 0.432 \text{ SCHOOL}_1 - 0.653 \\ & \text{SCHOOL}_2 + 0.156 \text{ LIST}_1 - 0.277 \text{ LIST}_2 + 0.073 \text{ LIST}_3 \\ & - 0.062 \text{ INTERACTION}_{11} + 0.080 \text{ INTERACTION}_{12} + \\ & 0.062 \text{ INTERACTION}_{13} + 0.268 \text{ INTERACTION}_{21} - 0.653 \\ & \text{INTERACTION}_{22} - 0.226 \text{ INTERACTION}_{23}. \end{aligned}$$

Table 23

Multiple Regression Analysis of Dimension One by SCHOOL, LIST, LIST*SCHOOL

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	10.863	11	.988	1.472	.141
SCHOOL	1.248	2	.624	.930	.396
LIST	.752	3	.251	.374	.772
LIST*SCHOOL Interaction	8.863	6	1.477	2.203	.044*
ERROR	152.222	227	.671		
Total	163.085	238			

Note. $R^2 = .096$, Dimension one is the dimension of professional nursing and clinical knowledge.

*p<.05

The model was then evaluated for compliance with the assumptions of multiple regression. Normality was established by viewing a probability plot of the residuals and the remaining assumptions were validated by reviewing a plot of the residuals by the estimate (see Appendix J).

The SAS analysis of dimension two revealed three variables that might have some explanatory significance: YEARS, SS=2.93, F ratio=2.56, p=.111; LEARN, SS=9.85, F ratio=2.15, p=.076; and LIST, SS=5.59, F ratio=1.62, p=.18. These three variables were explored (see Appendix K) and a final model was developed. This model had the lowest mean square error (1.140) and the largest R^2 (0.10) and is reported in Table 24. The regression equation for this model was as follows:

$$\begin{aligned}
 \text{Dimension two} &= 7.321 + 0.224 \text{ LEARN}_1 + 0.054 \\
 &\text{LEARN}_2 - 0.216 \text{ LEARN}_3 + 0.133 \text{ LEARN}_4 + 0.0640 \\
 &\text{LIST}_1 - 0.363 \text{ LIST}_2 + 0.127 \text{ LIST}_3 + 0.149 \\
 &\text{INTERACTION}_{11} + 0.254 \text{ INTERACTION}_{12} - 0.454 \\
 &\text{INTERACTION}_{13} + 0.319 \text{ INTERACTION}_{21} - 0.680 \\
 &\text{INTERACTION}_{22} - 0.169 \text{ INTERACTION}_{23} + 0.588 \\
 &\text{INTERACTION}_{31} - 0.161 \text{ INTERACTION}_{32} + 0.518 \\
 &\text{INTERACTION}_{33} - 0.511 \text{ INTERACTION}_{41} + 0.113 \\
 &\text{INTERACTION}_{42} - 0.051 \text{ INTERACTION}_{43}.
 \end{aligned}$$

The model was then evaluated for compliance with the assumptions of multiple regression. Normality was established by viewing a probability plot of the residuals and the remaining assumptions were validated by reviewing a plot of the residuals by the estimate (see Appendix L).

Table 24

Multiple Regression Analysis of Dimension Two by LEARN, LIST
and LEARN*LIST

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
Model	29.182	19	1.546	1.356	.140
LEARN	3.402	4	.850	.746	.562
LIST	9.394	3	3.131	2.747	.044*
LEARN*LIST Interaction	16.386	12	1.366	1.198	.286
ERROR	249.607	219	1.140		
Total	279.004	238			

Note. $R^2 = .102$, Dimension two is the dimension of commitment to professional nursing practice and nursing diagnosis.

* $p < .05$

The SAS analysis of dimension three did not reveal any variables that might have some explanatory significance. In examining the correlation matrix, a possible significant relationship was identified between LIST and the combined dimensions score. This was analyzed and the results are reported in Table 25. The regression equation for this model was as follows:

$$\text{Dimension Total} = 21.949 + 0.468 \text{ LIST}_1 - 0.194 \text{ LIST}_2 + 0.386 \text{ LIST}_3$$

Table 25

Analysis of the Combined Dimensions by LIST.

Source	Sums of Squares	DF	Mean Squares	F Ratio	PR>F
LIST	35.063	3	11.688	1.873	.135
ERROR	1466.042	235	6.238		

Note. $R^2 = .023$

Further Analysis

A final method can be used to understand the data in a regression analysis--clustering (Dunn-Rankin, 1983). The function of clustering is data reduction and description. The model is simple to use and has no underlying assumptions. Clustering merely attempts to group objects together that are generally more similar.

The dependent variables, the 21 requisites that comprise the three dimensions of the nursing diagnostic process, were explored using a clustering technique. Waern's graphic similarity analysis was the technique used (Dunn-Rankin, 1983). Analysis proceeds in a stepwise fashion using levels of significance for correlations as a standard (see Figure 7). The levels of significance chosen for analysis were .01 and .05. Appendix H contains the

Figure 7.

Cluster one is activities of data gathering and analysis:
1, 2, 3, 4, 7, 9, 11, 13, 14, 15, 17, 20, 21.
Cluster two is professional commitment: 5, 6, 8, 10, 12,
16, 18, 19.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
10. Participation in professional development activities, e. g., reading, workshops
11. Knowledge about the different diagnostic categories
12. Skill in interpersonal relationships
13. Ability to interpret the patient's signs and symptoms
14. Knowledge of nursing concepts
15. Ability to interpret laboratory and/or diagnostic studies
16. Commitment to collaborating with the patient to confirm the nursing diagnosis
17. Knowledge of the defining characteristics of each diagnostic category
18. Ability to differentiate nursing practice from medical practice
19. Professional commitment to using nursing diagnoses
20. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
21. Ability to verify the signs and symptoms for sufficiency and accuracy

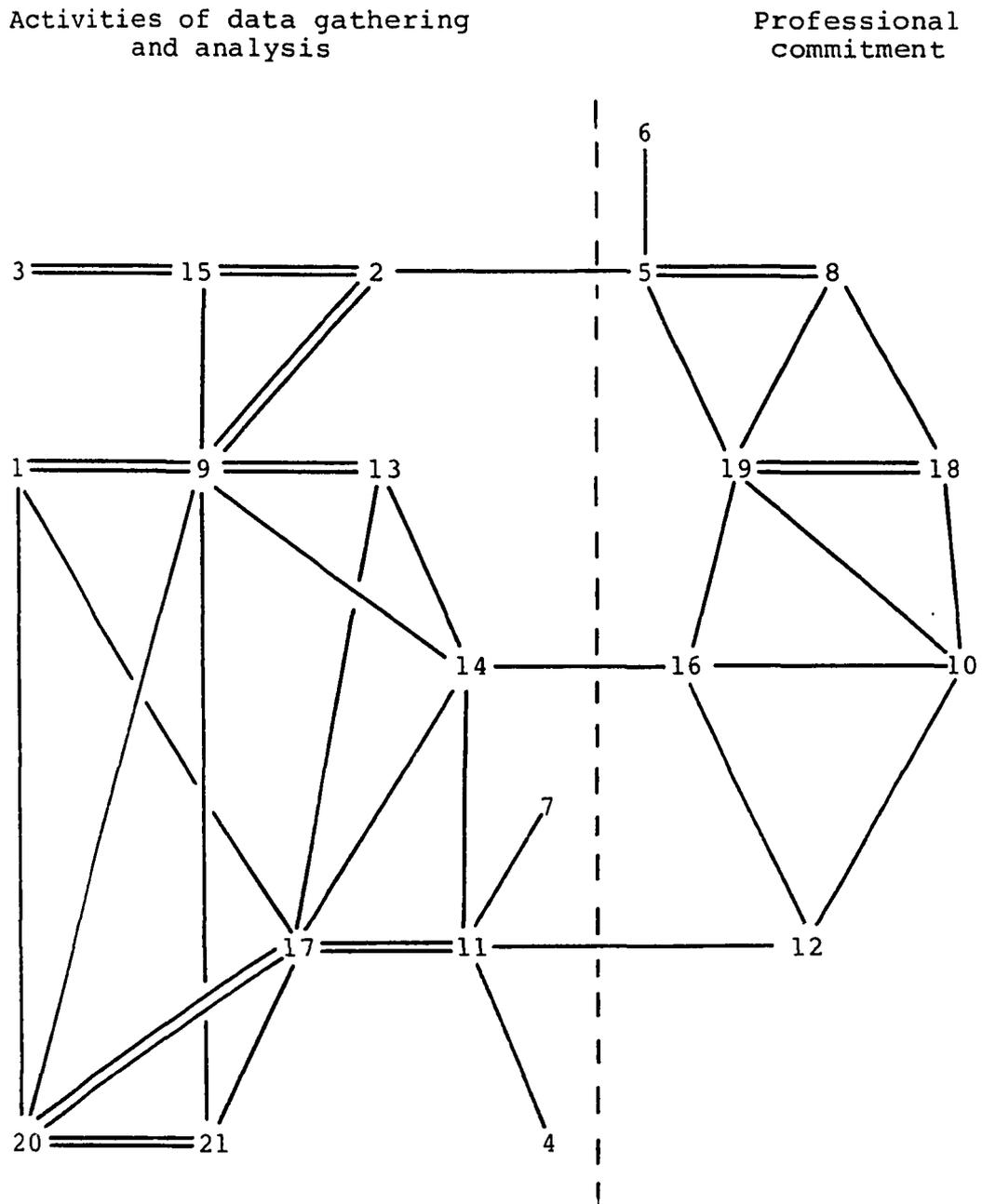


Figure 7. Waern's Graphic Similarity Analysis of the Nursing Diagnostic Process data. Double lines indicate a significance level of .01, single lines indicate a significance level of .05.

correlation table used in this analysis. This graphic analysis reduces the requisites of the nursing diagnostic process to two clusters instead of the three dimensions found in the KYST-2 solution. These clusters appear to be (a) activities of data gathering and analysis and (b) professional commitment. The implications of this analysis will be discussed in Chapter V in the section on Judgments.

Analysis of Preference Data

The preference data were analyzed using the MDPREF program (Chang, 1968). These data were obtained from the second part of the questionnaire the ranking of the requisites of the nursing diagnostic process in order of importance. Each of the five groups was analyzed separately to determine members' preferences. A three-dimensional solution was generated for each of the five groups of nurses. The dimensions generated by this solution are not identical to the dimensions of the nursing diagnostic process. These are dimensions developed from preference data, not judgment data. A unidimensional analysis was also conducted in order to facilitate the interpretation of the multidimensional preference solutions. This analysis followed the guidelines for unidimensional rank scaling developed by Dunn-Rankin (1983, Chapter 5). Each of the solutions will be discussed by group: Nursing Faculty

Preferences, Nursing Student Preferences, Staff Nurse Preferences, and Expert Nursing Diagnostician Preferences.

Nursing Faculty Preferences

The three-dimensional solution for nursing faculty preferences accounted for 60% of the variance. The nursing faculty participants are plotted in the object spaces. Each nursing faculty member has a preference vector that represents his or her preference for the relative importance of the requisites of the nursing diagnostic process. A plot of the requisites of the nursing diagnostic process and the nursing faculty preferences are given in Figure 8 and Appendix M, Figures 16 and 17.

The plots of dimensions one and two and dimensions one and three are almost identical. The nursing faculty demonstrated a preference for 12 of the 21 requisites. The following are the 12 preferred requisites: (a) knowledge of nursing concepts, (b) skill in psychosocial assessment, (c) skill in interpersonal relationships, (d) ability to see relationships between the patient's signs and symptoms, (e) ability to analyze the patient's signs and symptoms, (f) ability to interpret the patient's signs and symptoms, (g) ability to verify the signs and symptoms for sufficiency and accuracy, (h) skill in techniques of physical assessment, (i) ability to differentiate nursing practice from medical practice, (j) professional commitment to using nursing

Figure 8.

The preference vectors for the nursing faculty on the dimension of professional nursing role vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data. Faculty revealed strong preferences for requisites concerning assessment skills, critical thinking skills, and professional role.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 7 and C occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

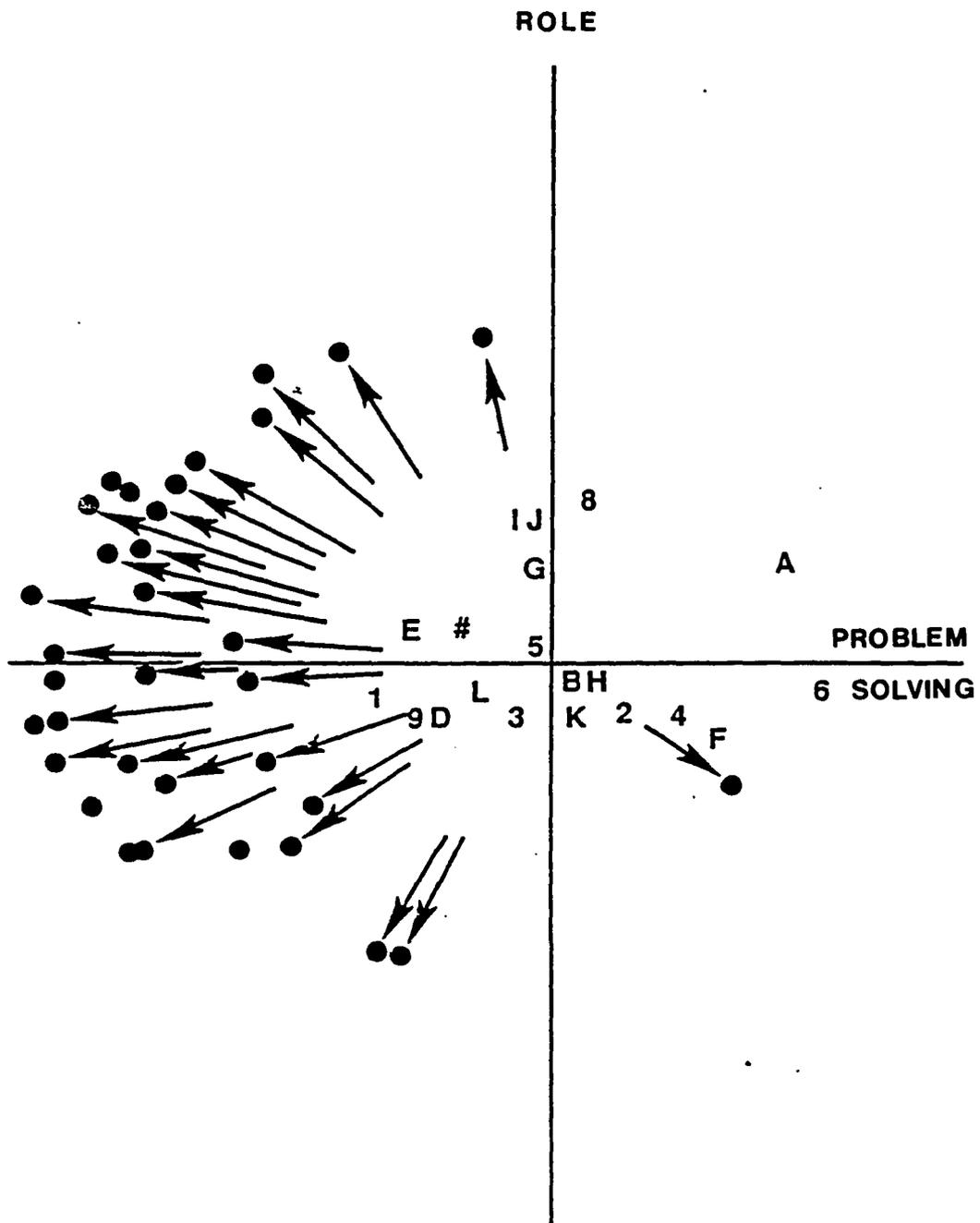


FIGURE 8.

diagnosis, (k) commitment to collaborating with the patient to confirm the nursing diagnosis, and (l) ability to determine priorities between different diagnoses (see Figure 8 and Appendix M, Figure 16). The unidimensional analysis confirms the visual interpretation of the multidimensional analysis. Table 26 lists the scale scores for the requisites of the nursing diagnostic process.

The preferences for these requisites reflect an equal sampling from each of the three dimensions of the nursing diagnostic process as identified in Chapter III under the heading of Instrument Development. The nursing faculty appear to have selected four elements from each dimension that are most important to them. From the dimension of professional nursing and clinical knowledge, the following requisites were selected: (a) ability to interpret the patient's signs and symptoms, (b) ability to verify the signs and symptoms for sufficiency and accuracy, (c) commitment to collaborating with the patient to confirm the nursing diagnosis, and (d) ability to differentiate nursing practice from medical practice. The following requisites were preferred from the dimension of commitment to professional practice and nursing diagnosis: (a) skill in interpersonal relationships, (b) knowledge of nursing concepts, (c) professional commitment to using nursing diagnosis, and (d) ability to determine priorities between different diagnoses. Finally, the following requisites were

Table 26

Unidimensional Scale Scores of the Nursing Faculty
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Ability to see relationships between the patient's signs and symptoms	71.86
Knowledge of nursing concepts	67.00
Ability to analyze the patient's signs and symptoms	65.71
Ability to interpret the patient's signs and symptoms	65.00
Skill in psychosocial assessment	60.86
Skill in interpersonal relationships	60.57
Ability to verify the signs and symptoms for sufficiency and accuracy	59.29
Skill in techniques of physical assessment	54.86
Professional commitment to using nursing diagnoses	53.29
Ability to differentiate nursing practice from medical practice	52.29
Commitment to collaborating with the patient to confirm the nursing diagnosis	50.86
Ability to determine priorities between diagnoses	50.14
Knowledge about the different diagnostic categories	50.00
Commitment to furthering quality nursing care	48.14

(table continues)

Table 26 (continued)

Unidimensional Scale Scores of the Nursing Faculty
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category	48.00
Knowledge of the defining characteristics of each diagnostic category	46.29
Knowledge of disease processes	41.43
Experience using nursing diagnoses	38.14
Ability to interpret laboratory and/or diagnostic studies	28.86
Participation in professional development activities	20.43
Ability to write "SOAP" notes	15.86

Note. A 26 point difference between scale scores indicates a significant difference.

preferred from the dimension of skill in cue clustering and patient assessment: (a) skill in psychosocial assessment, (b) skill in techniques of physical assessment, (c) ability to see relationships between the patient's signs and symptoms, and (d) ability to analyze the patient's signs and symptoms.

The plot of dimensions two and three revealed no particular group preference for any cluster of requisites. The plot, however, revealed wide variation in individual preferences for the requisites of the nursing diagnostic process (see Appendix M, Figure 17).

Nursing Student Preference

The three-dimensional solution for nursing student preferences accounted for 62% of the variance. The nursing student participants are plotted in the object spaces. Each nursing student has a preference vector that represents his or her preference for the relative importance of the requisites of the nursing diagnostic process. The plots of the requisites of the nursing diagnostic process and the nursing students' preferences are given in Figure 9 and Appendix M, Figures 18 and 19.

The plots of dimensions one and two and dimensions one and three are very similar. The nursing students demonstrated a preference for seven of the 21 requisites. The following are the seven preferred requisites: (a)

Figure 9.

The preference vectors for the nursing students on the dimension of professional nursing role vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data. Students revealed strong preferences for requisites concerning knowledge, assessment skills, and critical thinking skills.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 5, 7, C, and G occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

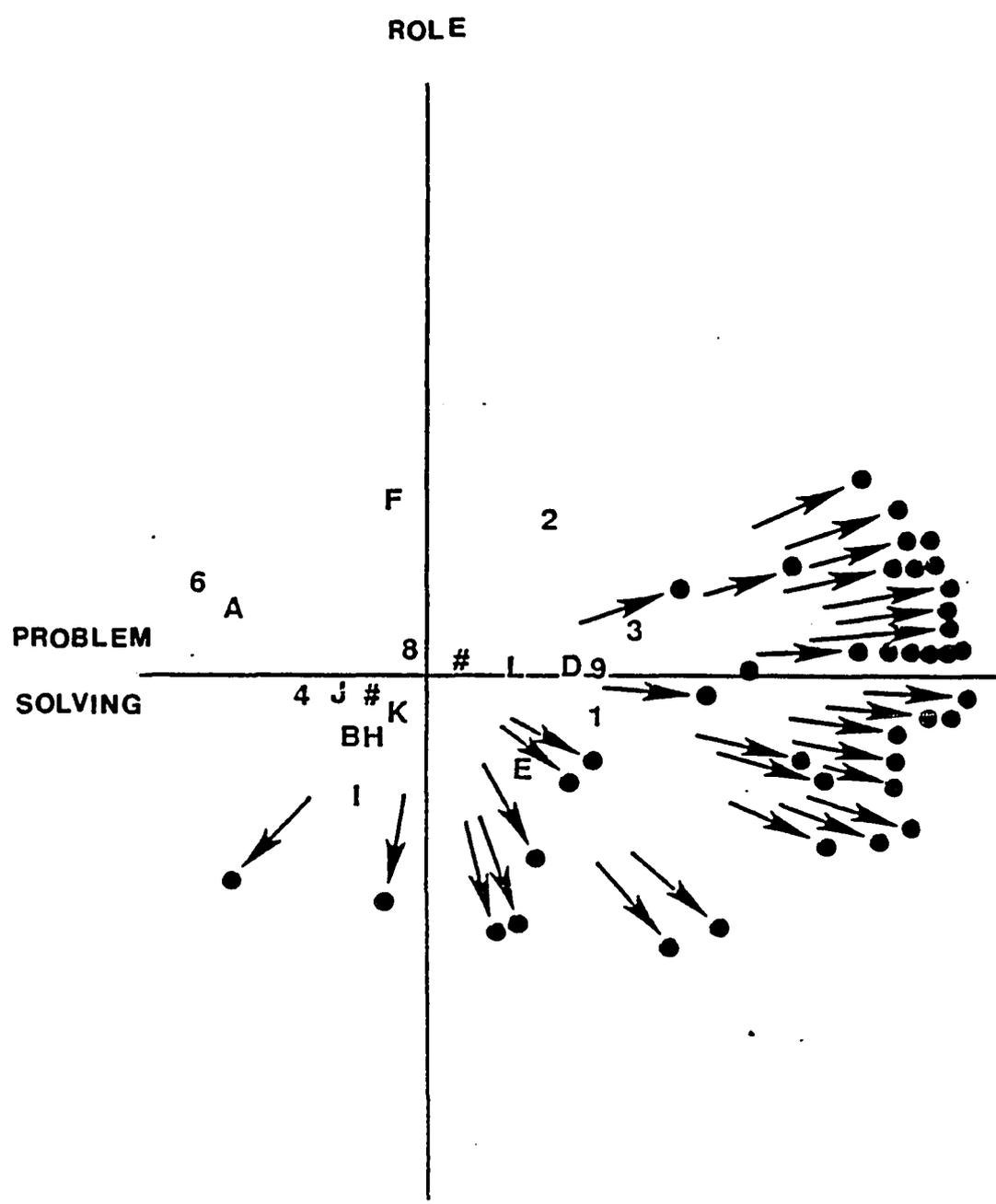


FIGURE 9.

ability to verify the signs and symptoms for sufficiency and accuracy, (b) ability to interpret the patient's signs and symptoms, (c) ability to analyze the patient's signs and symptoms, (d) ability to see relationships between the patient's signs and symptoms, (e) knowledge of nursing concepts, (f) skill in techniques of physical assessment, and (g) knowledge of nursing concepts. The plot of dimensions one and three also included a preference for knowledge of disease processes (see Figure 9 and Appendix M, Figure 18). The unidimensional analysis confirms the visual interpretation of the multidimensional analysis. Table 27 lists the significant scale scores for the requisites of the nursing diagnostic process.

The preferences for these requisites reflect an equal sampling from two of the dimensions of the nursing diagnostic process. The nursing students appear to have selected three requisites from each of the two dimensions that are most important to them. From the dimension of professional nursing and clinical knowledge, the following requisites were selected: (a) knowledge of disease processes, (b) ability to interpret the patient's signs and symptoms, and (c) ability to verify the signs and symptoms for sufficiency and accuracy. The following requisites were preferred from the dimension of skill in cue clustering and patient assessment: (a) skill in techniques of physical assessment, (b) ability to analyze the patient's signs and

Table 27

Unidimensional Scale Scores of the Nursing Student
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Skill in techniques of physical assessment	74.05
Ability to see relationships between the patient's signs and symptoms	72.62
Knowledge of nursing concepts	69.29
Ability to analyze the patient's signs and symptoms	69.05
Ability to interpret the patient's signs and symptoms	67.74
Knowledge of disease processes	62.26
Ability to verify the signs and symptoms for sufficiency and accuracy	60.00
Skill in psychosocial assessment	55.95
Ability to determine priorities between diagnoses	54.76
Commitment to furthering quality nursing care	52.98
Professional commitment to using nursing diagnoses	51.67
Skill in interpersonal relationships	45.83
Commitment to collaborating with the patient to confirm the nursing diagnosis	44.17
Ability to differentiate nursing practice from medical practice	44.05

(table continues)

Table 27 (continued)

Unidimensional Scale Scores of the Nursing Student
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category	43.93
Knowledge of the defining characteristics of each diagnostic category	42.98
Knowledge about the different diagnostic categories	39.29
Ability to interpret laboratory and/or diagnostic studies	37.39
Experience using nursing diagnoses	35.24
Participation in professional development activities	19.05
Ability to write "SOAP" notes	17.98

Note. A 24 point difference between scale scores indicates a significant difference.

symptoms, and (c) ability to see relationships between the patient's signs and symptoms. One requisite was selected from the dimension of commitment to professional practice and nursing diagnosis: knowledge of nursing concepts.

The plot of dimensions two and three revealed no particular group preference for any cluster of requisites. The plot, however, revealed wide variation in individual preferences for the requisites of the nursing diagnostic process (see Appendix M, Figure 19).

Nursing Administrator Preferences

The three-dimensional solution for nursing administrator preferences accounted for 63% of the variance. The nursing administrator participants are plotted in the object spaces. Each nursing administrator has a preference vector that represents his or her preference for the relative importance of the requisites of the nursing diagnostic process. The plots of the requisites of the nursing diagnostic process and the nursing administrators' preferences are given in Figure 19 and Appendix M, Figures 20, and 21.

The plots of dimensions one and two and dimensions one and three are very similar. The nursing administrators demonstrated a preference for eleven of the 21 requisites that are common to both plots. These eleven requisites are (a) ability to analyze the patient's signs and symptoms, (b)

Figure 10.

The preference vectors for the nursing administrators on the dimension of knowledge (general knowledge and specific nursing diagnosis knowledge) vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data. Students revealed strong preferences for requisites concerning knowledge, assessment skills, and critical thinking skills.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

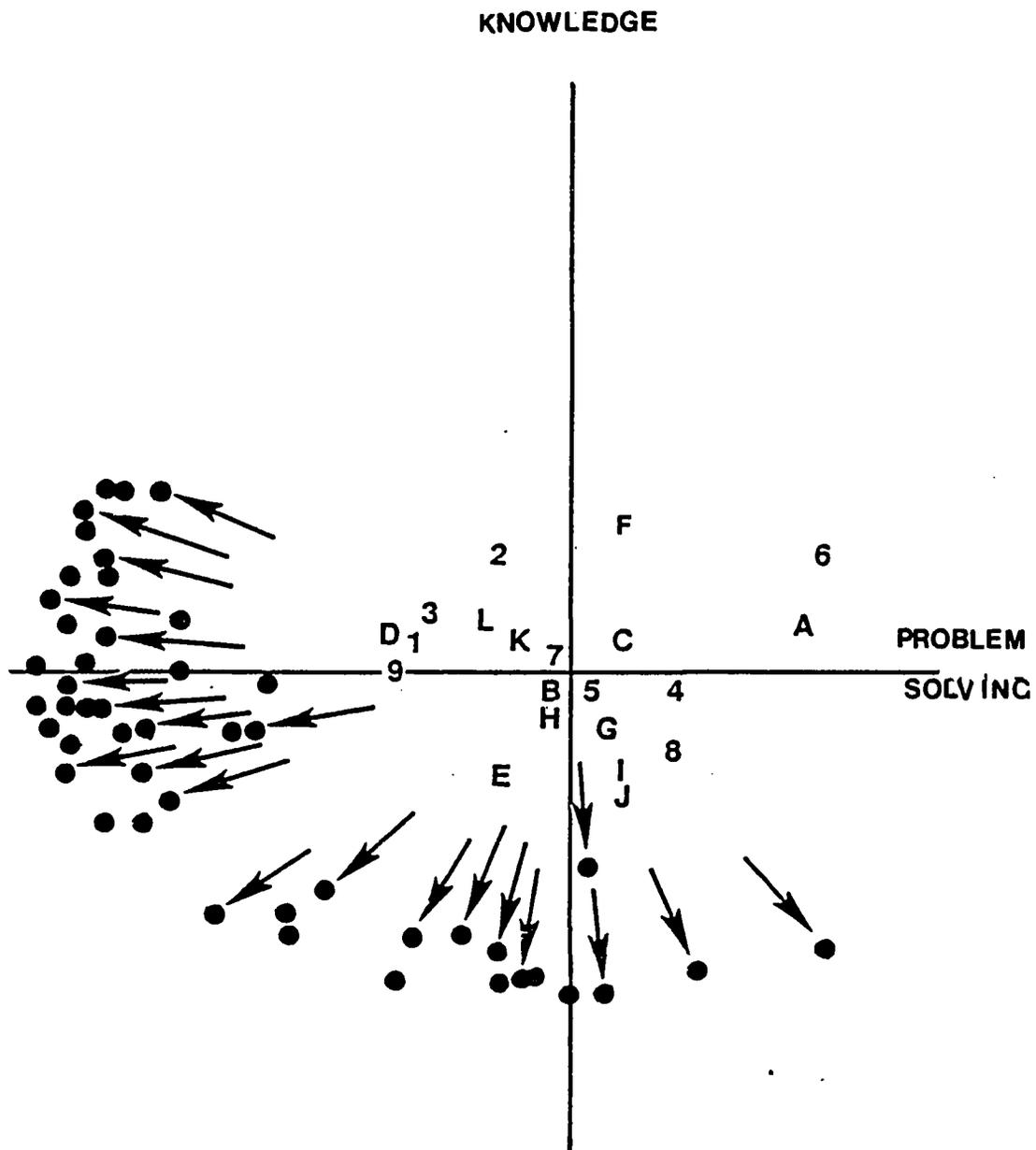


FIGURE 10.

ability to interpret the patient's signs and symptoms, (c) ability to see relationships between the patient's signs and symptoms, (d) skill in techniques of physical assessment, (e) skill in psychosocial assessments, (f) ability to verify the signs and symptoms for sufficiency and accuracy, (g) knowledge of nursing concepts, (h) knowledge about the different diagnostic categories, (i) knowledge of the defining characteristics of each diagnostic category, (j) ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category, and (k) ability to differentiate nursing practice from medical practice. The plot of dimensions one and three also included a preference for knowledge of disease processes (see Appendix M, Figure 20). The plot of dimensions one and two included preferences for two other requisites (see Figure 10). These requisites are (a) commitment to collaborating with the patient to confirm the nursing diagnosis and (b) professional commitment to using nursing diagnoses.

The plot of dimensions two and three revealed wide variation in preferences among the nursing administrators for the requisites of the nursing diagnostic process. The unidimensional analysis confirms the visual interpretation of the multidimensional analysis. Table 28 lists the significant scale score for the requisites of the nursing diagnostic process.

Table 28

Unidimensional Scale Scores of the Nursing Administrator
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Ability to analyze the patient's signs and symptoms	70.28
Ability to interpret the patient's signs and symptoms	68.87
Ability to see relationships between the patient's signs and symptoms	68.02
Skill in techniques of physical assessment	66.89
Knowledge of nursing concepts	64.53
Ability to verify the signs and symptoms for sufficiency and accuracy	58.87
Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category	54.62
Knowledge of the defining characteristics of each diagnostic category	54.06
Professional commitment to using nursing diagnoses	53.68
Knowledge about the different diagnostic categories	52.64
Skill in psychosocial assessment	52.08
Ability to differentiate nursing practice from medical practice	51.70
Knowledge of disease processes	51.04
Commitment to collaborating with the patient to confirm the nursing diagnosis	50.00

(table continues)

Table 28 (continued)

Unidimensional Scale Scores of the Nursing Administrator
Preferences for the Requisites of the Nursing Diagnostic
Process

Requisite	Scale Score
Ability to determine priorities between diagnoses	47.64
Commitment to furthering quality nursing care	46.32
Skill in interpersonal relationships	42.55
Experience using nursing diagnoses	37.45
Ability to interpret laboratory and/or diagnostic studies	32.36
Participation in professional development activities	17.36
Ability to write "SOAP" notes	10.00

Note. A 22 point difference between scale scores indicates a significant difference.

The preferences for these requisites reflect an equal sampling from two of the dimensions of the nursing diagnostic process and a lesser sampling from the remaining dimension. From the dimension of professional nursing and clinical knowledge, the following requisites were selected: (a) knowledge of disease processes, (b) knowledge about the different diagnostic categories, (c) ability to interpret the patient's signs and symptoms, (d) commitment to collaborating with the patient to confirm the nursing diagnosis, (e) ability to differentiate nursing practice from medical practice, and (f) ability to verify the signs and symptoms for sufficiency and accuracy. From the dimension of skill in cue clustering and patient assessment, the following requisites were selected: (a) ability to see relationships between the patient's signs and symptoms, (b) skill in techniques of physical assessment, (c) skill in psychosocial assessment, (d) ability to analyze the patient's signs and symptoms, and (e) ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category. The remaining dimension of commitment to professional practice and nursing diagnosis contained only three preferred requisites. These requisites are (a) knowledge of nursing concepts, (b) knowledge of the defining characteristics of each diagnostic category, and (c) professional commitment to using nursing diagnoses.

The plot of dimension two and three revealed wide variation in preference among the nursing administrators for the requisites of the nursing diagnostic process (see Appendix M, Figure 21).

Staff Nurse Preferences

The three-dimensional solution for staff nurses' preferences accounted for 81% of the variance. The staff nurse participants are plotted in the object spaces. Each staff nurse has a preference vector that represents his or her preference for the relative importance of the requisites of the nursing diagnostic process. The plots of the requisites of the nursing diagnostic process and the staff nurses' preferences are given in Figure 11 and Appendix M, Figures 22 and 23.

All three plots revealed strong preferences held by the staff nurses. Upon inspection, five requisites were found to exist in all three plots. These requisites are (a) skill in techniques of physical assessment, (b) ability to analyze the patient's signs and symptoms, (c) ability to interpret the patient's signs and symptoms, (d) ability to see relationships between the patient's signs and symptoms, and (e) ability to verify the signs and symptoms for sufficiency and accuracy. Interpretation and verification are in the dimension of professional nursing and clinical knowledge.

Figure 11.

The preference vectors for the staff nurses on the dimension of problem solving (assessment and critical thinking skills) vs. the dimension of professional nursing role from a three dimensional solution of preference data. The staff nurses revealed strong preferences for requisites concerning assessment and critical thinking skills.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites B and E occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

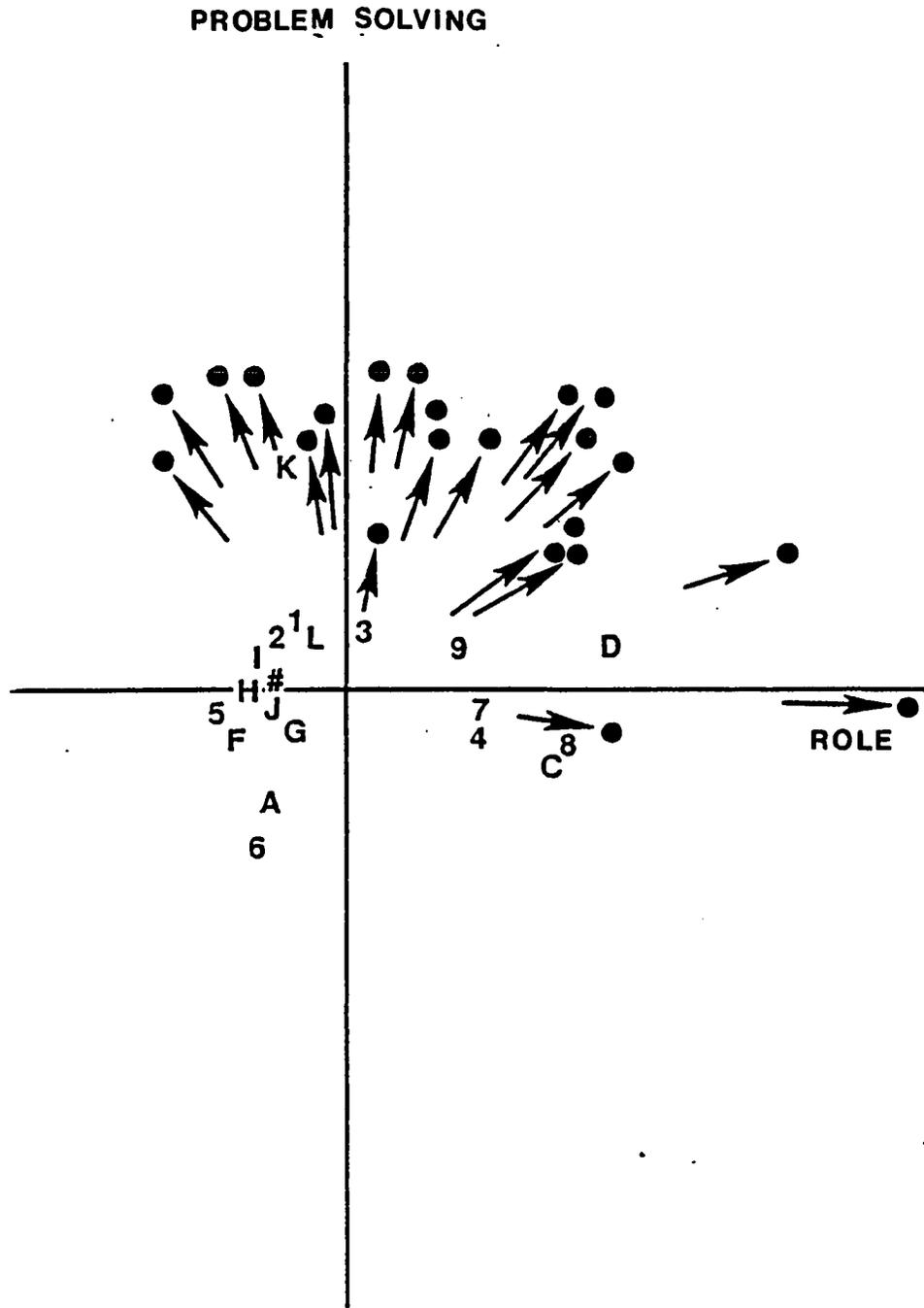


FIGURE 11.

The remaining three requisites are from the dimension of skill in cue clustering and patient assessment.

The plot of dimensions one and two revealed one other requisite that the staff nurses value. This requisite is the ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category. This requisite is from the dimension of skill in cue clustering and patient assessment (see Figure 11).

The plot of dimensions one and three revealed five other requisites in addition to the five requisites already mentioned. Three of the requisites come from the dimension of professional nursing and clinical knowledge. These requisites are (a) commitment to furthering quality nursing care, (b) knowledge of disease processes, and (c) knowledge about the different diagnostic categories. The last two requisites are (a) knowledge of nursing concepts and (b) professional commitment to using nursing diagnoses. These are the only requisites from the dimension of commitment to professional practice and nursing diagnoses for which the staff nurses indicated a preference (see Appendix M, Figure 22).

The plot of dimensions two and three revealed one other requisite in addition to the five requisites held in common by all three plots. This requisite is the ability to differentiate nursing practice from medical practice (see

Appendix M, Figure 23). The requisite is from the dimension of professional nursing and clinical knowledge.

The unidimensional analysis confirms the visual interpretation of the multidimensional analysis. Table 29 lists the significant scale scores for the requisites of the nursing diagnostic process.

Expert Nursing Diagnostician Preferences

The three-dimensional solution for expert nursing diagnostician preferences accounted for 64% of the variance. The expert nursing diagnostician participants are plotted in the object spaces. Each expert nursing diagnostician has a preference vector that represents his or her preference for the relative importance of the requisites of the nursing diagnostic process. The plots of the requisites of the nursing diagnostic process and the expert nursing diagnosticians' preferences are given in Figure 12 and Appendix M, Figures 24 and 25.

The plots of dimensions one and two and dimensions one and three are almost identical. The expert nursing diagnosticians demonstrated a preference for eight of the 21 requisites. These eight requisites are (a) ability to see relationships between the patient's signs and symptoms, (b) ability to interpret the patient's signs and symptoms, (c) ability to analyze the patient's signs and symptoms, (d) ability to verify the signs and symptoms for sufficiency and

Table 29

Unidimensional Scale Scores of the Staff Nurses' Preferences
for the Requisites of the Nursing Diagnostic Process

Requisite	Scale Score
Skill in techniques of physical assessment	71.81
Ability to see relationships between the patient's signs and symptoms	69.76
Ability to analyze the patient's signs and symptoms	68.86
Ability to verify the signs and symptoms for sufficiency and accuracy	66.81
Ability to interpret the patient's signs and symptoms	66.81
Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category	60.90
Knowledge of disease processes	57.95
Knowledge of nursing concepts	57.72
Commitment to furthering quality nursing care	54.77
Ability to differentiate nursing practice from medical practice	54.77
Professional commitment to using nursing diagnoses	53.86
Knowledge about the different diagnostic categories	53.40
Knowledge of the defining characteristics of each diagnostic category	49.31
Experience using nursing diagnoses	48.40

(table continues)

Table 29 (continued)

Unidimensional Scale Scores of the Staff Nurses' Preferences
for the Requisites of the Nursing Diagnostic Process

Requisite	Scale Score
Ability to determine priorities between diagnoses	47.95
Commitment to collaborating with the patient to confirm the nursing diagnosis	42.04
Skill in psychosocial assessment	39.31
Skill in interpersonal relationships	34.31
Ability to interpret laboratory and/or diagnostic studies	27.50
Participation in professional development activities	15.90
Ability to write "SOAP" notes	6.81

Note. A 33 point difference between scale scores indicates a significant difference.

Figure 12.

The preference vectors for the expert nursing diagnosticians on the dimension of professional nursing role vs. the dimension of knowledge (general knowledge and specific nursing diagnosis knowledge) from a three dimensional solution of preference data. The expert nursing diagnosticians revealed strong preferences for requisites concerning critical thinking skills, professional nursing role, and using nursing diagnoses.

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 1 and L occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

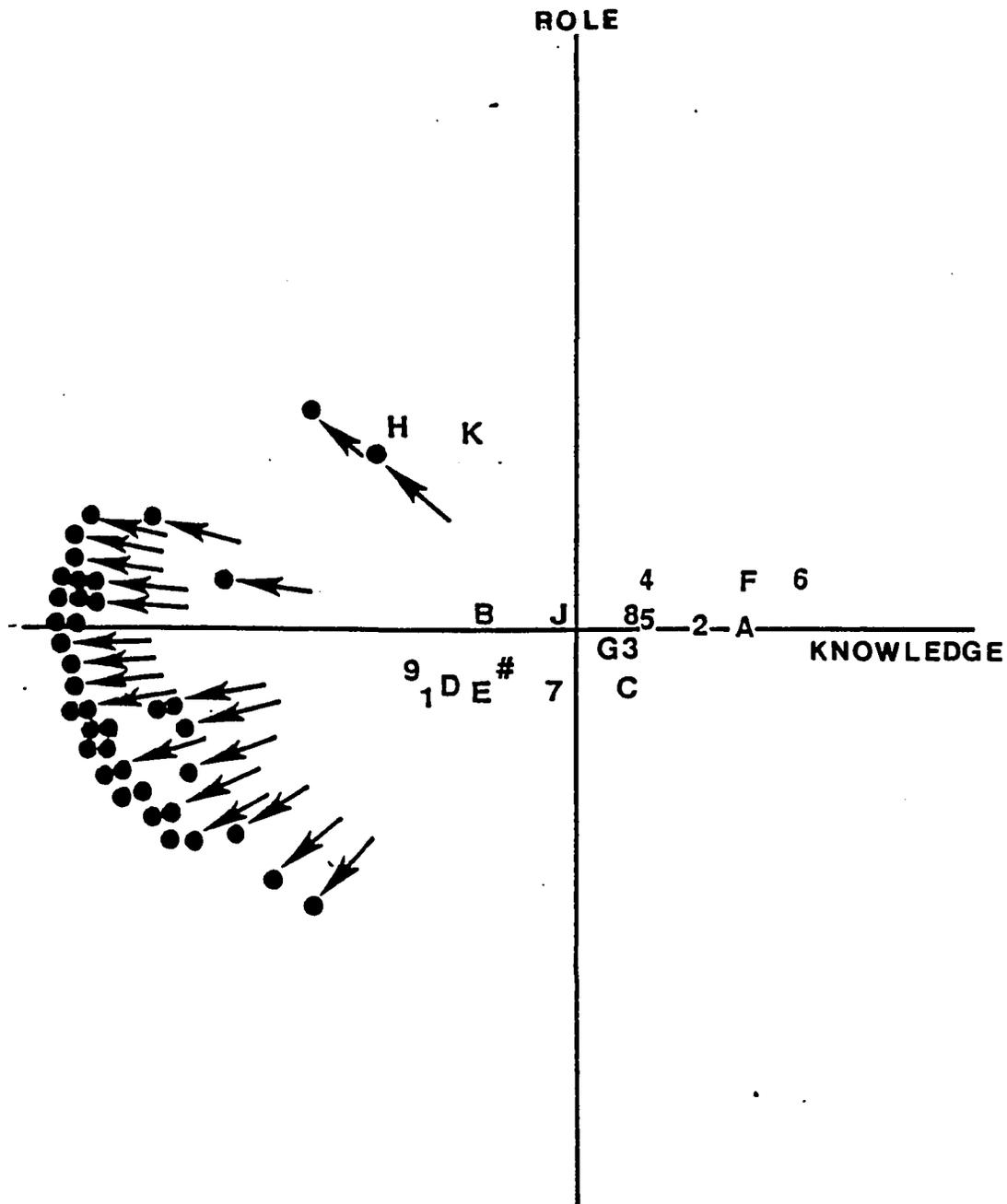


FIGURE 12.

accuracy, (e) ability to differentiate nursing practice from medical practice, (f) knowledge about the different diagnostic categories, (h) professional commitment to using nursing diagnoses, and (i) knowledge of nursing concepts. The plot of dimensions one and two included one more requisite: knowledge of the defining characteristics of each diagnostic category (see Figure 12; Appendix M, Figure 24).

The preferences for these nine requisites reflect an unequal sampling from each of the three dimensions of the nursing diagnostic process. Four requisites were preferred from the dimension of professional nursing and clinical knowledge. These requisites are (a) ability to interpret a patients' signs and symptoms, (b) ability to differentiate nursing practice from medical practice, (c) ability to verify signs and symptoms for sufficiency and accuracy, and (d) knowledge about the different diagnostic categories. Three requisites were preferred from the dimension of commitment to professional nursing practice and nursing diagnosis. These requisites are (a) professional commitment to using nursing diagnosis, (b) knowledge of nursing concepts, and (c) knowledge of the defining characteristics of each diagnostic category. Two requisites were preferred from the dimension of skill in cue clustering and patient assessment. These requisites are (a) ability to see relationships between the patient's signs and symptoms and (b) ability to analyze the patient's signs and symptoms.

The plot of dimensions two and three revealed wide variations in preference among the expert nursing diagnosticians for the requisites of the nursing diagnostic process (see Appendix M, Figure 25).

The unidimensional analysis confirms the visual interpretation of the multidimensional analysis. Table 30 lists the significant scale scores for the requisites of the nursing diagnostic process.

Unidimensional Preference Analysis

The unidimensional scales were then analyzed to determine whether there were any trends in preference for the requisites of the nursing diagnostic process across the five groups of nurses. Since each group had different preference scale scores, the groups were correlated to check for similarity. The five groups were significantly correlated (see Table 31). A Waern similarity analysis graphically demonstrates these relationships (Dunn-Rankin, 1983; see Figure 13). Nursing administrators are highly related to faculty, nursing students, and staff nurses. Students are similar to staff nurses and faculty; while faculty are similar to students and expert nursing diagnosticians. The expert nursing diagnosticians are only similar to faculty and nursing administrators. A single unidimensional scale, therefore, was constructed to summarize the preferences of the five groups. This scale

Table 30

Unidimensional Scale Scores of the Expert Nursing
Diagnosticians' Preferences for the Requisites of the
Nursing Diagnostic Process

Requisite	Scale Score
Ability to analyze the patient's signs and symptoms	76.17
Ability to see relationships between the patient's signs and symptoms	74.17
Ability to interpret the patient's signs and symptoms	72.83
Knowledge of nursing concepts	67.58
Ability to verify the signs and symptoms for sufficiency and accuracy	65.00
Ability to differentiate nursing practice from medical practice	64.83
Knowledge of the defining characteristics of each diagnostic category	64.00
Knowledge about the different diagnostic categories	63.00
Professional commitment to using nursing diagnoses	57.42
Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category	55.92
Skill in psychosocial assessment	54.08
Experience using nursing diagnoses	50.50
Skill in interpersonal relationships	45.75
Commitment to furthering quality nursing care	44.33

(table continues)

Table 30(continued)

Unidimensional Scale Scores of the Expert Nursing
 Diagnosticians' Preferences for the Requisites of the
 Nursing Diagnostic Process

Requisite	Scale Score
Commitment to collaborating with the patient to confirm the nursing diagnosis	42.92
Skill in techniques of physical assessment	42.50
Ability to determine priorities between diagnoses	37.00
Knowledge of disease processes	30.67
Participation in professional development activities	20.83
Ability to interpret laboratory and/or diagnostic studies	20.83
Ability to write "SOAP" notes	9.75

Note. A 20 point difference between scale scores indicates a significant difference.

Table 31

Correlation Matrix of the Five Groups of Nurses Based on Unidimensional Preference Scale Scores

	STUDENTS	STAFF	FACULTY	ADMIN	EXPERTS
STUDENTS	1.000				
STAFF	0.849**	1.000			
FACULTY	0.848**	0.779**	1.000		
ADMIN	0.905**	0.933**	0.908**	1.000	
EXPERTS	0.622*	0.780**	0.852**	0.844**	1.000

Note. * $p < .05$
 ** $p < .01$

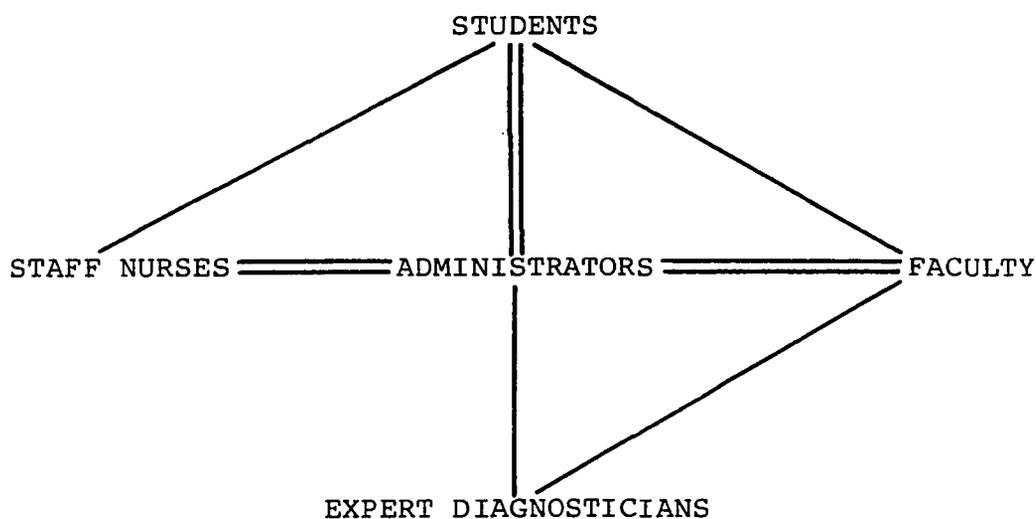


Figure 13. A Waern graphic similarity analysis of the similarities among the five groups of nurses in the study.

used the median score on each requisite since the groups were positively and significantly correlated (Dunn-Rankin, 1987). The final unidimensional scale is presented in Figure 14.

The requisites clustered in three areas on the unidimensional scale (see Figure 14). The highest four requisites are from all three of the dimensions of the nursing diagnostic process. The strong valuing of the abilities to see, analyze, and interpret relationships indicated a strong preference by all five groups for the basic skills of critical thinking. The middle cluster contained thirteen requisites: six from the dimension of professional nursing and clinical knowledge, four from the dimension of commitment to professional practice and nursing diagnosis, and three from the dimension of skill in cue clustering and patient assessment. The lowest cluster contained four requisites that were not preferred and occurred at a significant distance away from the most preferred cluster of requisites. These, too, came from all three dimensions of the nursing diagnostic process.

Summary

The analyses of the data collected in this study were presented in detail in this chapter. Each of the three phases of the multiple regression analysis of the judgment data was presented. First, the overall null hypothesis that

80	
8	
6	
4	
2	
	<-----See relationships
70	
8	<-----Analyze signs & symptoms
8	<-----Interpret signs & symptoms
6	<-----Nursing concepts
4	
2	
60	<-----Verify signs & symptoms
8	
6	
4	<-----Match signs & symptoms <-----Physical assessment
4	<-----Psychosocial assessment <-----Commitment to nursing diagnosis
2	<-----Diagnostic categories
2	<-----Medicine vs. nursing practice
2	<-----Disease processes
50	
8	<-----Defining characteristics
8	<-----Priority setting <-----Quality nursing care
6	<-----Interpersonal relationships
4	<-----Collaborate with patient
2	
40	
8	<-----Experience with nursing diagnosis
6	
4	
2	
30	
8	<-----Laboratory tests
6	
4	
2	
20	
8	<-----Professional development
6	
4	
2	
10	<-----SOAP notes
8	
6	
4	
2	
00	

Figure 13. A unidimensional scale of the requisites of the nursing diagnostic process developed by selecting the median value from the five groups of nurses on each requisite. A 24 point difference is significant.

there were no differences among groups on the three dimension scores and the combined dimension score was tested. This overall hypothesis and sub-hypotheses were not rejected as there was insufficient evidence to discredit them. Second, an expanded regression model containing variables more specific than group membership was tested. This overall null hypothesis and sub-hypotheses were also not rejected as there was insufficient evidence to discredit them. Third, three regression models were developed with a significance value of $p=.14$ by using the stepwise regression procedure. No hypothesis was tested. The preference data were analyzed using MDPREF. The three-dimensional solution for each of the five groups of nurses was presented and described. A unidimensional scale was developed for each of the five groups to assist in interpreting the MDPREF solution. These unidimensional preference scales and a unidimensional preference scale developed from the scores of the combined groups of nurses were presented and discussed.

The conclusions drawn from these results are presented in Chapter V. The final chapter also contains a summary of the study and recommendations for further research.

CHAPTER V

Summary, Conclusions, and Recommendations

This final chapter is presented in three parts. First, the study and its results will be summarized. Second, conclusions of the study are discussed. Third, recommendations for further research are presented.

Summary

The American Nurses Association (1980) defines nursing as the diagnosis and treatment of human responses to actual or potential health problems. This definition recognizes the importance of identifying, labeling, and classifying the phenomena or nursing diagnoses that nurses treat in their professional practice. Nursing diagnosis began to receive recognition in 1973 when a group of nurses formed the National Conference Group for the Classification of Nursing Diagnoses (Gebbie & Lavin, 1975). As nurses have developed and implemented nursing diagnoses over the past 15 years, an open dialogue has evolved to discuss the cognitive process of diagnostic reasoning and the requisites of the nursing diagnostic process. The perceptions of different groups of nurses--nursing faculty, nursing students, nursing administrators, staff nurses, and expert nursing diagnosticians--have influenced how this diagnostic

competency is being developed, taught, and implemented in nursing. While research has been conducted to explore decision making strategies (Carnevali, Mitchell, Woods, & Tanner, 1984) and concept attainment strategies (Gordon, 1972), no studies were found that explored the requisites and dimensions of the nursing diagnostic process, nor of nurses perceptions of the requisites' importance in identifying an accurate nursing diagnosis. The purposes of this study were (a) description of the elements of the nursing diagnostic process, (b) identification of the relevant dimensions of the nursing diagnostic process, and (c) identification of the perceptions that major groups of nurses hold concerning the phenomena involved in determining an accurate nursing diagnosis.

The descriptive research approach was selected since identification of requisites, dimensions, and perceptions was the main goal of the study. A three-part questionnaire was developed. The purpose of the first part of the questionnaire was to collect demographic data. Items were selected to assist in identifying group membership, number of years in nursing, highest formal educational preparation, the use of nursing diagnosis in practice, the clinical agency's recommendation to use nursing diagnosis in documentation, the teaching of nursing diagnosis in school, the source of knowledge about nursing diagnosis, and the use of an accepted list of nursing diagnoses.

The purpose of the second part of the questionnaire was to obtain judgment data concerning the importance of the requisites in determining an accurate nursing diagnosis. Twenty-one identified requisites of the nursing diagnostic process were presented in a Likert-type format. These requisites were identified from a review of the literature and the assistance of an expert panel. In a previous study, the questionnaire was tested for reliability and validity. The three dimensions of the nursing diagnostic process were also determined in that study. The three dimensions are (a) professional nursing and clinical knowledge, (b) commitment to professional nursing practice and nursing diagnosis, and (c) skill in cue clustering and patient assessment.

The purpose of the third part of the questionnaire was to obtain preference data concerning the importance of the requisites of the nursing diagnostic process. In order to decrease the preference task, the 21 requisites were arranged in a balanced incomplete block design.

A national sample of 500 nurses was selected. A total of 239 nurses returned the questionnaire for a return rate of 48%. Staff nurses had a 25% return rate. Nursing faculty and nursing students each had a 43% return rate. Nursing administrators had a 57% return rate. Expert nursing diagnosticians had a 71% return rate.

A major premise of the investigation was that group membership determined perceptions or attitudes of its

individual members. These perceptions focus what people see in a situation, what they value, what they reward, and what they practice. The judgment data were analyzed using multiple regression analysis to test the overall null hypothesis that there were no differences among groups on the three dimensions of the nursing diagnostic process. The data did not provide enough evidence to discredit the null hypotheses; therefore, the null hypotheses were not rejected. An expanded regression model, containing all the variables identified on the demographic sheet, was then used to test the overall null hypotheses. Again, data did not provide enough evidence to reject the null hypotheses. Finally a stepwise regression technique was used to identify those variables with the most explanatory power. Three models were developed with a significance of .15. In the first model, the dimension of professional nursing and clinical knowledge was described by the variables of (a) the teaching of nursing diagnosis in school, (b) the use of an accepted list of nursing diagnoses, and (c) an interaction between the two variables. In the second model, the dimension of commitment to professional nursing and nursing diagnosis was described by the variables of (a) the source of knowledge about nursing diagnosis, (b) the use of an accepted list of nursing diagnoses, and (c) an interaction between the two variables. In the third model, the combined dimensions of the nursing diagnostic process were best

described by only one variable--the use of an accepted list of nursing diagnoses. The percentage of explained variance was very low in all three models--the range was from two to ten per cent (see Tables 23, 24, and 25).

The preference data were also analyzed by groups using a multidimensional preference mapping (MDPREF) program. Similarities and differences were noted among the groups. All five groups demonstrated preferences for four requisites as being critical for determining accurate nursing diagnoses. The four requisites were (a) ability to see relationships between the patient's signs and symptoms (dimension three), (b) ability to analyze the patient's signs and symptoms (dimension three), (c) ability to interpret the patient's signs and symptoms (dimension one), and (d) ability to verify the signs and symptoms for sufficiency and accuracy (dimension one). The activities of seeing relationships (clustering or chunking), analyzing, interpreting, and verifying are activities or cognitive skills used in problem solving and critical thinking (Anderson, 1980; Carnevali, Mitchell, Woods, & Tanner, 1984; Gordon, 1982c; Hudgins, 1977; Norman, 1982). As the preferences that were unique or shared with one or two other groups were analyzed, a continuum of responses began to emerge. The continuum appeared to correlate with the work done by Benner (1984) on novice to expert development. These results will be discussed in the next section.

Conclusions

The conclusions of the study will be discussed in two parts: (a) Judgments and (b) Preferences.

Judgments

The basic hypothesis of this study was that nurses belonging to different groups--teachers, students, employers, employees, and experts--would have different attitudes and values toward the requisites of the nursing diagnostic process. Each group would have expectations, rewards, and activities that would act as perceptual screens which would assist in determining what was important and what was not important in the nursing diagnostic process. The data were insufficient to support this hypothesis. Contributing to these results was the low return rate of the questionnaire by the nursing faculty, the nursing students, and the staff nurses. Their numbers may not have been sufficient to provide a sensitive enough statistical measure of the differences among groups. A second contributing factor to the inconclusive results might be that the selected requisites enjoy a high rate of consensus among all nurses. This study, however, does not provide the data to confirm this hypothesis. A final factor might be that the independent variables selected to exemplify group membership

were not sensitive or accurate enough to allow group differences to be identified.

The final step in the analysis of the judgment data was a stepwise regression procedure. The only significant predictor of scores on the dimension of professional nursing and clinical knowledge was the interaction of affiliation with a school that teaches nursing diagnosis and utilization of the approved list of nursing diagnoses (SCHOOL*LIST, $p=.044$) when used in a model with SCHOOL and LIST as variables. The only significant predictor of the dimension of commitment to professional practice and nursing diagnosis was utilization of the approved list of nursing diagnosis in combination with the source of learning about nursing diagnoses (LEARN) and an interaction between the two variables (LIST*LEARN, $p=.044$).

Preferences

The analysis of group preferences revealed a continuum of responses that closely resembles Benner's (1984) work on discovering the knowledge embedded in clinical practice by studying novices and experts. This continuum begins with the preferences of nursing students and ends with the expert nursing diagnosticians. The nursing students strongly prefer the requisites relating to knowledge, assessment, and critical thinking skills. Staff nurses strongly prefer the requisites relating to assessment and critical thinking

skills, but no longer prefer those of knowledge. Nursing faculty strongly prefer the same requisites as staff nurses, but also have strong preferences for the requisites concerning the professional role. Nursing administrators have the same strong preferences as faculty, but also prefer requisites concerning nursing diagnostic categories. Finally, expert nursing diagnosticians have strong preferences for the requisites concerning critical thinking skills, professional nursing role, and nursing diagnostic categories, while having no preferences for assessment and knowledge. The elements of this continuum--assessment, knowledge, critical thinking skills, professional nursing role, and nursing diagnostic categories--are valued by each group according to the level of experience the group has in nursing. Each of these groups will be discussed along with implications for practice and research.

The nursing students demonstrated strong preferences for the elements of assessment (requisite 3; see Appendix A; see Figure 9), knowledge (requisites 2 and 14), and critical thinking skills (requisites 1, 9, 13, and 21). As with all novices, knowledge is extremely important. The experiential knowing of more advanced practitioners has yet to be developed. Focused attention must be paid to the facts the knowledge base contains. Second, the students felt that the ability to gather data was important in conjunction with having the skills of critical thinking with which to process

the assessment data and the knowledge base. When these preferences are matched with the three dimensions of the nursing diagnostic process, it is interesting to note that only one preference appears from the dimension of commitment to professional nursing practice and nursing diagnosis. Knowledge of nursing concepts is that requisite. The other two dimensions are sampled equally. Does this indicate a decrease in professional socialization since only one requisite was chosen from the dimension of commitment? Furthermore, no preferences were indicated for knowledge about the different diagnostic categories and their defining characteristics; yet, the judgment data indicate that use of the accepted list of nursing diagnoses is critical to determining an accurate nursing diagnosis. Gordon (1986) has reported that students are unable to identify a nursing diagnosis when given a list that contains one or more of them. They are also unable to list or identify the defining characteristics of various nursing diagnoses. Preliminary data indicate that this phenomenon is due to a lack of emphasis on nursing diagnostic categories combined with a strong emphasis on medical diagnostic categories while students are in school (Gordon, 1986).

The staff nurses demonstrated strong preferences for the elements of assessment (requisite 3; see Appendix A; see Figure 11) and critical thinking skills (requisites 1, 9, 13, 20, and 21). These nurses had experience and were no

longer considered novices. Their experiential ways of knowing might possibly explain their lack of preference for the knowledge element that the student nurses had considered important (Benner, 1984). When these preferences are matched with the three dimensions of the nursing diagnostic process, it is interesting to note that two preferences come from the dimension of professional nursing and clinical knowledge (requisites 13 and 21), four preferences come from the dimension of skill in cue clustering and patient assessment (requisites 1, 3, 9, and 20), and no preferences were made from the dimension of commitment to professional nursing practice and nursing diagnosis. Again, might this be reflective of decreased professional socialization or decreased control over practice? This group also did not indicate a preference for knowledge of the nursing diagnostic categories and their defining characteristics.

The nursing faculty demonstrated strong preferences for the elements of assessment (requisite 7; see Appendix A; see Figure 8), critical thinking skills (requisites 1, 9, 13, and 21), and professional nursing role (requisites 12 and 14). Nursing faculty have experience in clinical nursing, as do staff nurses. Their experiential ways of knowing might explain their lack of preference of the knowledge element of the continuum. All three dimensions of the nursing diagnostic process were sampled equally. As with the previous two groups, the nursing faculty did not

indicate a preference for knowledge about the different nursing diagnostic categories and their defining characteristics. Gordon (1986) expressed concern that faculty were not teaching recognition and utilization of nursing diagnoses. The fact that they do not prefer these requisites equally with assessment skills and critical thinking skills could explain their teaching behavior. Nursing faculty are also charged with teaching students about the professional nursing role; therefore, it is not surprising that they demonstrated strong preferences for this element while the nursing students and staff nurses did not.

The nursing administrators demonstrated strong preferences for the elements of assessment (requisite 3; see Appendix A; see Figure 10), critical thinking skills (requisites 1, 9, 13, and 21), professional nursing role (requisite 14), and nursing diagnoses (requisites 11 and 17). These nurses are experts and would have reasons for their preferences similar to those of the staff nurses and nursing faculty. They share that part of the continuum. The primary goals of nursing administrators are the delivery and documentation of quality nursing care. Based on these goals, the expectation is that they would be concerned about the elements of professional nursing role and nursing diagnostic categories. These two elements directly impact the attainment of the two goals. All three dimensions of

the nursing diagnostic process were sampled equally. This is the first group to have strong preferences for the requisites of knowledge of the nursing diagnostic categories and their defining characteristics.

The expert nursing diagnosticians demonstrated strong preferences for the elements of critical thinking skills (requisites 1, 9, 13, and 21; see Appendix A; see Figure 12), professional nursing role (requisites 14 and 18), and nursing diagnostic categories (requisites 11 and 17). Since these nurses are experts in nursing diagnosis, it is not surprising that they have no preferences for the element of assessment. Their focus is more on the critical thinking skills required for diagnostic reasoning and on knowledge of the diagnostic categories. They also prefer the element of professional nursing role, as they are usually the role models for student and staff nurses. One interesting observation is that they had no preference for the requisite of experience in using nursing diagnosis as being important in determining accurate nursing diagnoses. Yet, most of them became experts through experience in determining nursing diagnoses in practice (Benner, 1984; Gordon, 1986).

The implications of these findings and the complexity of analyzing (a) the dimensions of the nursing diagnostic process, (b) the group preferences for the requisites of the nursing diagnostic process, and (c) the group preferences for elements on a continuum lead the researcher to look for

a way to summarize the data. Requisites were clustered for each group to develop three profiles (see Figure 15). In the first profile, practical clinical experience (requisites 2, 3, and 8), experience was highly valued by students and decreased in value as levels of clinical experience increased. This finding corresponds with the previous discussion. As experience is gained, it ceases to be perceived as valuable because the individual has integrated it thoroughly into the performance of nursing practice (Benner, 1984). It is not something unique and separate. The knowledge and critical thinking profile (requisites 4, 5, 9, 11, 13, 15, 17, 18, and 19; note that scale scores cluster differently than raw preference data) revealed a low student preference and a high expert preference. The profile increased in value as levels of clinical and nursing experience increased. This may seem different from the previous analysis since only students valued the element of knowledge on the continuum. This summary profile contains the elements of knowledge, critical thinking, and nursing diagnostic categories which were valued more by the experts. The final profile is understanding and interpersonal skills (requisites 1, 6, 7, 10, 12, 14, and 20). Nursing administrators and expert nursing diagnosticians have an average preference for these requisites. Nursing students

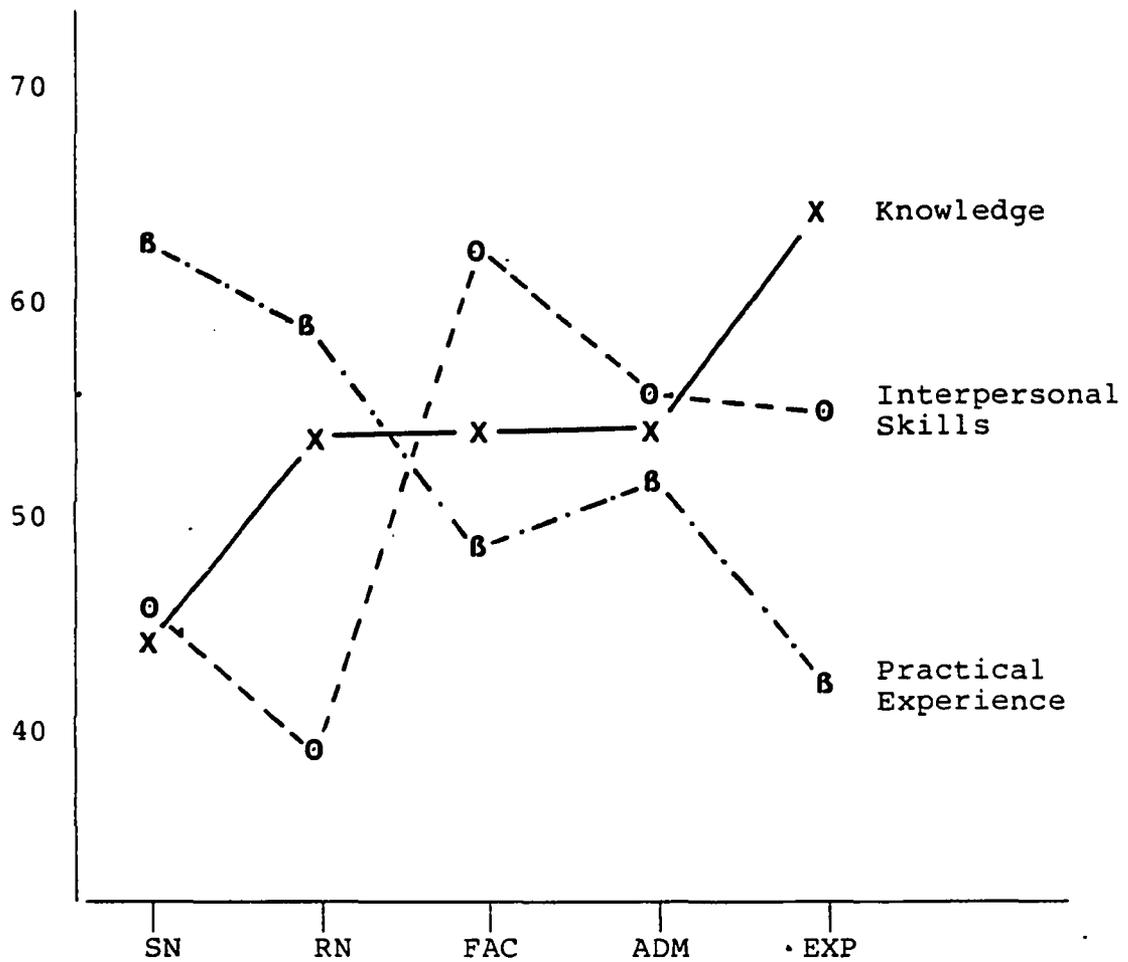


Figure 15. Profiles grouped according to correlations among item profiles across respondents.

and staff nurses revealed low preferences for the requisites in the profile, while faculty had strong preferences for the requisites in the profile. This disparity of values may explain some of the conflict that occurs between education and practice. Education values psychosocial assessment, interpersonal relationship skills, and professional growth. Practice values knowledge of disease, physical assessment skills, and bedside nursing skills. Would students be better educated to function in clinical settings if faculty and staff nurses could come to some common agreement as to the importance of understanding and interpersonal skills and the importance of practical clinical experience?

Recommendations

During the conduct of this descriptive study, several indications have arisen implying the need for further research. The first recommendation is to replicate the study with a larger sample, especially of staff nurses, nursing faculty, and nursing students. The increased sample size may reveal differences in the judgment data and interpretation of the preference data would be stronger and more valid. Next, the questionnaire needs further refinement to improve its validity. A third recommendation would be to identify other variables that would assist in differentiating among the groups of nurses. One method to accomplish this would be to conduct a protocol analysis of

interviews with nurses to uncover what they view as important and what characteristics they have as group members. Another recommendation is to further explore the continuum of responses that was revealed when group preferences were analyzed. One approach to the study of this continuum would be the one used by Benner (1984) in her work on uncovering knowledge embedded in clinical practice. Her research strategy was based on Heideggerian phenomenology (Heidegger, 1962) and the constant comparative method of Strauss and Glaser (Glaser, 1978; Glaser & Strauss, 1967). Questions would focus on each group's preferences for each of the five elements of the continuum. Why are the elements preferred and why do they disappear as the continuum is traversed? Why do only the nursing administrators and expert nursing diagnosticians demonstrate strong preferences for knowledge of the diagnostic categories and their defining characteristics? Why do staff nurses and nursing students demonstrate no preferences for commitment to professional nursing practice and nursing diagnosis? Do faculty emphasize medical diagnostic knowledge over nursing diagnostic knowledge and if so, why? Does this continuum parallel or is it part of Benner's novice to expert continuum? There are indications that the five groups of nurses did not share the same strong preferences for the requisites of the nursing diagnostic process. Further investigation of these differences could

have implications for the development of curriculum, design of teaching strategies, provision of staff nurse continuing education, and the development/refinement of nursing diagnoses and the nursing diagnostic taxonomy.

Appendix A
Questionnaire

NURSING DIAGNOSIS: A PERCEPTUAL STUDY

Demographic Data

Years in nursing _____

Highest degree attained: Diploma _____
 ADN _____
 Bachelors in nursing (specify) _____
 Bachelors not in nursing (specify) _____
 Masters in nursing (specify) _____
 Masters not in nursing (specify) _____
 Doctorate in nursing (specify) _____
 Doctorate not in nursing (specify) _____

Specialty in nursing: medical-surgical _____
 pediatrics _____
 mental health _____
 community health _____
 maternal-child _____
 administration _____
 other _____

Position in nursing: staff nurse _____
 faculty member _____
 student nurse _____
 administrator _____
 clinical nurse specialist _____
 other _____

Job title _____

Do you use nursing diagnosis in your practice?

Yes _____
 No _____

Does your agency recommend the use of nursing diagnosis in practice?

Yes _____
 No _____

If you are associated with a school of nursing, does the school teach nursing diagnosis?

Yes _____
 No _____

From which of the following did you learn about nursing diagnosis?

school _____

workshops _____

inservices _____

self-study _____

other (specify) _____

If you use nursing diagnosis in your practice, school, or hospital,
is the National Conference for the Classification of Nursing Diagnoses
list

the only list used? _____

the list primarily used? _____

part of a master list used? _____

not used at all? _____

The purpose of this questionnaire is to determine your perception of what is required in determining a nursing diagnosis. How much of the following skills, abilities, knowledge, and commitments or values do nurses need in order to be able to diagnose a patient's response to actual or potential health problems? If you think that a nurse needs to know a lot about the item or that it is very important in determining a nursing diagnosis, then circle 9. If you think that the item is relatively unimportant or is required to a small degree in determining a nursing diagnosis, then circle 1. Please make your judgment about the item on the basis of what it means to you. Do not worry or puzzle over the individual items. It is your first impression about the item that is desired. How much characteristic is needed?

	very little				to a great degree				
	1	2	3	4	5	6	7	8	9
1. Ability to see relationships between the patient's signs and symptoms	1	2	3	4	5	6	7	8	9
2. Knowledge of disease processes	1	2	3	4	5	6	7	8	9
3. Skill in techniques of physical assessment	1	2	3	4	5	6	7	8	9
4. Experience in using nursing diagnoses	1	2	3	4	5	6	7	8	9
5. Ability to determine priorities between different diagnoses	1	2	3	4	5	6	7	8	9
6. Ability to write "SOAP" notes [†]	1	2	3	4	5	6	7	8	9
7. Skill in psychosocial assessments	1	2	3	4	5	6	7	8	9
8. Commitment to furthering quality nursing care	1	2	3	4	5	6	7	8	9
9. Ability to analyze the patient's signs and symptoms	1	2	3	4	5	6	7	8	9
10. Participation in professional development activities, e.g., reading, workshops	1	2	3	4	5	6	7	8	9
11. Knowledge about the different diagnostic categories	1	2	3	4	5	6	7	8	9
12. Skill in interpersonal relationships	1	2	3	4	5	6	7	8	9
13. Ability to interpret the patient's signs and symptoms	1	2	3	4	5	6	7	8	9
14. Knowledge of nursing concepts*	1	2	3	4	5	6	7	8	9
15. Ability to interpret laboratory and/or diagnostic studies	1	2	3	4	5	6	7	8	9
16. Commitment to collaborating with the patient to confirm the nursing diagnosis	1	2	3	4	5	6	7	8	9
17. Knowledge of the defining characteristics of each diagnostic category	1	2	3	4	5	6	7	8	9

- | | | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|---|---|
| 18. | Ability to differentiate nursing practice from medical practice | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 19. | Professional commitment to using nursing diagnoses | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20. | Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 21. | Ability to verify the signs and symptoms for sufficiency and accuracy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

- + "SOAP" progress notes: subjective data, objective data, assessment, plan.
- * Examples: pain, powerlessness, adaptation, attachment, loss, self care, immobility, gas exchange, fluid and electrolyte balance

Part II. In each section, rank-order the skill, ability, knowledge, and commitment or value according to their importance in determining a nursing diagnosis. Place (1) beside the most important item in determining a nursing diagnosis, (2) beside the next most important, etc. Please make the judgment: on the basis of what it means to you. It is your first impression about the item that is most desired.

- Section 1. _____ Ability to verify the signs and symptoms for sufficiency and accuracy
 _____ Ability to see relationships between the patient's signs and symptoms
 _____ Experience in using nursing diagnosis
 _____ Knowledge of nursing concepts
 _____ Commitment to collaborating with the patient to confirm the diagnosis

- Section 2. _____ Ability to see relationships between the patient's signs and symptoms
 _____ Knowledge of disease processes
 _____ Ability to determine priorities between different diagnoses
 _____ Ability to interpret laboratory and/or diagnostic studies
 _____ Knowledge of the defining characteristics of each diagnostic category

- Section 3. _____ Knowledge of disease processes
 _____ Skill in techniques of physical assessment
 _____ Ability to write "SOAP" notes
 _____ Commitment to collaborating with the patient to confirm the nursing diagnosis
 _____ Ability to differentiate nursing practice from medical practice
- Section 4. _____ Skill in techniques of physical assessment
 _____ Experience in using nursing diagnosis
 _____ Skill in psychosocial assessment
 _____ Knowledge of the defining characteristics of each diagnostic category
 _____ Professional commitment to using nursing diagnoses
- Section 5. _____ Experience in using nursing diagnosis
 _____ Ability to determine priorities between different diagnoses
 _____ Commitment to furthering quality nursing care
 _____ Ability to differentiate nursing practice from medical practice
 _____ Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- Section 6. _____ Ability to determine priorities between different diagnoses
 _____ Ability to write "SOAP" notes
 _____ Ability to analyze the patient's signs and symptoms
 _____ Professional commitment to using nursing diagnosis
 _____ Ability to verify the signs and symptoms for sufficiency and accuracy
- Section 7. _____ Ability to write "SOAP" notes
 _____ Skill in psychosocial assessment
 _____ Participation in professional development activities e.g., reading, workshops
 _____ Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
 _____ Ability to see relationships between the patient's signs and symptoms
- Section 8. _____ Skill in psychosocial assessment
 _____ Commitment to furthering quality nursing care
 _____ Knowledge about the different diagnostic categories
 _____ Ability to verify the signs and symptoms for sufficiency and accuracy
 _____ Knowledge of disease processes

- Section 9. _____ Commitment to furthering quality nursing care
 _____ Ability to analyze the patient's signs and symptoms
 _____ Skill in interpersonal relationships
 _____ Ability to see relationships between the patient's signs and symptoms
 _____ Skill in techniques of physical assessment
- Section 10. _____ Ability to analyze the patient's signs and symptoms
 _____ Participation in professional development activities, e.g., reading, workshops
 _____ Ability to interpret the patient's signs and symptoms
 _____ Knowledge of disease processes
 _____ Experience in using nursing diagnoses
- Section 11. _____ Participation in professional development activities, e.g., reading, workshops
 _____ Knowledge about the different diagnostic categories
 _____ Knowledge of nursing concepts
 _____ Skill in techniques of physical assessment
 _____ Ability to determine priorities between different diagnoses
- Section 12. _____ Knowledge about the different diagnostic categories
 _____ Skill in interpersonal relationships
 _____ Ability to interpret laboratory and/or diagnostic studies
 _____ Experience in using nursing diagnoses
 _____ Ability to write "SOAP" notes
- Section 13. _____ Skill in interpersonal relationships
 _____ Ability to interpret the patient's signs and symptoms
 _____ Commitment to collaborating with the patient to confirm the nursing diagnosis
 _____ Ability to determine priorities between different diagnoses
 _____ Skill in psychosocial assessment
- Section 14. _____ Ability to interpret the patient's signs and symptoms
 _____ Knowledge of nursing concepts
 _____ Knowledge of the defining characteristics of each diagnostic category
 _____ Ability to write "SOAP" notes
 _____ Commitment to furthering quality nursing care

- Section 15. _____ Knowledge of nursing concepts
 _____ Ability to interpret laboratory and/or diagnostic studies
 _____ Ability to differentiate nursing practice from medical practice
 _____ Skill in psychosocial assessment
 _____ Ability to analyze the patient's signs and symptoms
- Section 16. _____ Ability to interpret laboratory and/or diagnostic studies
 _____ Commitment to collaborating with the patient to confirm the nursing diagnosis
 _____ Professional commitment to using nursing diagnosis
 _____ Commitment to furthering quality nursing care
 _____ Participation in professional development activities, e.g., reading, workshops
- Section 17. _____ Commitment to collaborating with the patient to confirm the nursing diagnosis
 _____ Knowledge of the defining characteristics of each diagnostic category
 _____ Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
 _____ Ability to analyze the patient's signs and symptoms
 _____ Knowledge about the different diagnostic categories
- Section 18. _____ Knowledge of the defining characteristics of each diagnostic category
 _____ Ability to differentiate nursing practice from medical practice
 _____ Ability to verify the signs and symptoms for sufficiency and accuracy
 _____ Participation in professional development activities, e.g., reading, workshops
 _____ Skill in interpersonal relationships
- Section 19. _____ Ability to differentiate nursing practice from medical practice
 _____ Professional commitment to using nursing diagnosis
 _____ Ability to see relationships between the patient's signs and symptoms
 _____ Knowledge about the different diagnostic categories
 _____ Ability to interpret the patient's signs and symptoms

- Section 20. _____ Professional commitment to using nursing diagnosis
_____ Ability to match the patient's signs and symptoms
_____ with the signs and symptoms of each diagnostic
_____ category
_____ Knowledge of disease processes
_____ Skill in interpersonal relationships
_____ Knowledge of nursing concepts
- Section 21. _____ Ability to match the patient's signs and symptoms
_____ with the signs and symptoms of each diagnostic
_____ category
_____ Ability to verify the signs and symptoms for
_____ sufficiency and accuracy
_____ Skill in techniques of physical assessment
_____ Ability to interpret the patient's signs and
_____ symptoms
_____ Ability to interpret laboratory and/or diagnostic
_____ studies

Appendix B
Letter of Introduction
Nursing Faculty

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice. This research--Nursing Diagnosis: A Perceptual Study--has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that the responses be candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. Selection of a national sample of full-time undergraduate nursing faculty is critical so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis. Your assistance in this selection is appreciated. Please randomly select five (5) of your full-time undergraduate faculty members to participate in the study. I have attached a table of random numbers for your convenience. Select a number from the table, using the next five or more numbers to select the sample. The numbers may be matched with social security numbers or any other number that identifies individuals. Having selected the five faculty members, please give them one of the enclosed envelopes that contain directions, a questionnaire, and a return envelope.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project by you and your faculty.

Sincerely,

Judith J. Warren, R.N., M.S.

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear Colleague:

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice.

This research--Nursing Diagnosis: A Perceptual Study-- has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii. To assure your anonymity, do not place your name on the questionnaire. By completion of the questionnaire, you agree to the release of the data. If you do not wish to participate in the study, do not complete or return the questionnaire. If you have any further questions about your participation in the study, please contact me. If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822; phone 808-948-8612. A stamped, addressed envelope is included for your convenience in returning the demographic sheet and questionnaire.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that your responses be your candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. As part of a national sample of nursing faculty, it is critical that you respond so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis.

While I recognize the many demands placed on your time, I know that you recognize the importance of each response. The questionnaire takes an average of 20-30 minutes to complete.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project.

Sincerely,

Judith J. Warren, R.N., M.S.

Appendix C
Letter of Introduction
Nursing Students

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice. This research--Nursing Diagnosis: A Perceptual Study--has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that the responses be candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. Selection of a national sample of undergraduate senior nursing students is critical so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis. Your assistance in this selection is appreciated. Please randomly select five (5) of your undergraduate senior nursing students to participate in the study. I have attached a table of random numbers for your convenience. Select a number from the table, using the next five or more numbers to select the sample. The numbers may be matched with social security numbers or any other number that identifies individuals. Having selected the five nursing students, please give them one of the enclosed envelopes that contain directions, a questionnaire, and a return envelope.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project by you and your students.

Sincerely,

Judith J. Warren, R.N., M.S.

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear Colleague:

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice.

This research--Nursing Diagnosis: A Perceptual Study-- has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii. To assure your anonymity, do not place your name on the questionnaire. By completion of the questionnaire, you agree to the release of the data. If you do not wish to participate in the study, do not complete or return the questionnaire. If you have any further questions about your participation in the study, please contact me. If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822; phone 808-948-8612. A stamped, addressed envelope is included for your convenience in returning the demographic sheet and questionnaire.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that your responses be your candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. As part of a national sample of nursing students, it is critical that you respond so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis.

While I recognize the many demands placed on your time, I know that you recognize the importance of each response. The questionnaire takes an average of 20-30 minutes to complete.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project.

Sincerely,

Judith J. Warren, R.N., M.S.

Appendix D
Letter of Introduction
Nursing Administrators

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice.

This research--Nursing Diagnosis: A Perceptual Study-- has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii. To assure your anonymity, do not place your name on the questionnaire. By completion of the questionnaire, you agree to the release of the data. If you do not wish to participate in the study, do not complete or return the questionnaire. If you have any further questions about your participation in the study, please contact me. If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822; phone 808-948-8612. A stamped, addressed envelope is included for your convenience in returning the demographic sheet and questionnaire.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that your responses be your candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. As part of a national sample of nursing administrators, it is critical that you respond so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis.

While I recognize the many demands placed on your time, I know that you recognize the importance of each response. The questionnaire takes an average of 20-30 minutes to complete.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project.

Sincerely,

Judith J. Warren, R.N., M.S.

Appendix E
Letter of Introduction
Staff Nurses

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice. This research--Nursing Diagnosis: A Perceptual Study--has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that the responses be candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. Selection of a national sample of registered nurses in staff positions is critical so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis. Your assistance in this selection is appreciated. Please randomly select ten (10) of your staff nurses to participate in the study. I have attached a table of random numbers for your convenience. Select a number from the table, using the next ten or more numbers to select the sample. The numbers may be matched with social security numbers or any other number that identifies individuals. Having selected the ten staff members, please give them one of the enclosed envelopes that contain directions, a questionnaire, and a return envelope.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project by you and your staff.

Sincerely,

Judith J. Warren, R.N., M.S.

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear Colleague:

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice.

This research--Nursing Diagnosis: A Perceptual Study--has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii. To assure your anonymity, do not place your name on the questionnaire. By completion of the questionnaire, you agree to the release of the data. If you do not wish to participate in the study, do not complete or return the questionnaire. If you have any further questions about your participation in the study, please contact me. If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822; phone 808-948-8612. A stamped, addressed envelope is included for your convenience in returning the demographic sheet and questionnaire.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that your responses be your candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. As part of a national sample of staff nurses, it is critical that you respond so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis.

While I recognize the many demands placed on your time, I know that you recognize the importance of each response. The questionnaire takes an average of 20-30 minutes to complete.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project.

Sincerely,

Judith J. Warren, R.N., M.S.

Appendix F
Letter of Introduction
Expert Nursing Diagnosticians

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

I am a doctoral student in Educational Psychology at the University of Hawaii. For several years I have been involved in the development and teaching of nursing diagnosis. My research has grown out of my personal experiences and observations regarding the teaching and implementation of nursing diagnosis in nursing practice.

This research--Nursing Diagnosis: A Perceptual Study-- has been reviewed and approved by a graduate dissertation committee and a human studies committee at the University of Hawaii. To assure your anonymity, do not place your name on the questionnaire. By completion of the questionnaire, you agree to the release of the data. If you do not wish to participate in the study, do not complete or return the questionnaire. If you have any further questions about your participation in the study, please contact me. If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822; phone 808-948-8612. A stamped, addressed envelope is included for your convenience in returning the demographic sheet and questionnaire.

The focus of this research is group patterns and not individual data. It is hoped that emergent patterns will identify important aspects of determining a nursing diagnosis, which can then be used to promote the successful teaching and implementation of nursing diagnosis in nursing practice. It is important that your responses be your candid beliefs or perceptions about nursing diagnosis in order to assure that knowledge can be accurately clarified in this area. As part of a national sample of nursing diagnosis experts, it is critical that you respond so that a representative sample can be used to examine the perceived attributes that are required in determining a nursing diagnosis.

While I recognize the many demands placed on your time, I know that you recognize the importance of each response. The questionnaire takes an average of 20-30 minutes to complete.

A report of this study will be in the Hamilton Library at the University of Hawaii, or you may contact me under a separate cover for your own report. I sincerely appreciate the time and the consideration given this project.

Sincerely,

Judith J. Warren, R.N., M.S.

Appendix G
Letters Used as Reminders for
Questionnaire Return

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear Director of Nursing:

Last month I sent you a request to participate in the research study--Nursing Diagnosis: A perceptual Study. Since then ___ of your staff nurses have participated by returning the questionnaires. As part of a small national sample of staff nurses their responses are critical to completing the task of identifying the dimensions involved in determining a nursing diagnosis. Based on these dimensions, recommendations will be made for curriculum content, professional performance evaluations, and so forth. I would, therefore, appreciate it if you would encourage the remaining ___ of your staff nurses who have not returned their questionnaires, to do so by May 10, 1985. I have enclosed reminder cards for your use.

Again I appreciate your willingness to participate in the research effort to identify these dimensions of nursing diagnosis. Upon completion of the data analysis, I will send you a report of the results.

Sincerely,

Judith J. Warren, R.N., M.S.

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

Last month I sent you a request to participate in the research study--Nursing Diagnosis: A perceptual Study. Since then ___ of your senior nursing students have participated by returning the questionnaires. As part of a small national sample of senior nursing students their responses are critical to completing the task of identifying the dimensions involved in determining a nursing diagnosis. Based on these dimensions, recommendations will be made for curriculum content, professional performance evaluations, and so forth. I would, therefore, appreciate it if you would encourage the remaining ___ of your senior nursing students who have not returned their questionnaires, to do so by May 10, 1985. I have enclosed reminder cards for your use.

Again I appreciate your willingness to participate in the research effort to identify these dimensions of nursing diagnosis. Upon completion of the data analysis, I will send you a report of the results.

Sincerely,

Judith J. Warren, R.N., M.S.

Judith J. Warren, R.N., M.S.
1949 Ashley Hall Road
Charleston, S.C. 29407
803-763-7816

Dear

Last month I sent you a request to participate in the research study--Nursing Diagnosis: A perceptual Study. Since then ___ of your faculty have participated by returning the questionnaires. As part of a small national sample of nursing faculty their responses are critical to completing the task of identifying the dimensions involved in determining a nursing diagnosis. Based on these dimensions, recommendations will be made for curriculum content, professional performance evaluations, and so forth. I would, therefore, appreciate it if you would encourage the remaining ___ of your faculty who have not returned their questionnaires, to do so by May 10, 1985. I have enclosed reminder cards for your use.

Again I appreciate your willingness to participate in the research effort to identify these dimensions of nursing diagnosis. Upon completion of the data analysis, I will send you a report of the results.

Sincerely,

Judith J. Warren, R.N., M.S.

Postcard

This is a reminder to return your blue questionnaire for the study--Nursing Diagnosis: A Perceptual Study. As part of a small national sample of nurses, your response is critical to completing the task of identifying the dimensions involved in determining a nursing diagnosis. Based on these dimensions, recommendations will be made for curriculum content, professional performance evaluations, and so forth.

If you have already responded, please disregard this reminder and thank you for your cooperation.

Thank You,

Appendix H
Correlation Matrix of the
Questionnaire Items

Table 32

Correlation Matrix of Questionnaire Items

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Item 2	.218*							
Item 3	.185	.478**						
Item 4	.075	.028	.033					
Item 5	.235*	.333**	.272**	.281**				
Item 6	-.039	.152	.229*	.244*	.308**			
Item 7	.180	.069	.233*	.138	.169	.162		
Item 8	.102	.205*	.266**	.176	.437**	.287**	.257**	
Item 9	.438**	.147	.212*	.140	.175	.025	.222*	.167
Item 10	.183	.168	.198*	.236*	.393**	.145	.219*	.517**
Item 11	.061	.084	.107	.329**	.227*	.149	.233*	.141
Item 12	.197*	.019	.143	.160	.250*	.212*	.319**	.259**
Item 13	.405**	.158	.131	.011	.182	-.026	.147	.013
Item 14	.092	.024	.190	.207*	.183	.177	.218*	.224*
Item 15	.213*	.447**	.452**	-.016	.223*	.087	.224*	.231*
Item 16	.238*	.083	.160	.122	.316**	.252*	.389**	.223*
Item 17	.069	.109	.130	.259**	.156	.129	.268**	.070
Item 18	.061	-.036	.127	.108	.210*	.087	.260**	.269**
Item 19	.019	.055	.168	.132	.295**	.168	.266**	.404**
Item 20	.324**	.118	.159	.085	.142	.083	.044	-.012
Item 21	.182	.057	.103	-.015	.117	.071	.206*	.020

(table continues)

*p<.05

**p<.01

Table 32 (continued)

Correlation Matrix of Questionnaire Items

	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14	Item 15
Item 10	.180						
Item 11	.122	.213*					
Item 12	.049	.367**	.326**				
Item 13	.482**	.191	.150	.187			
Item 14	.313**	.272**	.339**	.283**	.190		
Item 15	.310**	.166	.020	.098	.255**	.291**	
Item 16	.131	.346**	.179	.329**	.275**	.315**	.259**
Item 17	.219*	.131	.491**	.135	.304**	.314**	.182
Item 18	.230*	.304**	.274**	.153	.139	.287**	.042
Item 19	.080	.415**	.208*	.217*	.012	.235*	.033
Item 20	.321**	.119	.390**	.076	.403**	.165	.130
Item 21	.367**	.146	.358**	.125	.372**	.256**	.211*

	Item 16	Item 17	Item 18	Item 19	Item 20	Item 21
Item 17	.269**					
Item 18	.293**	.283**				
Item 19	.377**	.073	.508**			
Item 20	.180	.497**	.165	.030		
Item 21	.232*	.360**	.266**	.111	.498**	

*p<.05
**p<.01

Appendix I

Stepwise Regression of Dimension One:
Professional Nursing and Clinical Knowledge

Table 33

Stepwise Regression Analysis Using the SAS Information

Source	Sum of Squares	DF	Mean Square	F Ratio	P
LIST	4.958	3	1.653	2.375	.071
ERROR	163.495	235	.696		

Note. $R^2 = .029$

Round Two

Model	6.207	5	1.241	1.796	.111
SCHOOL	2.499	2	1.250	1.808	.166
LIST	3.708	3	1.236	1.789	.150
ERROR	160.995	233	.691		

Note. $R^2 = .044$; $F = 8.26^*$, variable added.
* $p < .05$

Round Three

Model	10.863	11	.988	1.472	.141
SCHOOL	1.248	2	.624	.930	.396
LIST	.752	3	.251	.374	.772
LIST*	8.863	6	1.477	2.203	.044
SCHOOL					
ERROR	152.222	227	.671		

Note. $R^2 = .096$; $F = 6.94^*$, variable added.
* $p < .05$

Appendix J
Assumptions of Regression Analysis of
Dimension One Model

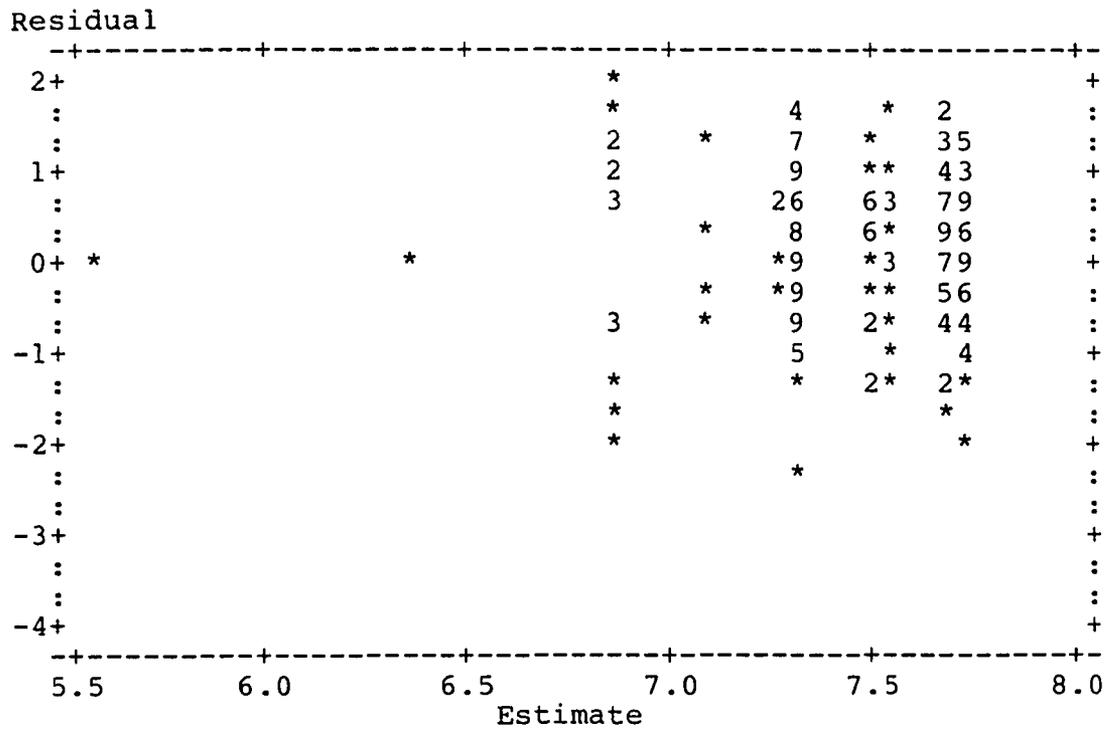


Figure 16. Plot of Residuals by Estimate for Dimension One.

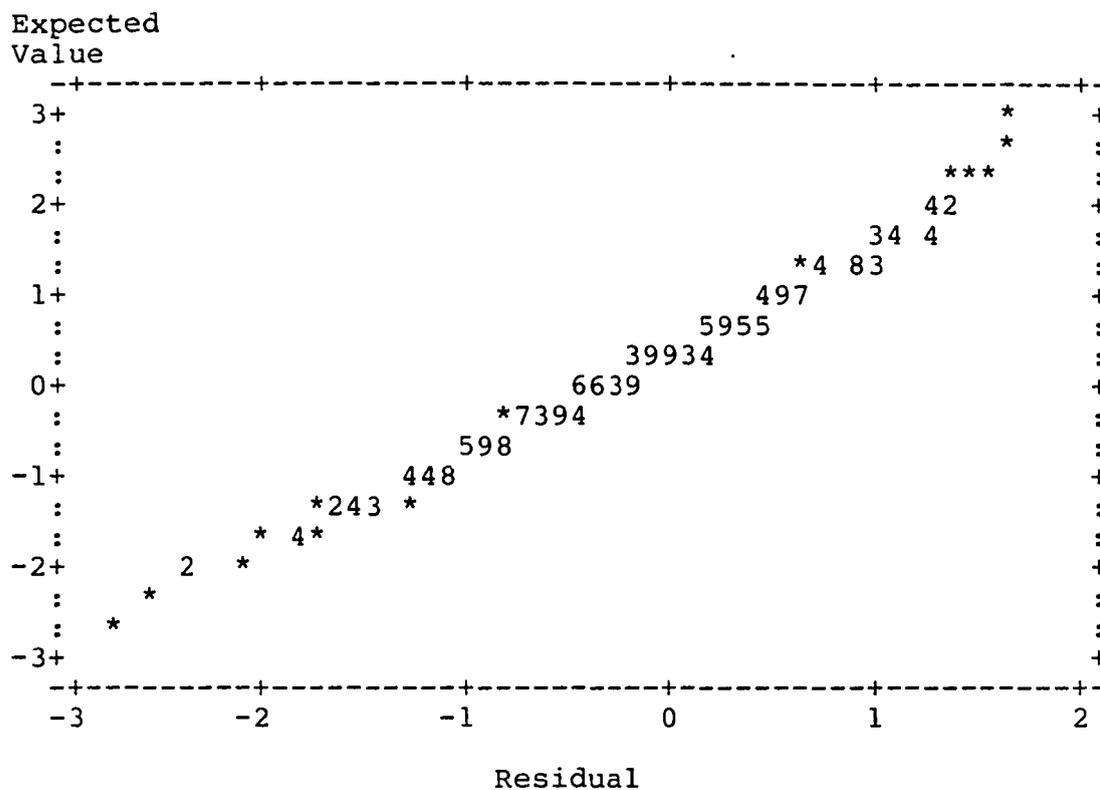


Figure 17. Normal Probability Plot for Residuals from Dimension One

Box Plot of Estimate



Box Plot of Residual

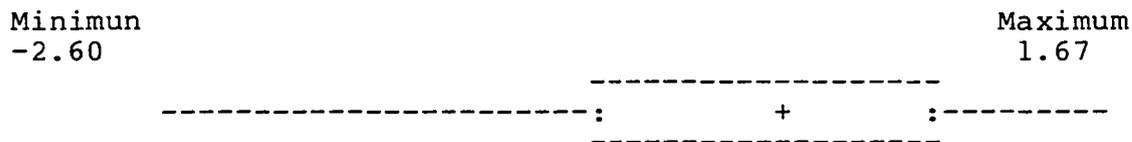


Figure 18. Box Plots for Dimension One

Appendix K

Stepwise Regression of Dimension Two:
Commitment to Professional Practice and
Nursing Diagnosis

Table 34

Stepwise Regression Analysis Using the SAS Information

Source	Sum-of Squares	DF	Mean- Square	F-Ratio	F
LIST	6.742	3	2.247	1.951	.122
ERROR	270.744	235	1.152		

Note. $R^2 = .024$

Round Two

Model	11.999	7	1.714	1.487	.169
LIST	7.248	3	2.416	2.098	.101
LEARN	4.751	4	1.188	1.031	.392
ERROR	265.994	231	1.151		

Note. $R^2 = .041$; $F = 4.567^*$, add variable.
* $p < .05$

Round Three

Model	12.234	8	1.529	1.324	.231
YEARS	.247	1	.247	.214	.644
LEARN	4.913	4	1.228	1.063	.376
LIST	7.074	3	2.358	2.041	.109
ERROR	265.747	230	1.155		

Note. $R^2 = .042$; $F = .203$, variable deleted.

(table continues)

Table 34 (continued)

Stepwise Regression Analysis Using the SAS Information

Round Four

Model	29.182	19	1.546	1.356	.149
LIST	9.394	3	3.131	2.747	.044
LIST*					
LEARN	16.386	12	1.366	1.198	.286
ERROR	249.607	219	1.140		

Note. $R^2=1.00$; $F=15.07^*$, variable added.
* $p<.05$

Appendix L
Assumptions of Regression Analysis of
Dimension Two Model

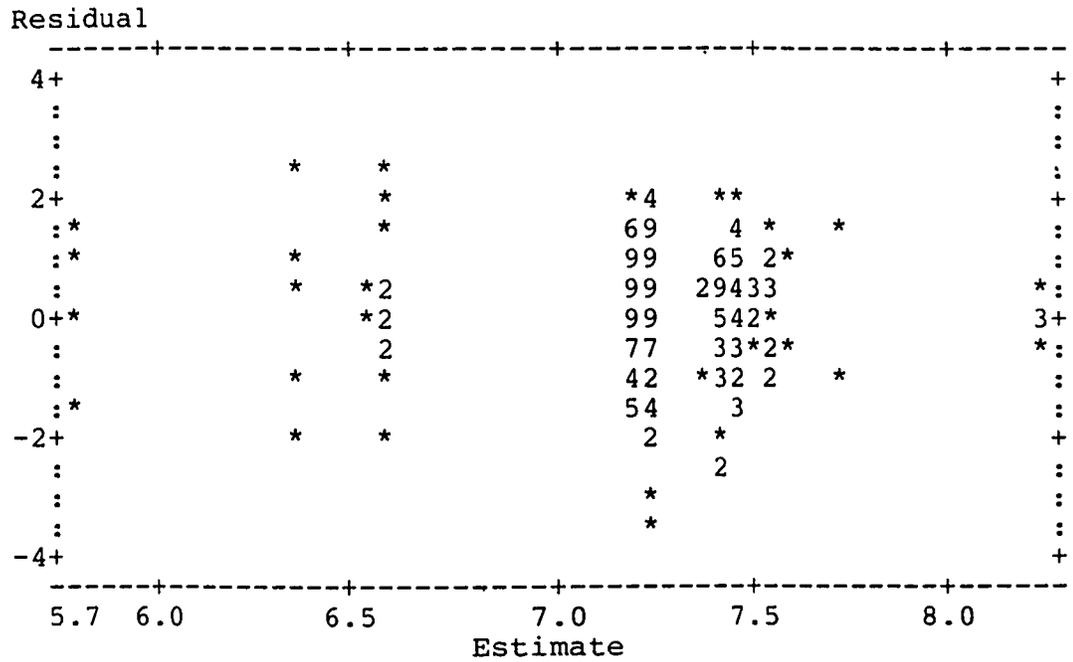


Figure 19. Plot of Residual by Estimate for Dimension Two.

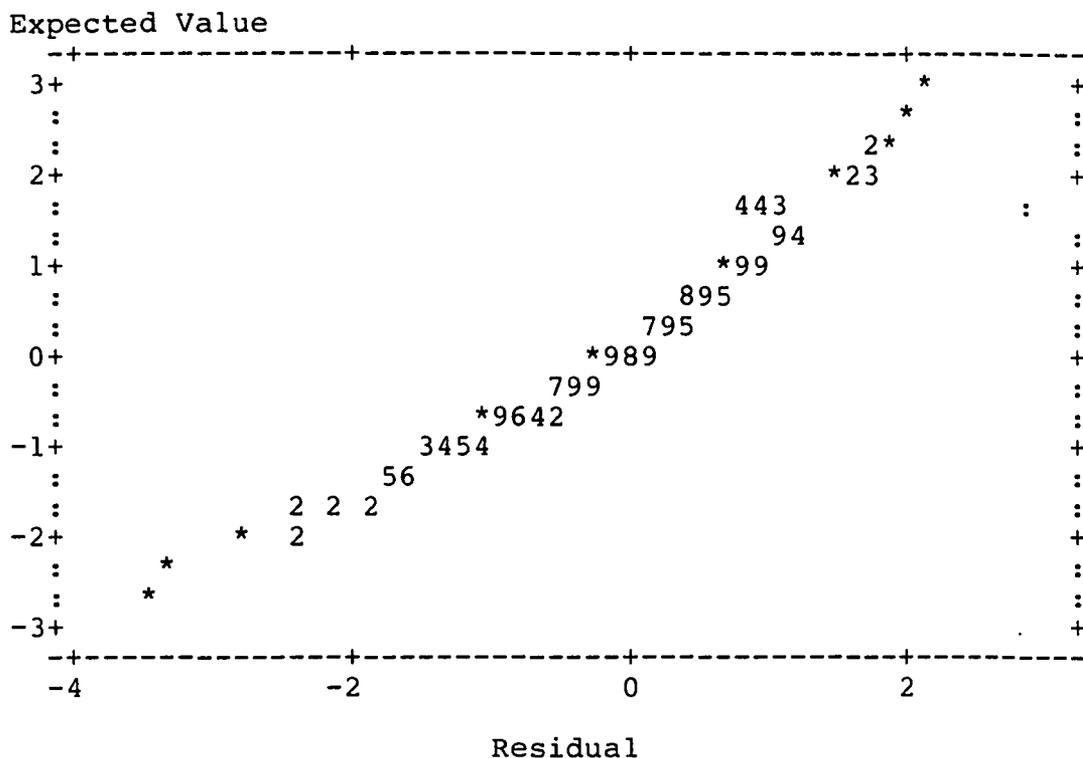
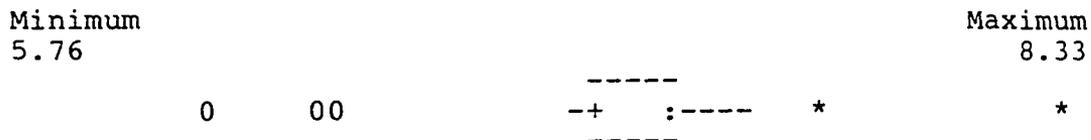


Figure 20. Normal Probability Plot for Dimension Two.

Box Plot of Estimate



Box Plot of Residual

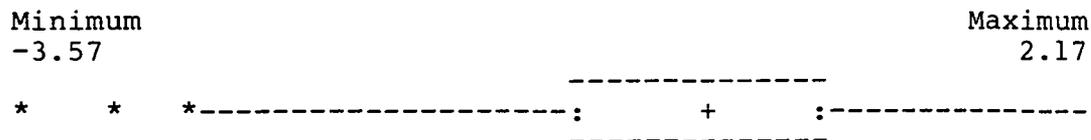


Figure 21. Box Plots for Dimension Two.

Appendix M
Multidimensional Preference Plots
for the
Five Groups of Nurses

Figure 22.

The preference vectors for the nursing faculty on the dimension of professional nursing role vs. the dimension of knowledge from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 7 and C occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

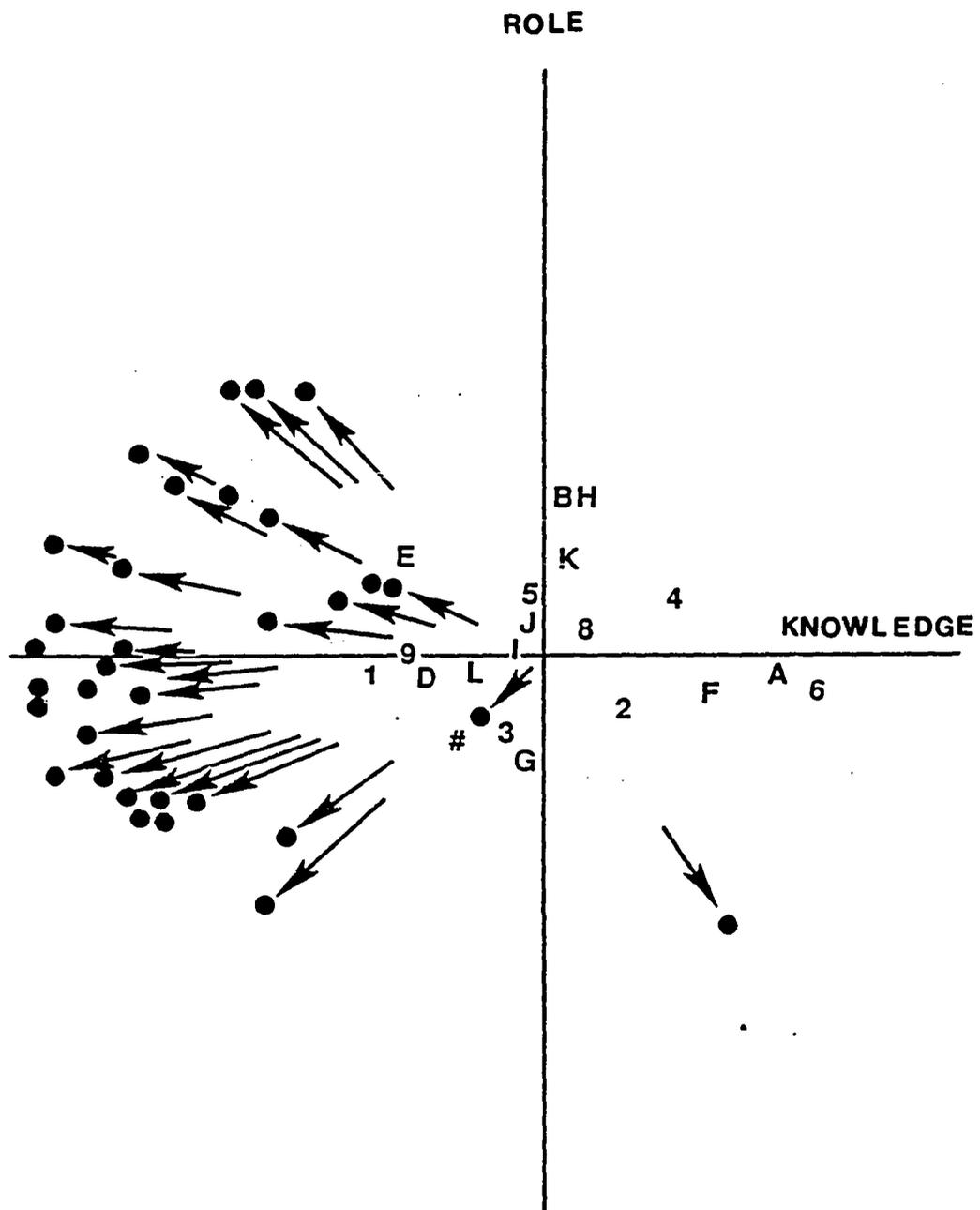


FIGURE 22.

Figure 23.

The preference vectors for the nursing faculty on the dimension of problem solving (assessment and critical thinking skills) vs. the dimension of knowledge from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 7 and C occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

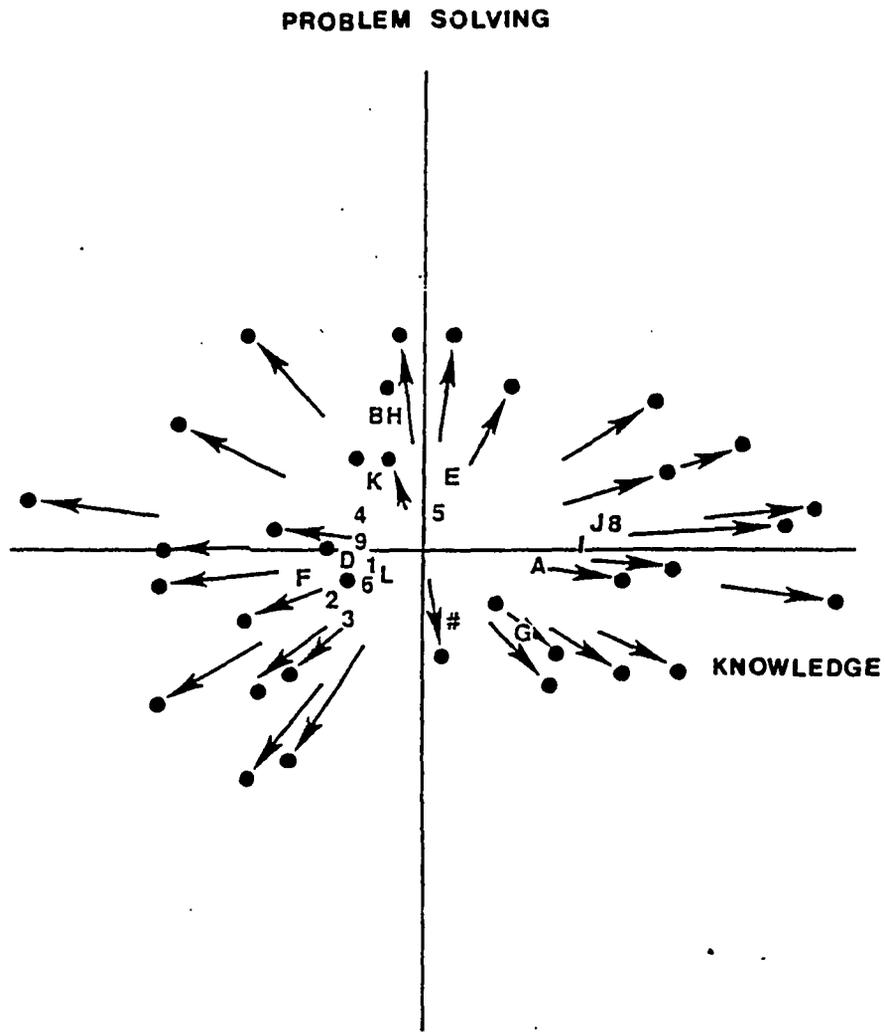


FIGURE 23.

Figure 24.

The preference vectors for the nursing students on the dimension of professional nursing role vs. the dimension of knowledge from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

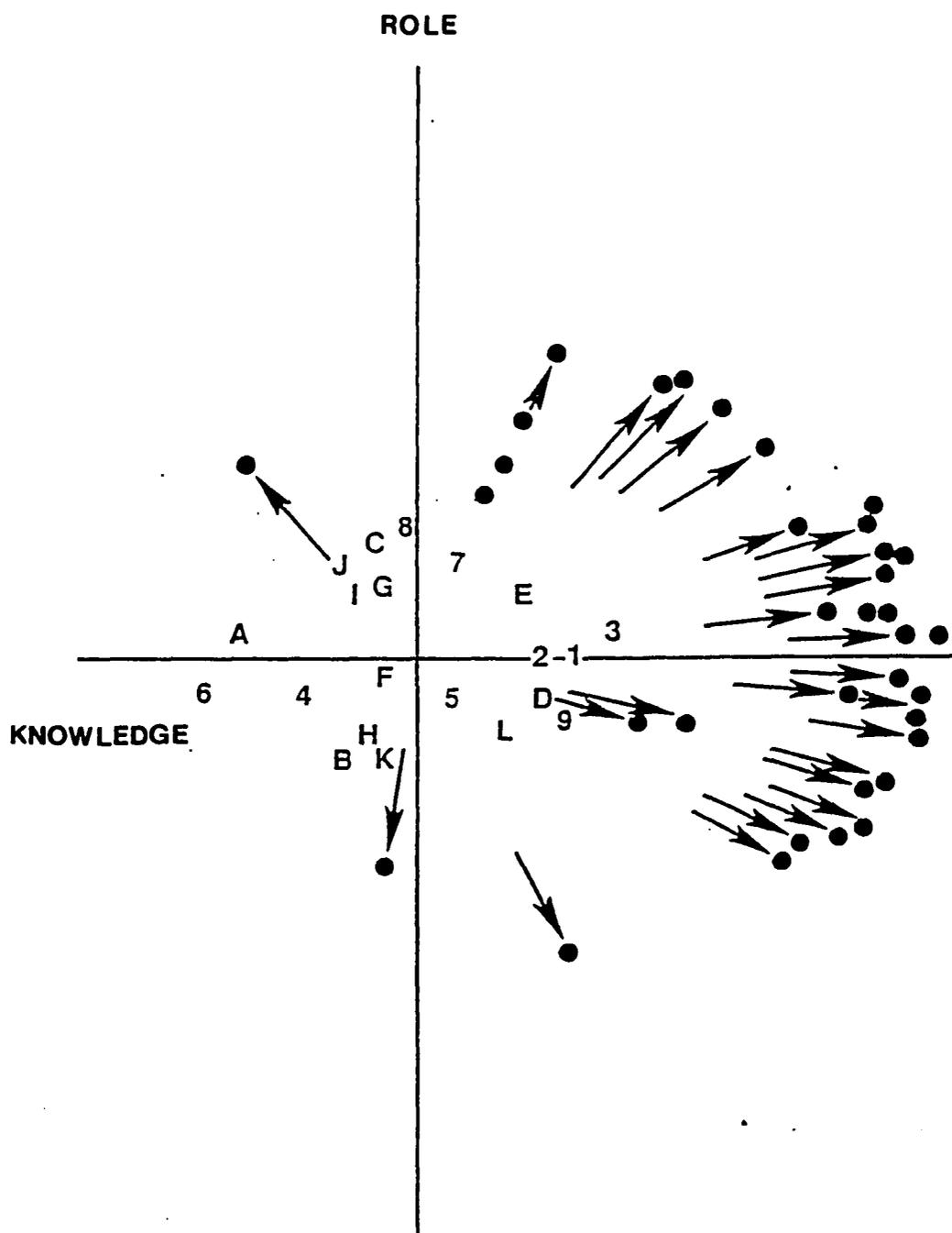


FIGURE 24.

Figure 25.

The preference vectors for the nursing students on the dimension of knowledge vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 5, 9, D, and L occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

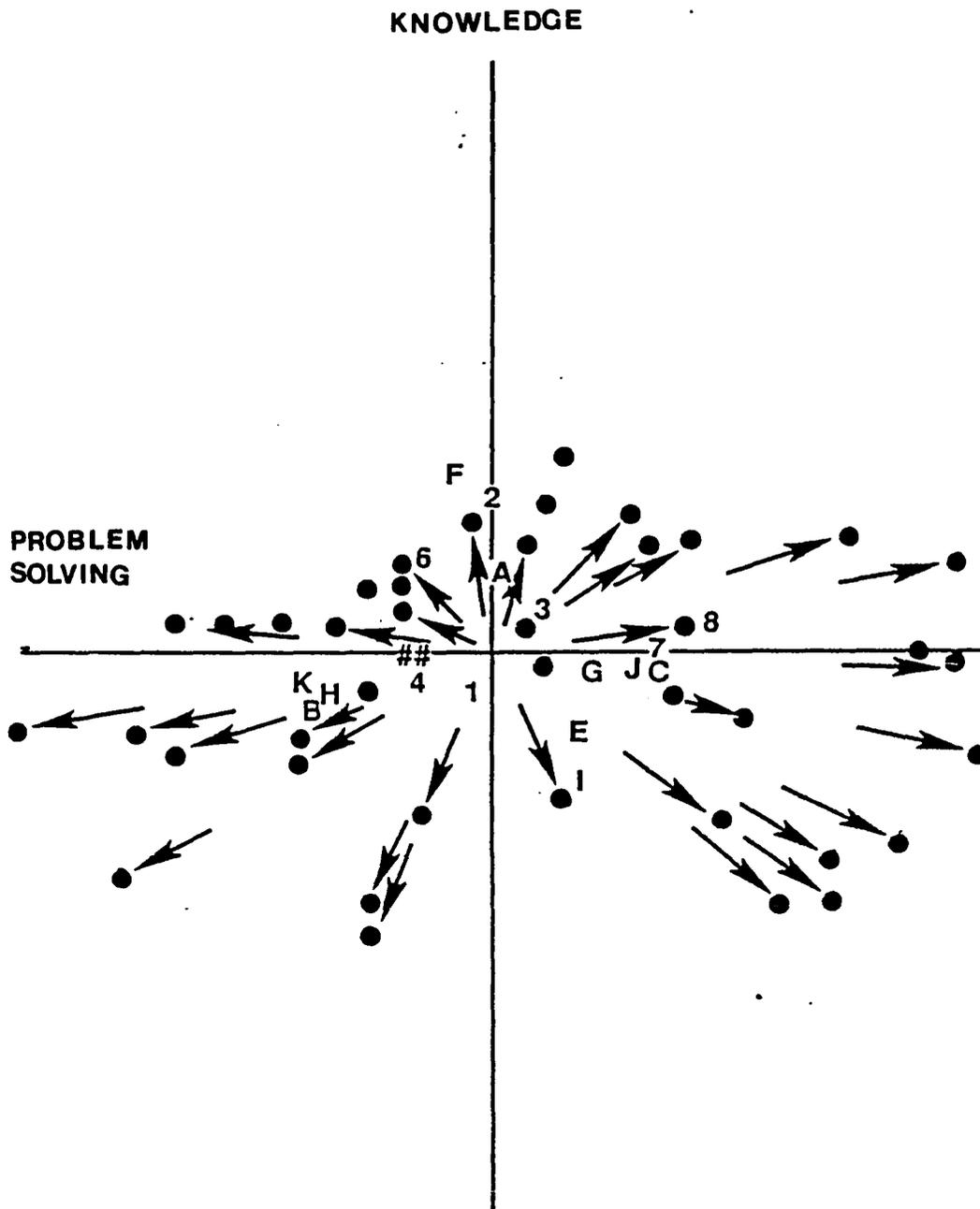


FIGURE 25.

Figure 26.

The preference vectors for the nursing administrators on the dimension of knowledge vs. the dimension of professional nursing role from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 7, 9, B, D, and H occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

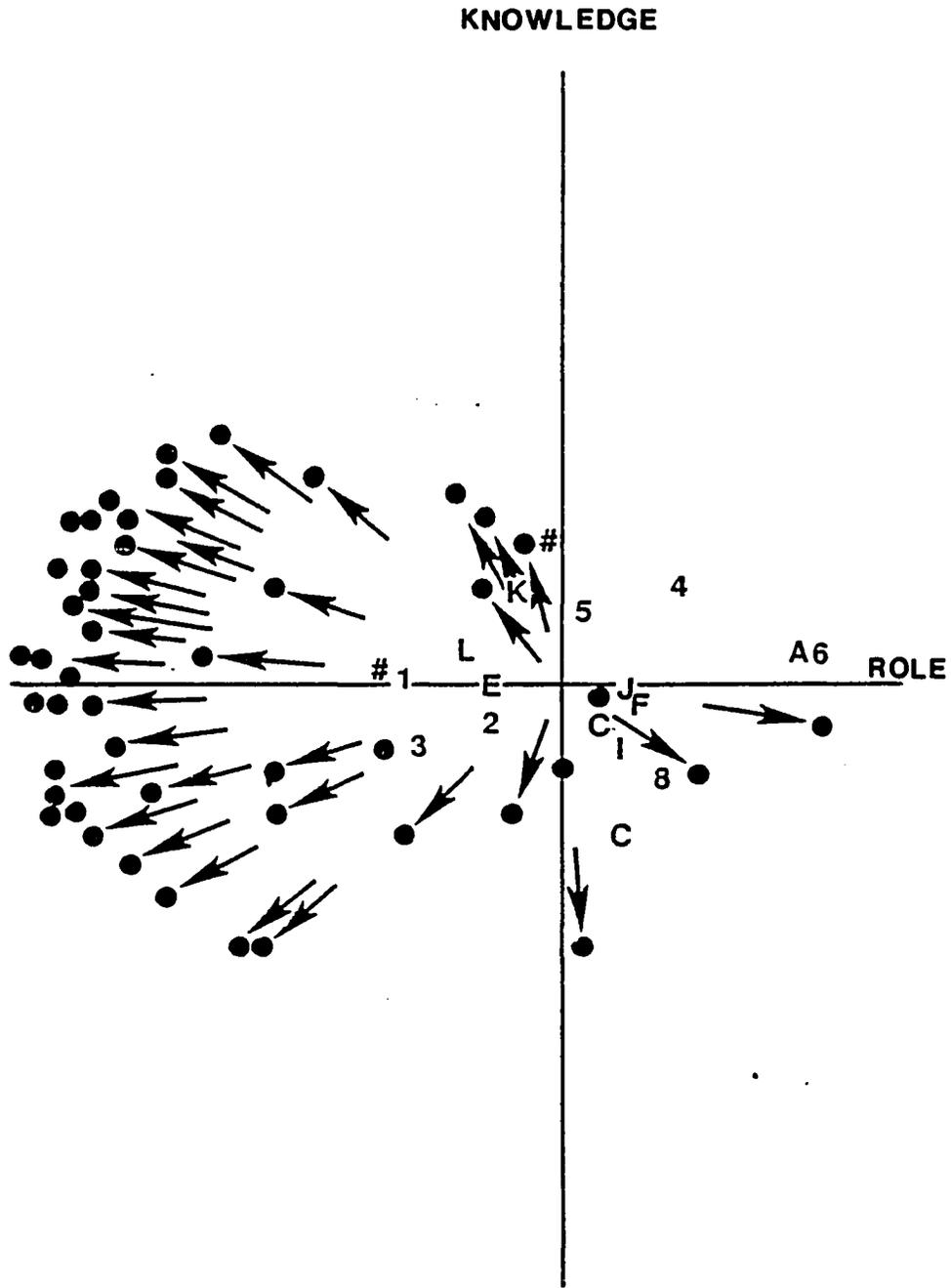


FIGURE 26.

Figure 27.

The preference vectors for the nursing administrators on the dimension of problem solving (assessment and critical thinking skills) vs. the dimension of professional nursing role from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 1, 9, A, D, and L occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

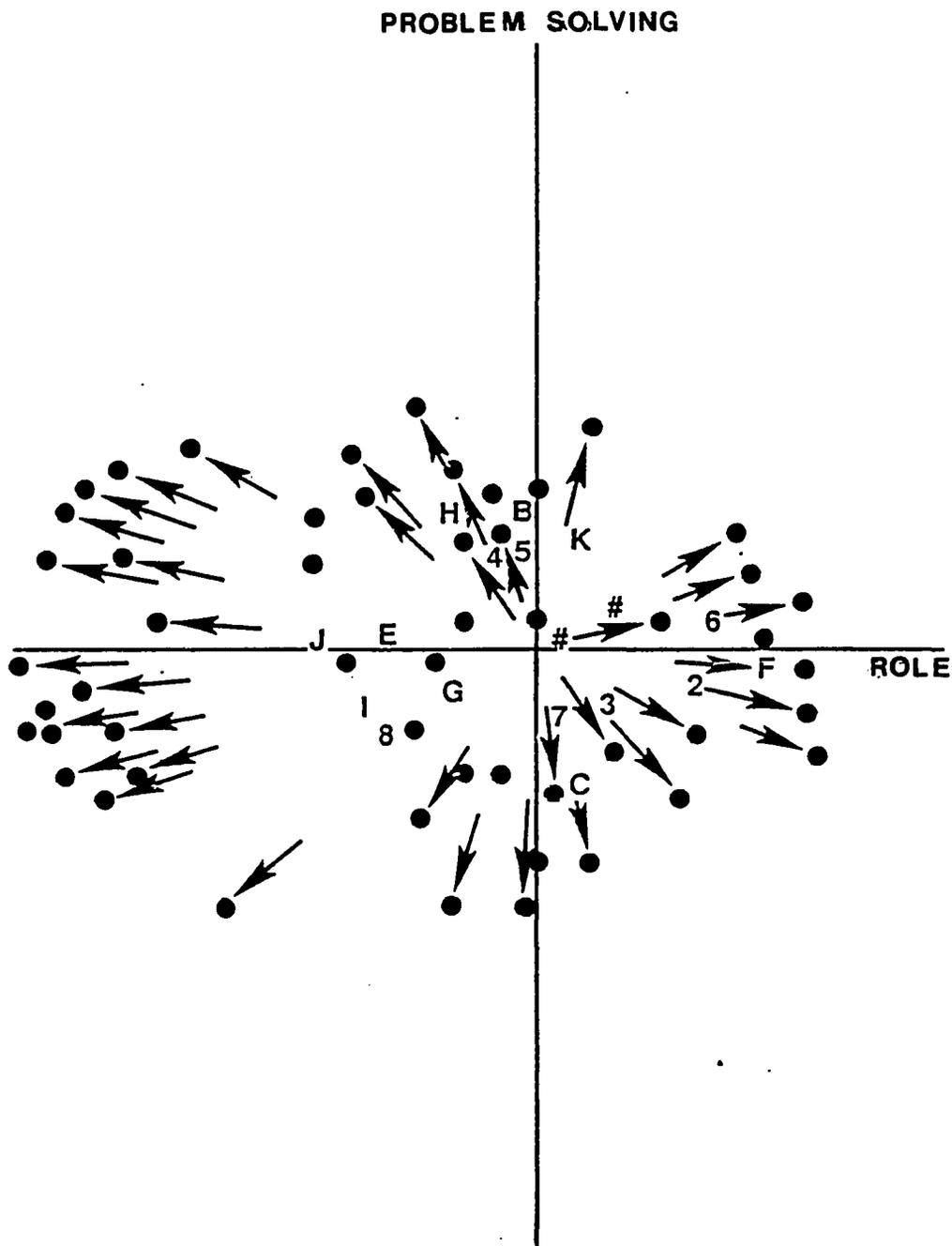


FIGURE 27.

Figure 28.

The preference vectors for the staff nurses on the dimension of problem solving (assessment and critical thinking skills) vs. knowledge from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 2, B, and E occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

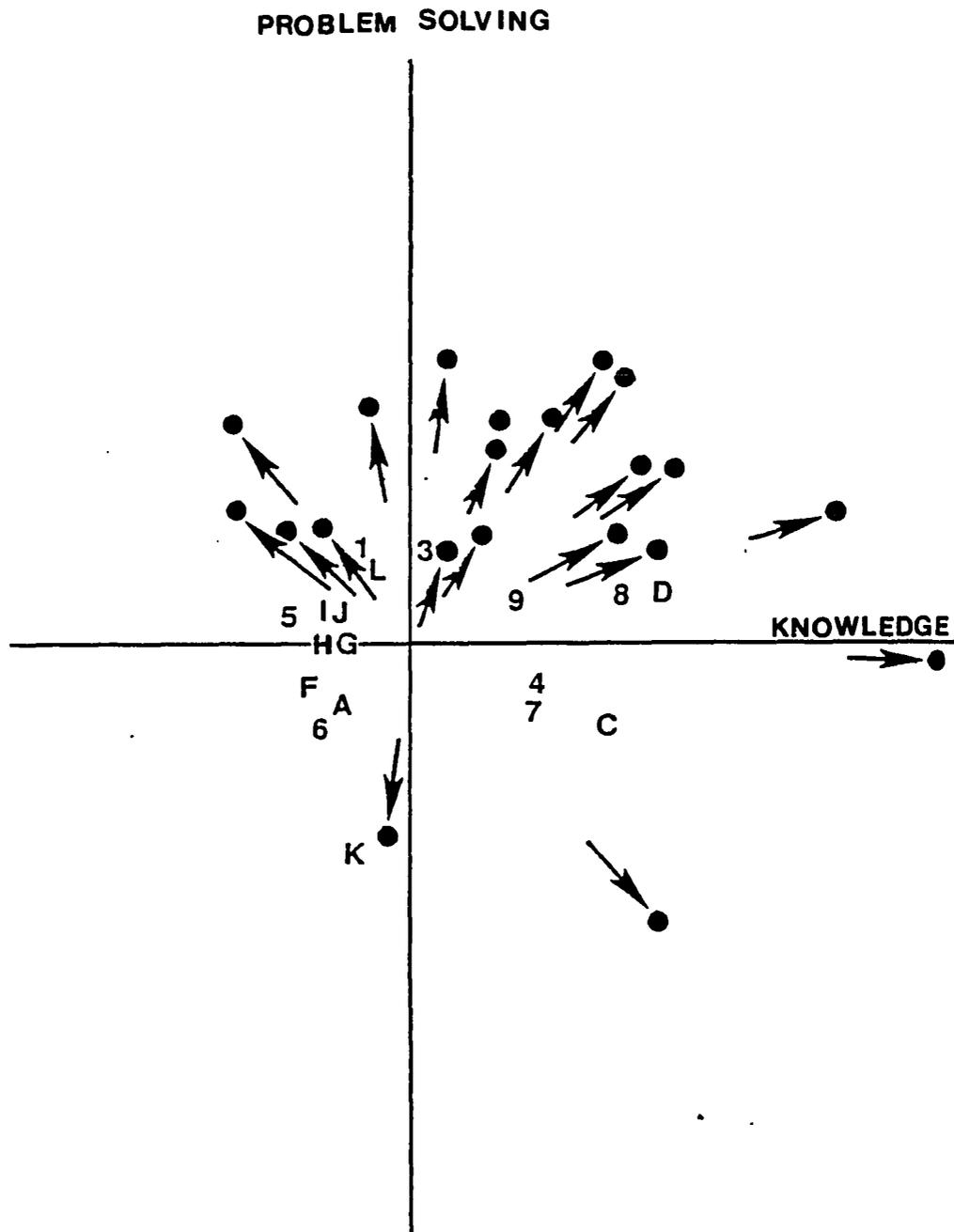


FIGURE 28.

Figure 29.

The preference vectors for the staff nurses on the dimension of professional nursing role vs. the dimension of knowledge from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 2, 5, B, D, E, and J occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

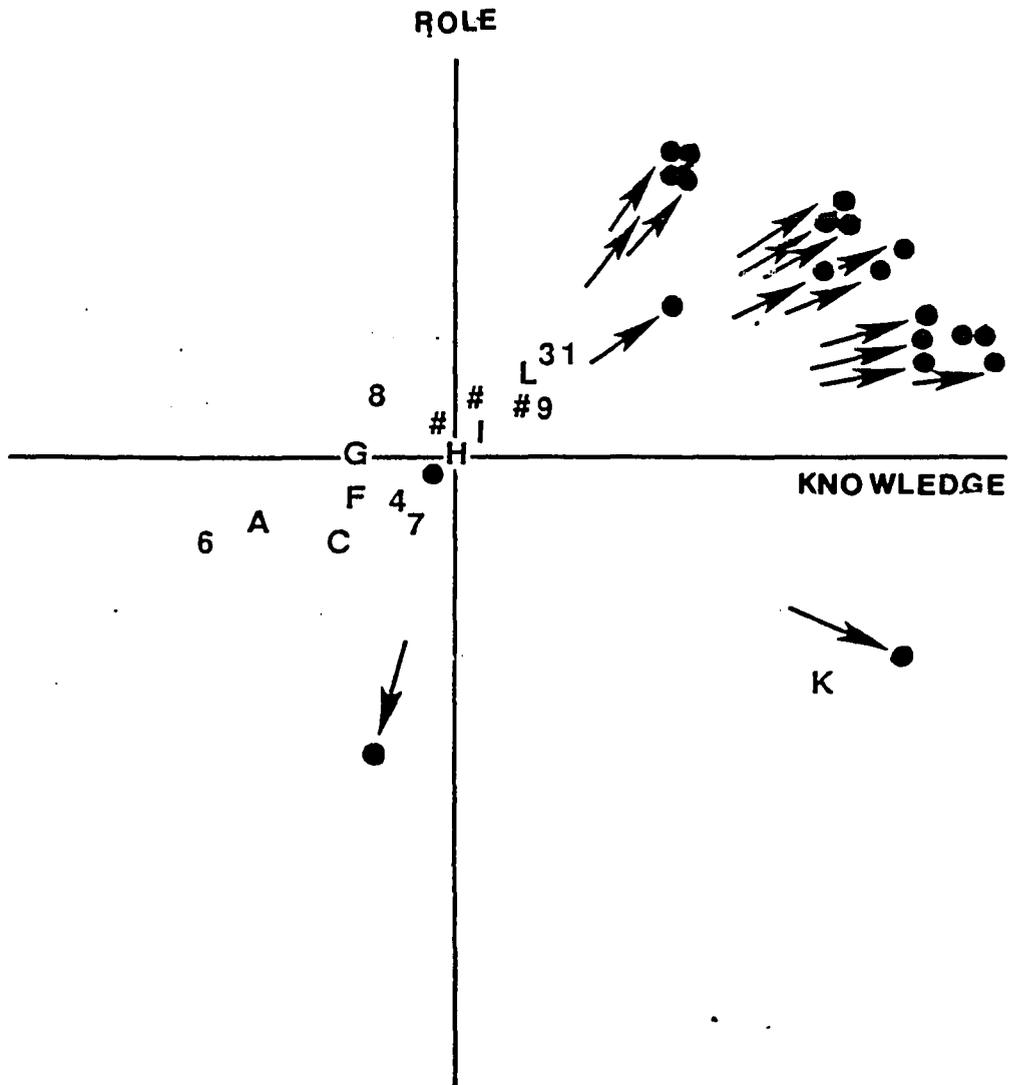


FIGURE 29.

Figure 30.

The preference vectors for the expert nursing diagnosticians on the dimension of professional nursing role vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 1 and L occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

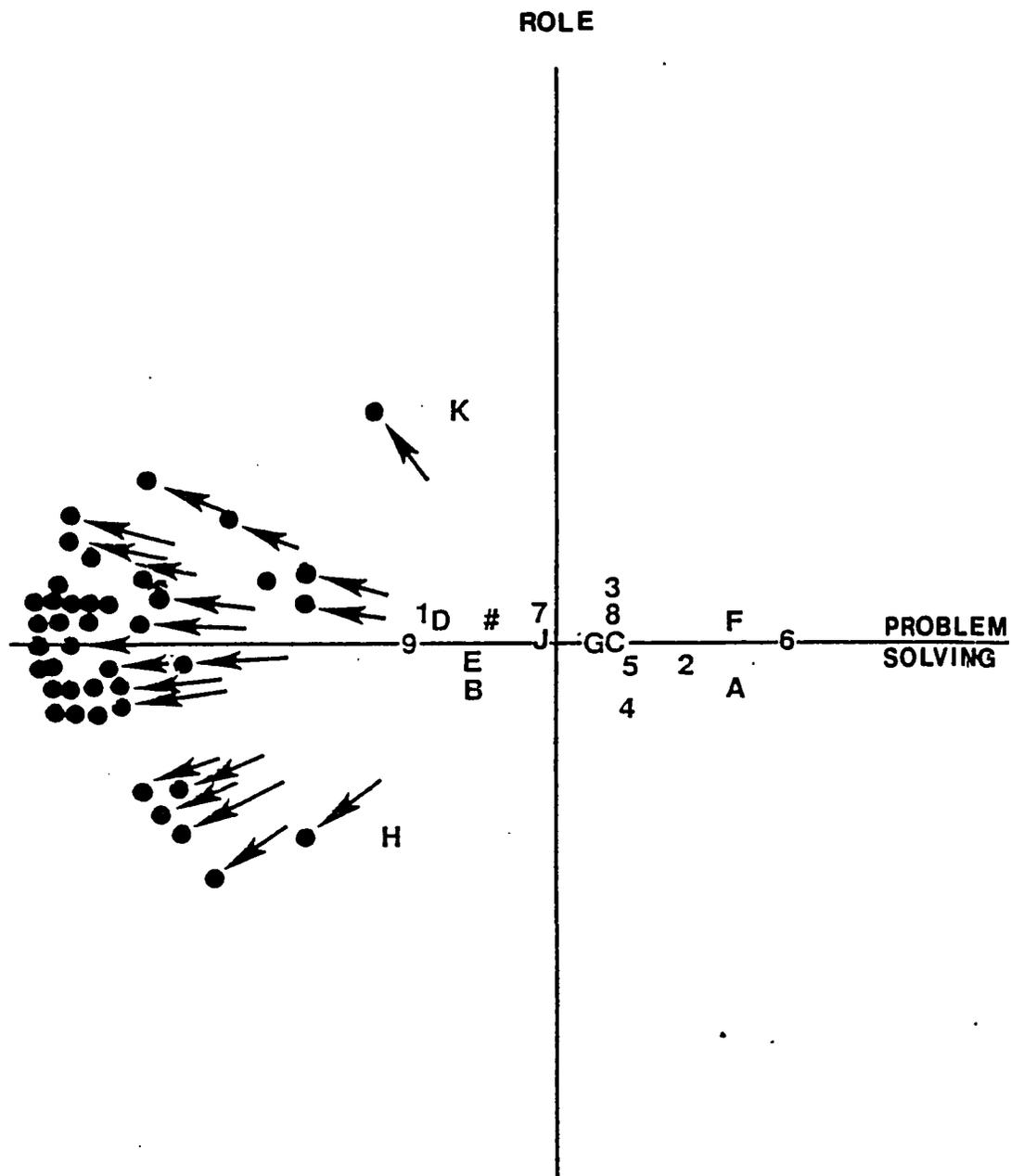


FIGURE 30.

Figure 31.

The preference vectors for the expert nursing diagnosticians on the dimension of knowledge vs. the dimension of problem solving (assessment and critical thinking skills) from a three dimensional solution of preference data (see Figure 8).

Legend:

1. Ability to see relationships between the patient's signs and symptoms
2. Knowledge of disease processes
3. Skill in techniques of physical assessment
4. Experience in using nursing diagnoses
5. Ability to determine priorities between different diagnoses
6. Ability to write "SOAP" notes
7. Skill in psychosocial assessments
8. Commitment to furthering quality nursing care
9. Ability to analyze the patient's signs and symptoms
- A. Participation in professional development activities, e. g., reading, workshops
- B. Knowledge about the different diagnostic categories
- C. Skill in interpersonal relationships
- D. Ability to interpret the patient's signs and symptoms
- E. Knowledge of nursing concepts
- F. Ability to interpret laboratory and/or diagnostic studies
- G. Commitment to collaborating with the patient to confirm the nursing diagnosis
- H. Knowledge of the defining characteristics of each diagnostic category
- I. Ability to differentiate nursing practice from medical practice
- J. Professional commitment to using nursing diagnoses
- K. Ability to match the patient's signs and symptoms with the signs and symptoms of each diagnostic category
- L. Ability to verify the signs and symptoms for sufficiency and accuracy
- #. The pound sign indicates that requisites 1, 2, B, D, H, I, and K occupy the same space in the solution

Participant vectors originate at the origin and point to the participant's preference, indicated by the black dots and arrows

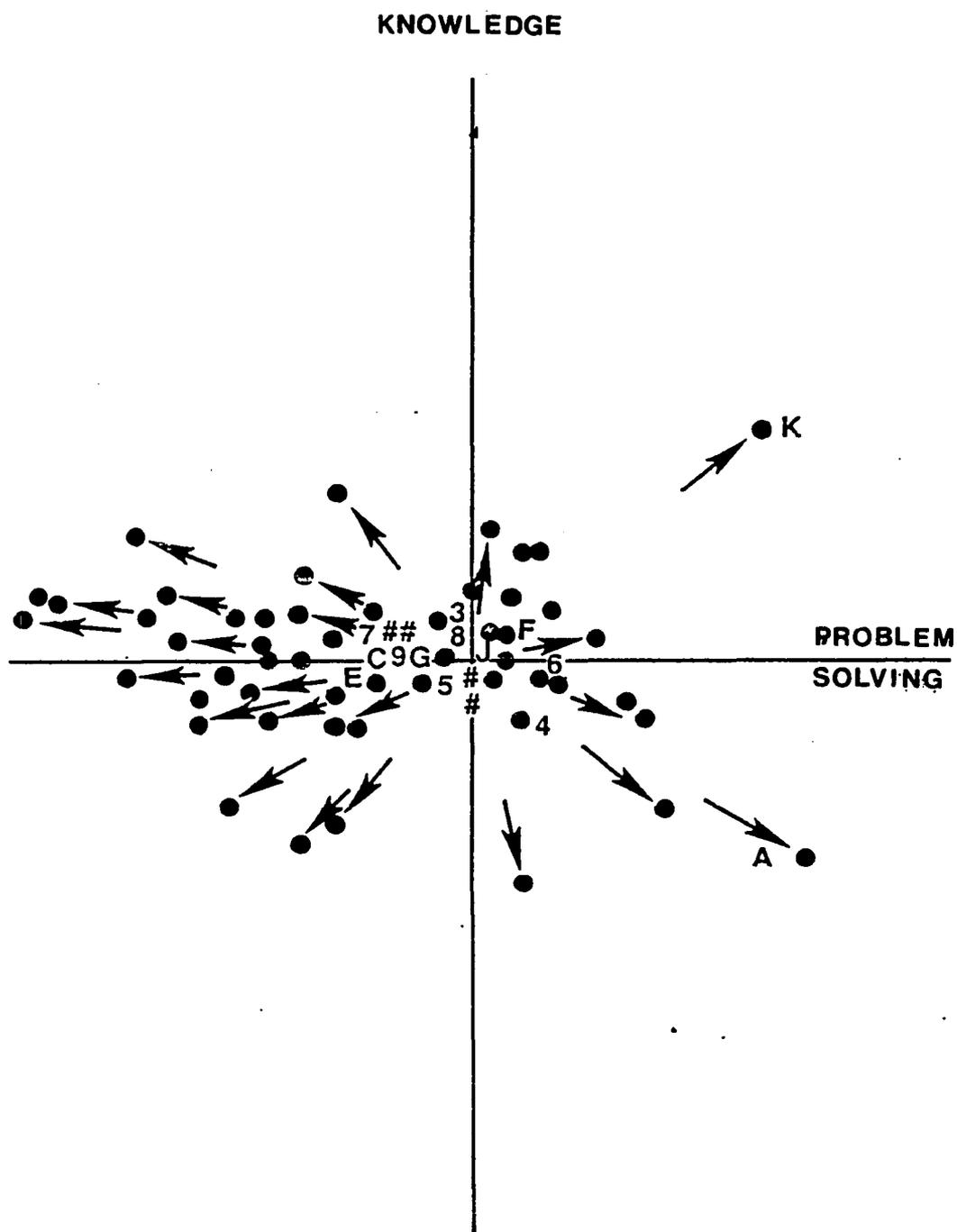


FIGURE 31.

References

- American Hospital Association. (1984). AHA guide to the health care field. Chicago: Author.
- American Nurses' Association. (in press). Standards of practice for rheumatic disease nursing. Kansas City, MO: Author.
- American Nurses' Association. (1980). Nursing: A social policy statement. Kansas City, MO: Author.
- Anderson, J. R. (1980). Cognitive psychology and its implications. San Francisco: W. H. Freeman.
- Aspinall, M. J. (1976). Nursing diagnosis--the weak link. American Journal of Nursing, 76, 433-437.
- Aspinall, M. J., & Tanner, C. A. (1981). Decision making for patient care: Applying the nursing process. Norwalk, CN: Appleton-Century-Crofts.
- Babbie, E. R. (1973). Survey research methods. Belmont, CA: Wadsworth.
- Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. Menlo Park, CA: Addison-Wesley.
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals--Handbook I: Cognitive domain. New York: David McKay.
- Brooks, E. R. (1983). The starting point. Nursing Management, 14(6), 35-37.
- Carmines E.G., & Zeller, R.A. (1979). Reliability and validity assessment. Beverly Hills, CA: Sage Publications.
- Carnevali, D. L. (1983). Nursing care planning: Diagnosis and management. Philadelphia: J. B. Lippincott.
- Carnevali, D. L. (1981). Conceptualizing: Storage of knowledge for diagnosis and management. In P. H. Mitchell & A. Lousteau (Eds.), Concepts basic to nursing (pp 207-222). New York: McGraw-Hill.

- Carnevali, D. L., Mitchell, P. H., Woods, N. F., & Tanner, C. A. (1984). Diagnostic reasoning in nursing. Philadelphia: J. B. Lippincott.
- Carpenito, L. J. (1983). Nursing diagnosis: Application to clinical practice. Philadelphia: J. B. Lippincott.
- Carpenito, L. J. (1984). Handbook of nursing diagnosis. Philadelphia: J. B. Lippincott.
- Cattell, R. B. (1962). The basis of recognition and interpretation of factors. Educational and Psychological Measurement, 22, 667-697.
- Chang, J. J. (1968). Preference mapping program. Murray Hill, NJ: Bell Telephone Laboratories.
- Chinn, P. L., & Jacobs, M. K. (1983). Theory and nursing: A systematic approach. St. Louis: C. V. Mosby.
- Cochran, W. G., & Cox, G. M. (1957). Experimental design. New York: John Wiley & Sons.
- Crawford, P. L., & Bradshaw, H. L. (1968). Perception of characteristics of effective university teachers: A scaling analysis. Educational and Psychological Measurement, 28, 1079-1085.
- De Gasperis, M. (1983). Implementing nursing diagnosis in the critical care setting. Dimensions of Critical Care Nursing, 2, 44-49.
- del Bueno, D. J. (1983). Doing the right thing: Nurses' ability to make clinical decisions. Nurse Educator, 8(3), 7-11.
- Doenges, M., & Moorhouse, M. (1985). Nurses' pocket guide: Nursing diagnoses with interventions. Philadelphia: F. A. Davis.
- Dreyfus, H. L. (1979). What computers can't do. (rev. ed.). New York: Harper & Row.
- Dunn-Rankin, P. (1987). Personal communication.
- Dunn-Rankin, P. (1983). Scaling methods. Hillsdale, NJ: Lawrence Erlbaum.
- Eiser, J. R., & Stroebe, W. (1972). Categorization and social judgment. New York: Academic Press.

- Field, L. (1979). The implementation of nursing diagnosis in clinical practice. Nursing Clinics of North America, 14, 497-508.
- Forgus, R. H., & Melamed, L. E. (1976). Perception: A cognitive-stage approach. New York: McGraw Hill.
- Fredette, S., & O'Connor, K. (1979). Nursing diagnosis in teaching and curriculum planning. Nursing Clinics of North America, 14, 541-552.
- Gay, L. R. (1976). Educational research: Competencies for analysis and application. Columbus, OH: Charles E. Merrill.
- Gebbie, K. M., & Lavin, M. A. (Eds.). (1975). Classification of nursing diagnosis: Proceedings of the first national conference. St. Louis: C. V. Mosby.
- Glaser, B. G. (1978). Theoretical sensitivity. Mill Valley, CA: Sociology Press.
- Glaser B. G., & Strauss, A. (1967). The discovery of grounded theory. Chicago: Aldine.
- Gordon, M. (1972). Strategies in probabilistic concept attainment: A study of nursing diagnosis. Unpublished doctoral dissertation, Boston College, Boston.
- Gordon, M. (1976). Nursing diagnoses and the diagnostic process. American Journal of Nursing, 76, 1298-1300.
- Gordon, M. (1982a). The diagnostic process. In M. J. Kim, & D. A. Moritz (Eds.), Classification of nursing diagnosis: Proceedings of the third and fourth national conferences (pp. 47-52). New York: McGraw Hill.
- Gordon, M. (1982b). Manual of nursing diagnoses. New York: McGraw Hill.
- Gordon, M. (1982c). Nursing diagnosis: Process and application. New York: McGraw Hill.
- Gordon, M. (1986, June). Diagnostic concept utilization. Paper presented at the National Conference on Diagnostic and Ethical Reasoning, Boston, MA.
- Gordon, M., & Sweeney, M. A. (1979). Methodological problems and issues in identifying and standardizing nursing diagnoses. Advances in Nursing Science, 2(1), 1-15.

- Guzzetta, C. E., & Dossey, B. M. (1983). Nursing diagnosis: Framework, process, and problems. Heart & Lung, 12(3), 281-291.
- Halfman, T. M., & Pigg, J. S. (1984). Nurses' perceptions of rheumatic disease patient problems as evidenced in nursing diagnoses, etiologies, defining characteristics, expected outcomes, and interventions. In M. J. Kim, G. K. McFarland, & A. M. McLane (Eds.), Classification of nursing diagnoses: Proceedings of the fifth national conference (pp. 216-223). St. Louis: C. V. Mosby.
- Hallowell, A. I. (1951). Cultural factors in the structuralizations of perception. In J. H. Rohrer, & M. Sherif (Eds.), Social psychology at the crossroads (pp. 164-195). New York: Harper.
- Harrow, A. J. (1972). A taxonomy of the psychomotor domain: A guide for developing behavioral objectives. New York: David McKay.
- Hausman, K. A. (1980). The concept and application of nursing diagnosis. Journal of Neurosurgical Nursing, 12, 76-90.
- Heidegger, M. (1962). Being and time. New York: Harper & Row.
- Hickey, M. (1984). Nursing diagnosis in the critical care unit. Dimensions of Critical Care Nursing, 3(2), 91-97.
- Hudgins, B. B. (1977). Learning and thinking: A primer for teachers. Itasca, IL: F. E. Peacock.
- Hurley, M. (Ed.). (1986). Classification of nursing diagnoses: Proceedings of the sixth national conference. St. Louis: C.V. Mosby.
- Kim, H. S. (1983). The nature of theoretical thinking in nursing. Norwalk, CN: Appleton-Century-Crofts.
- Kim, M. J., McFarland, G. K., & McLane, A. M. (Eds.). (1984a). Classification of nursing diagnoses: Proceedings of the fifth national conference. St. Louis: C. V. Mosby.
- Kim, M. J., McFarland, G. K., & McLane, A. M. (Eds.). (1984b). Pocket guide to nursing diagnoses. St. Louis: C. V. Mosby.

- Kim, M. J., & Moritz, D.A. (Eds.). (1982). Classification of nursing diagnoses: Proceedings of the third and fourth national conferences. New York: McGraw Hill.
- Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). Taxonomy of educational objectives: The classification of educational goals--Handbook II: Affective domain. New York: David McKay Co., Inc.
- Kruskal, J. B., & Wish, M. (1978). Multidimensional scaling. Beverly Hills, CA: Sage Publications.
- Lancaster, W., & Beare, P. (1982). Decision making in nursing practice. In J. Lancaster, & W. Lancaster (Eds.), Concepts for advanced nursing practice: The nurse as a change agent (pp. 146-174). St. Louis: C. V. Mosby.
- Loxley, C. M., & Cress, S. S. (1983). The Pocket guide to clinical nursing process for the adult medical-surgical client. New York: The Miller Press.
- Martin, P. A., & York, K. A. (1984). Incidence of nursing diagnoses. In M. J. Kim, G. K. McFarland, & A. M. McLane (Eds.), Classification of nursing diagnosis: Proceedings of the fifth national conference (pp. 224-231). St. Louis: C. V. Mosby.
- Matthews, C. A., & Gaul, A. L. (1979). Nursing diagnosis from the perspective of concept attainment and critical thinking. Advances in Nursing Science, 2(1), 17-26.
- McQuitty, L. (1957). Elementary linkage analysis for isolating orthogonal and oblique types and typical relevancies. Educational and Psychological Measurement, 17, 207-229.
- Meade, C. D., & Kim, M. J. (1984). The effects of teaching on documentation of nursing diagnoses. In M. J. Kim, G. K. McFarland, & A. M. McLane (Eds.), Classification of nursing diagnosis: Proceedings of the fifth national conference (pp. 241-247). St. Louis: C. V. Mosby.
- Meleis, A. I. (1985). Theoretical nursing: Development and progress. Philadelphia: J. B. Lippincott.
- Merkel, S. I. (1982). Problem-oriented recording in the intensive care unit. Dimensions of Critical Care Nursing, 1, 232-240.

- Michela, J. L., Peplau, L. A., & Weeks, D. G. (1982). Perceived dimensions of attributes for loneliness. Journal of Personality and Social Psychology, 43, 929-936.
- Montenegro, X. P. (1978). Ideal and actual student perceptions of college instructors as predictors of teacher effectiveness. Unpublished doctoral dissertation, University of Hawaii, Honolulu.
- Moore, M. R. (1970). The perceptual-motor domain and a proposed taxonomy of perception. Audiovisual Communications Review, 18, 379-413.
- Morris, J. L. (1982). Nursing diagnosis--a focus for continuing education. Journal of Continuing Education in Nursing, 13(3), 33-36.
- Mundinger, M. D., & Jauron, G. D. (1975). Developing a nursing diagnosis. Nursing Outlook, 23(2), 94-98
- Murray, R. B. (1982). Model for psychiatric and mental health nursing: Negative self concept. In J. H. Carlson, C. A. Craft, & A. D. McGuire (Eds.). (1982). Nursing diagnosis. Philadelphia: W. B. Saunders.
- National League for Nursing. (1984). Baccalaureate education in nursing: Key to a professional career in nursing. New York: Author.
- Neisser, U. (1976). Cognition and reality: Principles and implications of cognitive psychology. San Francisco: W. H. Freeman.
- Norman, D. A. (1982). Learning and memory. San Francisco: W. H. Freeman.
- Nunnally, J. C. (1978). Psychometric theory. New York: McGraw-Hill.
- Perry, A. G. (1982). Nursing diagnosis research. Journal of Neurosurgical Nursing, 14, 108-111.
- Pedhazur, E. J. (1986). Multiple regression in behavioral research: Explanation and prediction. New York: Holt, Rinehart and Winston.
- Potter, P. A., & Perry, A. G. (1985). Fundamentals of nursing: Concepts, process, and practice. St. Louis: C. V. Mosby.

- Prior, J. A., & Silberstein, J. S. (1977). Physical diagnosis: The history and physical examination of the patient. St. Louis: C. V. Mosby.
- SAS Institute (1985). SAS User's guide, Cary, NC: Author.
- Schiffman, S. S., Reynolds, M. L., & Young, F. W. (1981). Introduction to multidimensional scaling: Theory, methods, and application. New York: Academic Press.
- Sherif, M., & Hovland, C. I. (1965). Social judgment: Assimilation and contrast effects in communication and attitude change. New Haven, CN: Yale University Press.
- Sherif, M., & Sherif, C. W. (1956). An outline of social psychology. New York: Harper & Row.
- Shoemaker, J. (1979). How nursing diagnosis helps focus your care. RN, 42(8), 55-61.
- Shoemaker, J. (1984). Essential features of a nursing diagnosis. In M. J. Kim, G. K. McFarland, & A. M. McLane (Eds.), Classification of nursing diagnosis: Proceedings of the fifth national conference (pp. 104-112). St. Louis: C. V. Mosby.
- Stevens, B. J. (1985). Tackling a changing society head on. Nursing and Health Care, 6, 27-30.
- SYSTAT, Inc. (1985). The systems for statistics. Evanston, IL: Author.
- Tabachnick, B. G., & Fidell, L.S. (1983). Using multivariate statistics. New York: Harper & Row.
- Thurstone, L. L. (1959). The measurement of values. Chicago: University of Chicago Press.
- Veldman, D. J. (1967). Fortran programming for the behavioral sciences. New York: Holt, Rinehart & Winston.
- Volicer, B. J. (1984). Multivariate statistics for nursing research. Orlando, FL: Grune & Stratton.
- Warren, J. J. (1983a). Accountability and nursing diagnosis. Journal of Nursing Administration, 13(10), 34-37.

- Warren, J. J. (1983b). The making of a nursing diagnosis. In Hawaii Nurses' Association (Ed.), HNA's 1983 Clinical Sessions. Honolulu: Author.
- Warren, E. O. (1985). Nursing Diagnosis Dimensions Scores (computer program). Unpublished program. (Medical University of South Carolina, College of Nursing)
- Weed, L. L. (1970). Medical records, medical education, and patient care. Chicago: Year Book Medical Publishers.
- Wyers, M. E., & Grove, S. K. (1983). Perceived competency behaviors for clinical nurse specialist role. Momentum: American Nurses' Association Council of Clinical Nurse Specialists, 1(4), 3-5.
- Wyers, M. E., Grove, S. K., & Pastorino, D. (1985). What role for nurse specialist? Nursing and Health Care, 6, 203-207.