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A DESCRIPTIVE CORRELATIONAL STUDY
OF THE DECISION-MAKING PATTERNS OF NURSE PRACTITIONERS
IN PRIMARY CARE

by
Rosemary Goodyear

A dissertation submitted in partial fulfillment
of requirements for the degree of

Doctor of Education

University of San Diego

1986

Dissertation Committee

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ABSTRACT

The purpose of this dissertation was to investigate the decision-making patterns of nurse practitioners and the relationship between this cognitive process and their personal characteristics and dimensions of employment. Since nurse practitioners are a major group of providers of primary care, they are faced with increasingly complex patient care decisions regarding the health management of these patients.

The premise that the decision-making process is influenced by factors within the individual and the work environment formed the basis for this investigation. The determination of the significant relationships among these variables was pursued for the expansion of knowledge and the practical applications in education and career planning of these professionals. Limited research exists concerning the styles of decision-making of nurse practitioners but the need for additional research, although repeatedly articulated, has not been met.

The descriptive correlational study sampled 208 nurse practitioners from a four-county region in the southwestern part of the country. Descriptive data relating to the demographics, education, work status, employment setting and perceived disciplinary role alignment were gathered and reported. The Decision Style Inventory (Rowe, 1983) was used to measure the four styles of the cognitive process of decision-making. The independent variables of personality

preference types, measured by the MBTI (AV Form), age, experience, education, specialty, faculty discipline and gender, and employment setting were tested for the significance of the relationship. The statistical procedures employed in the analyses were descriptive computations, product moment correlation, multiple regression and analysis of covariance.

The identification of significant predictors for each decision style was demonstrated. The behavioral decision style that had been related positively to female professionals in prior research was supported in this investigation. Likewise, personal preferences, experience, education, and specialty of practice were found to have significant relationships with specific decision styles.

Three decision-making patterns of nurse practitioners were found to be within the established norms as measured by the DSI. The behavioral decision style demonstrated a mean above the norm. It is anticipated that this knowledge will assist the nurse practitioner in determining future educational and career goals as well as becoming a more efficient and effective health care provider.

DEDICATED TO TWO MEN NAMED "BILL":

In memory of "Bill"

my father,
a friend and teacher;

And "Bill"

my son,
a friend and teacher.

ACKNOWLEDGMENTS

To family, friends and colleagues who have believed in me so that I could believe in myself and achieve this goal.

Although my father was not here to share in the joy of completion, it was through his example and words that I gained the strength and direction to address all challenges and remain steadfast in my goals. I would also like to thank my mother for her support and prayers; and especially my son for his patience, encouragement, and ability to envision and teach the complexities of mathematics and computers.

My thanks to my colleagues through the distant and near years who have provided the professional incentive and support in my education and career that was needed in the pursuit of this degree. A special note of appreciation to Dr. Loretta Ford, Dean of the School of Nursing, University of Rochester, who has been a motivating influence through my years of graduate and nurse practitioner education and in achieving this goal. My appreciation also is extended to Dr. Evelyn Anderson and Professor Ruth Stewart for their never-ending encouragement through the years. I wish to thank Dr. Mary Quayhagen for giving of her expertise in research since it was invaluable in the dissertation project. A special thanks to my peers at the Philip Y. Hahn School of Nursing, University of San Diego, the dean, faculty, students, and staff for their continued support over the best and worst of times. And a special note of appreciation to the community of nurse colleagues that supported the dissertation as participants in the research project.

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CHAPTER I

Introduction and Background of Problem

Research into the decision-making styles of the nurse practitioners in the work environment is in response to professional growth, change in the provision of health care and current educational and service needs in the health care industry. The ongoing search for improved educational models to prepare the professional nurse as a provider of health care recently was articulated as one of the major goals for institutions of higher education (Lindeman, 1985). Also Freund (1986), in a review of research on nurse practitioners in primary care, stated that future research "must begin to address the uniqueness of nurse practitioner practice, focusing on both the process and outcome of nurse practitioner practice and the relationship between process and outcome" (p. 328). To date, the available research on the problem-solving process in nursing has focused on cue recognition and hypothesis generation of the individual professional. There is an absence of research investigating the styles of decision-making among nurses within their work environment. This research into the process of decision-making of nurse practitioners was undertaken to meet these challenges and to expand the existing body of knowledge in the profession of nursing.

Within the larger health care system, the current federal policy of decreased funding of health programs has created an immediate need for research into alternative methods, settings, and providers that can curtail the soaring costs of this country's third largest industry. At a recent national meeting, in addressing the current issues of health care, J. Califano stated that the utilization of "...paraprofessionals to provide many medical services just as competently and less expensively than physicians..." was one solution for reducing the cost of health care (1986). Therefore, studies that could foster insight into the similarities and differences of decision-making styles of nurse practitioners and the factors that significantly influence those decision patterns would be of value both to the nursing profession and to the health care system straining to meet these new demands.

This chapter will address the background of the problem under study, the statement of the problem, hypothesis definitions and limitations as perceived by the investigator. Subsequent chapters address the literature, design, analysis and conclusion.

The study reported in this dissertation concentrated on two research needs and issues of concern: (a) the cognitive decision style of nurse practitioners; and (b) the influencing factors found within the individual and their work environment. A goal of this research was to investigate the multi-dimensional decision-making model that

considers the factors of task demands, peer group, work environment, and personal needs of the individual. The cognitive contingency model put forth by Driver & Rowe (1979) was operationalized in the Decision Style Inventory (DSI) used in this study.

The inclusion of personality preferences for perception and judgment along with the relationship of the variables of age, years of experience, education, faculty, specialty of practice, and work environment were examined to determine their significant influence concerning the decision-making style of the nurse practitioner. The emergence of patterns of decision styles and predictors that demonstrate a significant interaction will be helpful in the education, career planning and the continued employment of the nurse practitioner as an efficient and effective provider of health care.

During the last twenty years, change in the delivery of health care has been expansive, encumbering, and generally was reflective of societal trends. Both the providers of health care services and the patients have been frustrated equally by these changes. In the era known as the Great Society (1964-1968) the trend in health policy was toward increased governmental support to assure accessible, acceptable, and affordable health care for all Americans (U. S. Department of Health, Education and Welfare [DHEW], 1971). It was at this time that a shortage and maldistribution of physicians prompted longitudinal research

into the characteristics, preparation, and utilization of mid-level providers, one mid-level professional group being nurse practitioners (Sultz, Zielesny & Kinyon, 1976, 1978, 1980). The growth of nurse practitioners to an approximate total of 25,000 in a span of 20 years is one measure of success for this level of health professional. Today the physician and nurse practitioner make up the largest group of providers of primary care in the ambulatory or outpatient setting (Lynaugh, 1986).

Nurse practitioners originally were educated as registered nurses to assess and manage the health maintenance needs of individuals. The expanded education included the assessment and management of the patient's illness needs. The additional education that focused on "an expansion of clinical nursing" (Ford & Silver, 1985, p. 16) enabled nurse practitioners to assume the critical role of decision-maker on the health care team. This education added responsibilities that included initiating the admission of patients into the health care system, monitoring both their health maintenance and illness processes, as well as making referrals to medical and supportive services. Contingent on the added responsibility was the nurse practitioner's ability to process information and make decisions related to the disposition of the patient and his/her ongoing health care needs. It is important to note that the role of the nurse practitioner was a departure from the traditional nurse's role and consequently provoked

questions from both nursing and medicine as to the efficacy and wisdom of this integrated professional. Issues related to this controversy, though interesting, are outside the scope of this research.

Prior research of this professional group supports the premise that nurse practitioners can fill the current demands for increased health care providers and are competent to manage complex patient problems (Simborg, Starfield & Horn, 1978). A greater knowledge of patient problems, increased availability, and greater continuity of follow-up care were characteristics demonstrated in impact studies of the nurse practitioner (Andrus & Fenley, 1976; Hoekelman, 1975; and Linn, 1976). The patient acceptance of the nurse practitioner and the quality, efficiency, and effectiveness of care provided by the nurse practitioner has been demonstrated through prior research, and because of such positive findings this professional will be a vital figure in this time of change (Chard, Dunn, & Mandelbaum, 1983; Molde & Diers, 1985; Prescott & Driscoll, 1979). Research into the cognitive decision-making skill of nurse practitioners has demonstrated their acquisition of assessment knowledge comparable to their physician colleagues (Bibb, 1982; Holzemer, Schleutermann, Farrand & Miller, 1981). To reiterate, the studies on decision-making have focused on a limited portion of information processing and have not considered individual personality preferences or the work environment as factors that influence the

decision-making and practice patterns of nurse practitioners (Grier, 1984; Tanner & Hughes, 1984).

Research related to the education of the nurse practitioner has been addressed from a variety of perspectives by Andrus & Fenley (1976), Hoekelman (1975) and Sultz et al. (1976) to name a few. Within the context of this study, only factors pertinent to the type of program, faculty, and specialty of practice will be addressed.

The nurse practitioner, often referred to as a mid-level provider, was seen in an "expanded role" by nurse leaders, and in an "extended role" of the physician by medicine. There is only a subtle difference in the two terms, yet this difference has been the root of professional turf battles and legal practice disputes. The professional discipline is said to reflect distinctions between bodies of knowledge and the practice differences often have been espoused to equate medicine with curing and nursing with caring (Fagin, 1986). Considering these distinctions, the disciplinary roots of the nurse practitioner educated in certificate programs were drawn from dual origins. The initial preparation of the nurse practitioner was as a registered nurse with nursing faculty dominating the educational programs. The added, or post-basic, education as a nurse practitioner took place in the certificate programs that had a predominance of faculty from the medical profession. Sultz (1980) found that prior to 1975, 80% of the graduates were from certificate programs which were

dominated by a 59% medical faculty (p. 10). The evolution of Masters' education for the nurse practitioner was slow to emerge, but by 1980 these programs had grown from less than 50% to 58.3% and a dominance of nursing faculty (87%) was present (Sultz, 1980).

Given that each discipline socializes its students to its own image in order to set the identity of the student with the field, the disciplinary influence during their education becomes a factor that bears further investigation. The formation of these two groups by educational programs and faculty disciplines was an important factor in the establishment of the samples used for this investigation.

In 1977, the priority in specialty of practice by type of program was identified by Sultz (1980) to be family, pediatric and adult for both the certificate and Masters' programs. These specialties yielded a combined percentage of 74.8% of total enrollment in the programs. Nine years later, the percentages have remained close to those stated and therefore they were selected as the three specialty groups for this research study. A 79% response by these three specialty groups was demonstrated in the pilot study and reinforced the stratification of the sample in this manner. The educational preparation, discipline of faculties, and the specialty of practice comprise some of the variables that will be tested for significance in the decision-making styles of the nurse practitioners. In addition, the age and years of experience will be analyzed

to determine if they significantly influence the decision styles of the nurse practitioners as well.

The practice settings, role satisfaction, and tasks of the nurse practitioner have been studied in separate investigations and those findings form the basis for looking at these dimensions and their influence on the decision-making process of the professional in the work environment (Celentano & Anderson, 1980; Pesznecker & Draye, 1978; Roos, 1979). Since these factors impact each individual in a different manner and at a different intensity, a model that considered these variations on decision-making was tested.

In the larger health care environment, there has been a shift in the economic growth, in the aging of the population, in scientific advances, and in governmental policies, that in combination have given rise to the present-day stance on health care. The most distinguishing element that has induced change has been the economic profile of the health care industry. The altered direction of the health care policy, under the current leadership of the country, evolved from full federal support to curtailment and/or limited fiscal support of these same programs. This reversal has sharpened the interest of the educator, administrator, and provider within the industry to promote research and analysis into finding new methods for delivering services.

The presence of this conflict in the health care industry has brought about the climate for change. Nurse

practitioners, major providers of primary care, are enmeshed in this change through the redirection of health care from the inpatient to the outpatient facilities, a restructuring of the payment system, and an increasing professional responsibility in making complex decisions as part of their everyday work world. It is this increased complexity of patient care decisions in a changing work environment that has created an interest to focus this research on the decision-making style of the nurse practitioner.

It is important to note that decision-making is primarily a cognitive process that combines the mental process of perception, action, and coming to closure on a stimuli (Mann, 1982). Cognitive style, on the other hand, is the patterning or linking of these thinking processes and coming to closure in the presence of ambiguity and uncertainty (Driver & Rowe, 1979). The cognitive contingency model developed by Driver and Rowe (1979) considers the decision style of the individual with the factors of the environment, tasks, personal needs, and peer group as impacting the process of decision-making. Therefore, the model operationalized in the Decision Style Inventory (DSI) was used to study the problem of determining the decision-making style of nurse practitioners (Rowe, 1981). The theory, development of the model, and instruments to measure decision-making styles can be found in subsequent chapters.

Factors that regard the nurse practitioner's personal

preferences of perceiving and judging were studied using the Myers-Briggs Type Indicator (MBTI) (Myers, 1962). The theory, concepts, definitions, and development of the MBTI instrument are discussed in subsequent chapters. The relationship between the decision styles and personal preferences was investigated to determine if significant predictor variables existed. The emergence of patterns of decision-making and related predictors will provide the needed data in identifying a cognitive schema used by these professionals. Knowledge relating to the decision-making styles of nurse practitioners and factors that significantly influence this process will be a step toward improved education, career placement, and job satisfaction of these professionals, and can assist in the change occurring in today's health care industry.

Problem Statement

The problem of this research was to determine the differences in cognitive decision style among nurse practitioners and the factors in their personal, social, and organizational environment that significantly influence this process. First, the study attempted to determine the significance of the relationships separately and then between the decision-making styles and personality preferences, age, education, and years of professional experience. Second, the significance of the relationships of the decision style and discipline, sex of the faculty,

practice settings, and specialty of professional practice of the nurse practitioners were studied. A third goal was to analyze (a) the stated decision-making style of the nurse practitioner with that of the group norms elicited through the DSI; and (b) the perceived role and task affiliations of the nurse practitioner to the practice discipline of medicine or nursing.

Hypotheses

H 1. The conceptual and behavioral decision styles will be related significantly to the Extrovert "E," Intuitive "N," Feeling "F," and Perceiving "P" personality types, whereas the directive decision style will be related significantly to the Judging "J" and Sensing "S" types, while the analytic decision style will be related significantly to the Introvert "I" and Thinking "T" personality types.

H 2. Age will be related positively to the analytic and directive decision styles and inversely related to the conceptual and behavioral decision styles.

H 3. Education will be related positively to the conceptual and behavioral decision styles and inversely related to the analytic and directive decision styles.

H 4. Experience will be related positively to the directive and conceptual decision styles and inversely related to the analytic and behavioral decision styles.

H 5. Practitioners predominantly influenced by nursing

(discipline) will have higher scores on conceptual and behavioral decision styles, whereas practitioners predominantly influenced by medicine (discipline) will have higher scores on analytic and directive decision styles.

H 6. Practitioners predominantly influenced by female faculty will have higher scores on conceptual and behavioral decision styles and the practitioners predominantly influenced by male faculty will have higher scores on analytic and directive decision styles.

H 7. Practitioners in private and public health care facilities (settings) will have higher scores on conceptual and behavioral decision styles, whereas practitioners in federal and health maintenance health care facilities (settings) will have higher scores on the analytic and directive decision styles.

H 8. Practitioners specializing in family and pediatric practice will have higher scores on conceptual and behavioral decision styles, whereas practitioners specializing in adult practice will have higher scores on analytic and directive decision styles.

Questions that also were posed in this investigation are as follows:

Q 1. How do nurse practitioners describe their own decision-making style and that of their physician colleague?

Q 2. Do nurse practitioners align their role as a provider of health care with the discipline of nursing or medicine?

Definition of Terms

Analytic decision style is found in an individual who has a much higher tolerance for ambiguity than the individual with a directive decision style (see below) and also has a more cognitively complex personality. These features lead to the desire for considerable amounts of information and consideration of many more alternatives than are used by the directive style (Rowe, 1985, p. 231).

Behavioral decision style is found in an individual who is low on the cognitive complexity scale, but has a deep concern for the development of people (Rowe, 1985, p. 231).

Conceptual decision style is found in an individual who has both high cognitive complexity and a focus on people and tends to be systems-oriented with high data usage (Rowe, 1985, p. 231).

Decision-Making Style/Decision-Making Pattern will be used interchangeably. It is the manner in which the nurse practitioner reacts to a given situation and/or the manner of interaction with other people. It also is the manner in which the nurse practitioner performs tasks, meets personal needs, and arrives at a judgment (Driver & Rowe, 1979; Rowe, 1985, p. 230).

Directive decision style is found in an individual who has a low tolerance for ambiguity and tends to focus on the

technical side of the values scale (Rowe, 1985, p. 231).

Discipline is indicative of either the field of medicine or nursing and reflects distinction in the body of knowledge (Fagin, 1986, p. 29).

Dominant/Consistent decision-making pattern will be used interchangeably. It is the individual's most frequently used pattern of decision-making given a typical situation.

Education of the nurse practitioner is either at the Masters' level or continuing education, both of which are beyond the basic preparation of the registered nurse. The participants that were prepared at the continuing education certificate program level will be referred to as certificate nurse practitioners.

Extroversion (E) is an interest in the outer world of people and things (Myers, 1962, p. 57).

Feeling (F) is a process of appreciation, bestowing on objects a personal and subjective value (Myers, 1962, p. 52).

Intuition (N) is indirect perception by way of the unconscious, accompanied by ideas or associations which the unconscious tacks on to perceptions coming from outside (Myers, 1962, p. 51).

Judgment (J) is understood to include the process of coming to conclusions about what has been perceived. Thinking and feeling are two distinct and contrasting ways to reach this point (Myers, 1962, p. 51).

Nurse practitioner is a registered nurse educated beyond basic preparation. This additional education allows for the assessment of the physical and psychological status of the client. This additional education includes interviewing, eliciting health histories, performing physical examinations, ordering appropriate diagnostic tests, interpretation of the data, developing and implementing therapeutic plans, and following through on the continuum of care of the client. The nurse practitioner implements these plans through independent action, appropriate referrals, health counseling, and/or collaboration with other health care providers (Levine, 1976).

Perception (P) is the process of becoming aware of objects, people, occurrences, or ideas. There are two distinct and sharply contrasting ways of perceiving, that of sensing, and of intuition (Myers, 1962, p. 51).

Personal Preference is the way that people use their minds in perception and judgment (Myers, 1962, p. 51).

Preceptorship is a specified period of supervised clinical practice in patient assessment and management and

it is required for completion of the nurse practitioner program (Sultz, 1976, p. 28).

Primary Care is the assessment and management of the patient/client seeking initial entry into the health care system via an ambulatory setting and where continuity of care is available.

Sensing (S) is the process through which the individual becomes aware of things directly through his/her five senses (Myers, 1962, p. 51).

Specialty is an area of concentrated or limited professional practice. It may be defined by age of the population served, such as the pediatric nurse practitioner or employment of the provider, such as school nurse practitioner.

Thinking (T) is a logical process aimed at an impersonal finding (Myers, 1962, p. 52).

Limitations and Delimitations

Limitations:

The unique practice settings, composition of provider peer groups, and the cultural origin of patients receiving services were viewed as limitations and consequently narrowed the generalizability of the findings. The variation of health practices in different geographic locations, and state-by-state regulatory laws of

professionals prohibit generalization to all settings and were seen as limitations in the study. Furthermore, the previous experience of nurse practitioners during their tenure as providers was quantified as years of practice, but no attempt was made to quantify the quality of experience.

Survey research tools used in cross sectional research also possess limitations. They are constructed to gather standardized data that can be easily quantified for analysis (Borg & Gall, 1983). Inherent in this approach is the construction of the instrument(s) to elicit reliable and valid data. The Decision Style Inventory (DSI) has been reported to be reliable and valid as a result of over 10,000 administrations, test-retest patterns, intercorrelations between split halves, and content validity (Rowe, 1985). For additional information on the DSI tool, see chapter III. The DSI was selected because it was one of only a few instruments that was relevant to the problem under study. However, the scoring instructions and numbering scale proved to be a major limitation in the accuracy of completion of the instrument. A second mailing was initiated to twenty-six respondents who had scored the instrument incorrectly and were asked to rescore the DSI.

The MBTI, Form AV (Mann, 1982) was a second research tool used to measure personality preference indices of judgment and perception. These instruments have been researched extensively and validated (Kaiser, 1981; Stricker and Ross, 1963). Self-reporting data was recognized as a

limitation since this methodology may present bias in favor of the respondent.

Voluntary participation as a sampling technique is considered less than ideal in some schools of research and presented a limitation in this study. A 40% response was realized. Although the return was sufficient for statistical purposes, the findings will be limited in practical application. The lack of a census type listing of nurse practitioners providing primary care in the southwestern United States eliminated the gathering of a randomized sample as well as accuracy in mailing. Funding for a complete second mailing was not available and could be considered a limitation. Rosenthal and Rosnow (1975) have reviewed research using volunteer participants and have listed four levels of confidence in the type of persons who are typical volunteers. Some of the characteristics which they identified and the investigator found in the sample were that the volunteers were female, better educated, unconventional, more altruistic, younger and married. However, the degree that these characteristics affect the outcome depends on the nature of the study and considering the prior research findings these characteristics could be anticipated.

Delimitations:

Geographic and regional parameters assisted in assuring that the participants were practicing under the same legal constraints. Since nurse practitioners provide a large

portion of primary health care services, the resultant data will be helpful to the providers that match the descriptive findings of the volunteer sample. Respondents were stratified into groups to allow the investigator to analyze the relationships and differences between the decision styles, preference indices, and the factors which were hypothesized to have an influence on the decision-making styles of the sample.

CHAPTER II

Review of the Literature

Chapter II addresses the literature reviewed for the investigation into the cognitive process of decision-making. Some of the theoretical origins, concepts, and constructs are presented to establish a framework for this research. Prior research into the evolution of the professional group that participated in the study will be presented. The literature that pertains to the decision-making process and the professionals will be discussed in the last section of this chapter.

Therefore, the review of the literature will be covered in three categories and will address these major points. Decision-making styles and theoretical origins, the nurse practitioner as a provider of the primary care, and decision-making among nurse practitioners comprise the three categories.

Theoretical Origins

History:

Decision-making has been studied over the years by many academic and professional disciplines such as psychology, sociology, and psychiatry. Regardless of the approach

followed, the investigator recognized that the societal trends of the era were an influencing force on the theoretical outlook of that day. It is anticipated that this brief review of the history of cognitive theory will provide clarity for the framework of decision style theory which supports the model tested in this investigation.

Dewey, a philosopher, psychologist and educator, was one of the most noted researchers of this century who studied the process of human choice. He separated the decision-making process into five phases of reflective thought: (a) the perceived difficulty; (b) problem recognition and formulation of the question; (c) seeking an alternative solution; (d) reasoning or mental elaboration; and (e) the evaluation and choice (1910). His work promoted the terms of "activity," "process," and "growth" as being central in his analysis of the psychology of learning. He also proposed that "thought and learning is a process of inquiry starting from doubt or uncertainty and spurred by the desire to resolve practical frictions or to relieve strain and tension" (Dewey, 1916, p. 270). Although his work as an educational reformer was criticized for being focused too strongly on process and the experimental approach to social, ethical, and philosophical problems, the strands of his ideas can be found in cognitive theory research through the ensuing years.

Barnard (1948), known as the father of the decision-centered school in management, introduced behavioral

decision-making theory, and investigated the decision-making patterns of executives in large organizations. He found that the variables of environment, time, and external pressures influenced the decision-making process and supported the human relations approach that he promoted. This approach was based on the idea that all organizational members, workers and executives had a part in the decisions and goals of the firm. Barnard's inclusion of the person as a vital participant in the decision process was in opposition to the scientific approach that viewed the human as part of the machinery of an organization and non-contributory in decision-making (Perrow, 1972). Another prominent decision theorist in the field of organizational theory was Simon (1957) who suggested that each individual satisfices; that is, the individual is bounded by the real world (which he termed bounded rationality) and, in processing information, reaches a decision that is satisfactory or good-enough. He proposed that each individual is a receptive participant and has cognitive limitations in making decisions.

In the field of psychology, Jung's (1926) theory concerning judging and perceiving indicated that people are individuals and use different processes to accomplish basic tasks of life and work. He believed that even though all individuals were different, their behavior essentially was orderly and consistent and this could be seen as systematic preferences in the processes of judging and perceiving

(Myers & McCaulley, 1985). The observed behaviors of people and self-reporting of persons making judgments about others were some of the criteria used by Sarbin, Taft and Bailey (1960) to test the value of their model on clinical inference and cognitive theory. Since the introduction of cognitive theory in clinical inference the work of Hammond, Kelly, Schneider & Vancini (1966, 1967) followed and generated initial empirical research into the judgments and decision-making of nurses. The focus of this research was to determine how people know, sort, and use data to make judgments.

Approaches to Cognitive Theory

The development of the cognitive contingency model will be presented as three phases; (a) the early research of human information processing, (b) first model of decision-making styles by Driver & Mock (1975) and (c) the cognitive contingency model by Driver & Rowe (1979).

Cognitive style decision-making has been approached from two perspectives. A normative approach measures and attempts to understand the quality of information processed, memory, and cuing through outcome instruments such as the IQ and/or probability measures (Barefield, 1972; Klempa, 1983; Wulf, 1981). The descriptive approach is the second method that investigates decision-making. This approach is concerned with assessing how people process information and make decisions but does not measure the results against rigid criteria. The descriptive approach formed the

framework of this study.

When an investigator pursues research using the descriptive path, one of three schools of thought must be selected. First, the generalist approaches the study of decision-making based on the assumption that all individuals are basically the same and broad generalizations of learning can be made across populations. A second school of thought would focus the investigator toward the individual's uniqueness and cognitive limitations. On a continuum, the generalist and individual schools of thought are at opposite ends. The third group, known as the differential, presumes that individuals have unique cognitive abilities but these persons tend to cluster or group themselves through a manner of decision-making. Values, styles, risks, and complexity of data are examples of some of these groupings (Driver & Mock, 1975; Klempa, 1983). A conceptual map in Table 1 presents a schema of approaches used to investigate the cognitive process of how humans process and use information (Driver & Mock, 1975).

Table 1

Conceptual Map of Approaches to Human Information
Procession*

* Adapted from a Conceptual Map of Some Approaches to Cognitive Psychology and Human Information Processes Systems, "Human information processing style theory, and accounting information systems" by M. J. Driver and T. J. Mock, 1975, Accounting Review, 50, p. 493.

A model of human information processing that considered the concepts of information load and use was put forth by Schroeder, Driver and Streufert in 1967. Information load was defined as the aggregate of information complexity (amount), noxity (negative input - stress), and eucity (positive input - reward). In the research that tested this model, it was found that information use could be traced as an inverted U-curve with decreased use (of information) as the load of information reached its maximum. Based on these findings, models of decision style were developed and tested with the use of two instruments in laboratory and field

studies within organizations (Alawi, 1973; Driver & Mock, 1975; Driver & Streufert, 1969). The amount of information processed, as well as the individual's degree of focus on the data were the concepts upon which the first matrix of decision style was developed in 1975 by Driver and Mock. The matrix depicted four styles of decision-making (Flexible, Decisive, Integrative, Hierarchic) that evolved from the earlier research findings. The following brief descriptions and matrix in Table 2 are presented for clarification.

The individual known to use the flexible pattern processes minimal data but produces multiple solutions. The person using the decisive pattern reaches one solution with the use of minimal data. The decision pattern known as integrative is found in persons using a large amount of information and arriving at many solutions in their decision process; while the individual using the hierarchic pattern employs a high level of data but few decisions are reached.

Table 2

Decision-Making Model by Driver & Mock*

Amount of Information Used			
	Moderately Low (Satisfice)	High (Maximize)	
Multiple Solutions	Flexible	Integrative	High
One Solution	Decisive	Hierarchic	Com- plexity
			Low

* From "Human information processing style theory, and accounting information systems" by M. J. Driver and T. J. Mock, 1975, Accounting Review, 50, p. 497.

Driver and Mock (1975) found in certain situations that persons using the low-complexity style had clear advantages over the high-complexity style when time was a variable in reaching a decision. This was repeatedly demonstrated in the study with accountants and information processing. They also found little evidence that people change their decision styles easily and added the dimension of focus (outcome of information used) to the model. With this added dimension they were able to trace people's shift in style when the load of information became extreme and this shift became known as a backup style. With this added information, the applicability of the decision-making model of Driver and Mock became more valuable within organizations. The people

using different styles were found to be best suited for positions with varying amounts of information load and focus (Alawi, 1973; Testerman, 1975).

Cognitive Contingency Decision Model

In 1979, Driver and Rowe continued to develop the decision style model to encompass the differential approach and introduced four forces external to the decision-maker that also influenced the basic decision style. The enhanced model articulated the environment, group behavior, tasks, and the needs of the individual as the four forces found to impact the decision-maker's style. This trend in viewing a less rigid approach to understanding information processing was in keeping with research moving in a qualitative direction.

The concepts identified in this four force model are defined briefly. Environment is represented by the organizational factors which shape the decisions and affect the outcome of the decision-maker such as time and work climate. The peer group consists of all interactions with members within the organization that influence the decision process. The position or job description is where the task demands are located since the employment requirements are part of a contract between the individual and the organization. The individual needs of the decision-maker are the most obscure and varied and consist of perceptions, motivations, and aspirations. It was the feeling of these investigators that these forces assisted the individual to

develop decision-making skills and enhance the decision style that they used most consistently. Descriptive characteristics of each decision style can be found in Appendix A.

In 1983, Rowe and Boulgarides retitled the model and it became known as the cognitive contingency decision style model (Rowe & Boulgarides, 1983). See Table 3 for further clarification.

Table 3

Cognitive Contingency Decision Style Model*

	(Logical)	(Relational)
High		
Cognitive Complexity	Analytical	Conceptual
	Directive	Behavioral
Low		
	Task/Technical	People/Social
	Values Orientation	

* From Decision styles - a perceptive" by A. J. Rowe and J. D. Boulgarides, 1983, London Organizational Development Journal, 4, p. 4.

Inherent in the refinement of this model, Rowe (1983) indicated that the decision style is intrinsic to the decision-maker and does not change, but can be modified contingent on the situational variables and the decision-

maker's ability to cope with the demands or expectations. He summarized the model as a holistic approach to understanding the individual's ability to cope in a given situation demanding decision-making skills and suggested that the reaction of the individual to each force be examined to gain a knowledge of the individual's competence (Rowe, 1985). He continues:

For example, interpersonal competence describes the individual's ability to deal with peer pressure and group interactions. Self competence describes the skills, energy, capability, and performance of the individual in a task or technical sense in response to the demands of the job. Situational sensitivity, or political awareness, is the reaction to the environmental factors that affect the organization in which the individual finds himself. Self-image is the reaction to personal needs such as affiliation, power and achievement (p. 228).

Within the model, the concepts of cognitive complexity and integration of data are operationalized as basic for understanding the four decision styles. "Cognitive complexity involves differentiation, which represents the number of dimensions an individual extracts from data, the ability to articulate, and the fineness of discrimination achieved" (Rowe, 1985, p. 230). The second term is defined as "Integration...deals with the complexity of the rules

used to combine data and new constructs that are considered" (Rowe, 1985, p. 230).

It is important to note that there were differences between the model initially put forth by Driver which emphasized the amount of information processed and environmental uncertainty, whereas Rowe combines these concepts and places the emphasis on the decision-maker's ability to cope with these complexities. Another difference was the focus on personal needs and agendas that was present in Rowe's model and was not present in the earlier model. These changes can be attributed to the further investigation and research carried out by the theorists.

The cognitive contingency decision model was supported through the testing of the instrument known as the Decision Style Inventory (DSI) and developed by Rowe (1984). The adequacy of construct, convergent, discriminant and predictive validity has been reported by Rowe as well as face validity of (90%) ninety percent (Klempa, 1983; Mann, 1982). The inventory has been reported to have been administered to over 10,000 professionals in a variety of settings and the results were consistent in that there was a match between the job requirements and the person. In 1977, Rowe, Weingart and Provenzano studied the leadership patterns of military personnel and found that the individuals with the conceptual style were identified as effective leaders. Mann (1982) in a study of financial planners and strategic planners identified the division of

left and right brain styles to be consistent with the model.

Dickel (1983) in his study of decision style on strategic decision-making behaviors found that the decision style preferences were linked closely to an individual's occupational interest. The samples of this investigator consisted of 137 senior level business majors at a major private university and could be classified as quasi-experimental research, using a simulated gaming environment. Case studies introduced in two stages and using three groups were all part of this design. The focus of the investigation was on the inquiry mode of the participants and cognitive complexity of planning in conjunction with decision-making.

Dickel's findings of concurrence with occupational interest in the student population raises the question of whether the results would be similar across different student groups, such as nurses and nurse practitioners. In addition to the occupational interest, he found that the DSI accurately approximated the person's style with task versus people and along with the Myers-Briggs Type Indicator (MBTI) was "quite robust in distinguishing a person's cognitive style preferences" (p. 180).

With the expansion of the contingency model to include the dimension of personal needs, the inclusion of Jung's theory of preference in judging and perceiving as part of the framework was essential. The theoretical approach posited by Jung was that there are basic differences in

mental functioning and in the way persons prefer to make decisions (Myers & McCaulley, 1985). These preferences become like habits and the inner disposition to continue or change this manner can be influenced by the environment, peers or significant others.

The basic mental functions used by each person are sensing (S), intuition (N), thinking (T), and feeling (F) and were postulated by Jung to represent the individual's orientation to consciousness. It was his understanding that these functions were a form of "psychic activity" that remained unchanged in a variety of conditions. Just as it is important to grasp Jung's presentation of these mental functions, it is likewise important to appreciate his interpretation of judgment and perception. Perception includes the variety of ways of becoming aware of things, events, people, or ideas. It also includes the processes of information gathering, the seeking of sensation or the source of the stimulus. On the other hand, judgment includes all the ways of coming to conclusion about what has been perceived, as well as decision-making, evaluation, and selection of response after perceiving the stimulus (Myers & McCaulley, 1985).

The separation of sensing and intuition into two kinds of perception and entitled "irrational functions" by Jung meant that he had observed these behaviors to be operating in persons when rational limits were not imposed. Likewise, the mental functions of thinking and feeling were called

"rational functions" and were observed as operating when the laws of reason and harmony were in effect. In brief, the four functions direct conscious mental activity toward different goals:

- . Sensation (S) seeks the fullest possible experience of what is immediate and real.
- . Intuition (N) seeks the broadest view of what is possible and insightful.
- . Thinking (T) seeks rational order and plan according to impersonal logic.
- . Feeling (F) seeks rational order according to harmony among subjective values (Myers & McCaulley, 1985, p. 13).

The attitudes of extroversion and introversion were seen as complementary orientations toward life and a great deal of Jung's work was devoted to the descriptions of each. These dimensions play an important role in the development of the theory of type development. Myers and Briggs made the implicit concepts found in Jung's work explicit in the development of the MBTI. The theory assumes inborn predisposition to prefer one function over another and the development of that combination during growth and development. The combination of the mental functions and the attitudes evolved into (16) sixteen possible combination types of perceiving or judging (Myers & McCaulley, 1985).

Research combining the DSI and MBTI has been carried out and found to have a relationship between the decision

styles and preference types. Dickel (1983) reported concurrence with gender scores between the MBTI and DSI, a relationship between the four mental functions and the decision styles and a conceptual consistency between the two instruments, specifically between the Directive style and ST type and the Analytic to both the ST and NT types. The least similarity between these two types was with the F Type. Mann (1982) and Craft (1984) also have demonstrated concurrence between the types identified in the MBTI and the decision styles of the DSI.

Nurse Practitioners in Primary Care

Nurse practitioners in primary health care, the quality of service they rendered, and the acceptance by patients have been studied in depth from 1965 to 1980. However, once the care provided by these mid-level professionals was demonstrated to be safe, effective, and affordable, the rigorous investigation ceased. Longitudinal studies beyond 1980 are absent and the research carried out since that time has focused on issues of practice such as autonomy, prescribing, and reimbursement (Batey & Holland, 1983; Spitzer, 1984). The resurgence of research into the practice and outcome of the nurse practitioner's role has been called for in recent literature by nursing leaders to determine the "how and the why" of the positive outcomes of these professionals in primary care (Lindeman, 1985; Molde & Diers, 1985).

Since the literature investigating the dimensions of the nurse practitioner as a provider of primary care was of a broad and interdisciplinary spectrum only studies addressing the variables relevant to this investigation were reported. Four divisions of the literature have been used to focus the research review on the factors that were considered in this investigation: (a) demographics which included the educational programs, students, and the faculties teaching in the nurse practitioner programs; (b) settings of practice, and specialty of practice; (c) functions and characteristics of practice; and (d) psychosocial factors of the nurse practitioner.

Demographics:

The Department of Health, Education, and Welfare, and the Division of Nursing, interested in evaluating the preparation and effectiveness of nurse practitioners, contracted for a longitudinal study to obtain baseline information on this mid-level professional in 1973. Dr. H. Sultz, along with colleagues and consultants, developed the plan for a three-phase study. Some of the areas investigated in the first phase were type of program, length, students, curriculum content, and faculty make up and qualifications. These categories remained consistent through the investigation and the comparative data indicated changes between 1974 and 1977. Criteria for programs to be included in Sultz's investigation consisted of: (a) offering a formal curriculum; (b) starting instruction and students

enrolled by January 1, 1974; (c) providing preparation in extended care skills; and (d) students enrolling must be registered nurses. Initially 86 certificate and 45 Masters' programs responded with a 99% and 98% rate for each respective group. The two types of programs in the study were "certificate" or non-degree granting continuing education programs and "Masters'" or degree awarding programs based in institutions of higher education. The student response in this first phase was 85% (n=794) enrolled in certificate programs and 84% (n=307) in the Masters' programs (Jelinek, 1978; Sultz, Zielezny & Kinyon, 1976).

Telephone interviews of approximately 280 programs was the initial step in identifying the sample. Once the criteria were satisfied, paper and pencil questionnaires were used to gather the data from the programs and the student participants (Sultz et al., 1976).

The findings reported in Sultz's investigation, and pertinent to this study, were that the greatest geographic distribution of programs did not occur in the west for either the certificate or Masters' programs although the state of California had ten certificate and six Masters' programs. The average length of programs with a preceptorship was 10.2 months for the certificate programs and 13.1 months for the Masters' programs. The average length of the preceptorship was 5.5 months for certificate and 3.7 for Masters' programs. There was no significant

change in length of program during the three-year study.

Sultz et al. (1977) reported that nurse and nurse practitioners played the prominent role in teaching in both types of programs but that certificate programs depended somewhat less on nurses as teachers. They also reported that the physician as a teacher was more evident in the certificate programs. In addition, certificate programs utilized "guest lecturers" a substantial amount of time and more than half of these guest lecturers were physicians. In 1977, the rate remained the same in discipline of faculty by program as compared to the data generated in Phase I in 1974. The preceptors were dominated by physicians in the certificate program with 71.7%, but substantially less at 16.7% in the Masters'. The gender of the faculty or preceptor was not differentiated or reported for either program in any phase of the study.

The demographic data on the students enrolled in the programs and the differences recorded at the beginning of Phase I and end of the third phase are listed under 1974 and 1977 in Table 4.

Table 4

Demographic Data of Students from Phase I and Phase III

	1974 (%)	1977 (%)
Sex:		
Female	98.0	96.9
Male	2.0	3.1
Married:	55.3	59.0
Age: 25-34	54.0	44.0
Prof. Org.	45.4	36.0
Prior Yrs Nursing <10	67.0	69.0
< BSN	42.0	45.0

The factors identified by the students to have influenced them to enter programs preparing nurse practitioners were noted as (a) being able to have a greater influence on patient care and (b) additional opportunities for learning. Entrance of the students into a specific program was because of (a) the type of specialty of practice and (b) the location of the program. These priorities were selected at the same rank for the students in both programs (Sultz et al., 1976).

Settings of Practice

Sultz found that two thirds of all the nurse practitioner graduates were working in primary care settings

which included private practice, health maintenance groups, community and hospital based clinics. A large portion of those prepared at the Masters' level were employed in hospital settings in 1974, and in 1977 the certificate prepared nurse practitioners more than doubled in these settings. The role of the nurse practitioners in the hospital setting was either in a patient unit or the emergency room. The non-hospital or community settings included clinics, college or public school systems, and public health departments. Schools of nursing and extended care facilities were listed separately (Sultz et al., 1978, 1980). See Tables 5 and 6 for further detail. In a survey of nurse practitioners and physician assistants that occurred in the same time frame as Sultz et al. the findings were similar (Repicky, Mendenhall, & Neville, 1980).

Table 5

Employment Settings of Nurse Practitioners

Employed as NP:	1974 (%)	1977 (%)
Primary Care	63.0	61.0
Inhospital	7.0	11.0
Nonhospital-Community	26.0	29.0
Schools of Nursing	.4	.7
Extended Care Facilities	1.4	4.9

Table 6

Broad Functions of Nurse Practitioners

	1974 (%)	1977 (%)
Direct Patient Care	95.0	96.3
Administration	10.5	10.3
Education	34.0	25.2
Research	10.5	8.4

The specialty of practice reported in Phase I of Sultz's work was 77.9% for pediatric, family and adult programs. In 1977, in the Phase III report, the data demonstrated an addition of the specialty of emergency nurse practitioners and the percentage of family, pediatric and

adult had decreased to 74.8% of the enrollment in the programs included in the investigation.

Andrus and Fenely (1976) in their study found that the family nurse practitioners who completed their preceptorship in a rural setting remained in that setting instead of returning to the urban areas. Celentano also looked at urban versus rural practice when comparing two groups of mid-level practitioners and found the volume of patient contact greater in the rural settings. He also found that the nurse practitioners were employed in the urban areas greater than 50% of the time (1978). Sullivan, Dachelet, Sultz, and Henry (1978) reported that 85 of 525 graduates were working in rural areas with 71% of the 85 nurse practitioners working in community health centers or private practice. Similar results were identified by Pesznecker and Draye (1977) when they reported 50% of the nurse practitioners were working in public clinics. In a recent study that focused on salary variables, Roos and Crooker (1983) found that nurse practitioners were employed in thirty-two different settings and the investigators had to establish a classification system using job characteristics to gain meaningful data. The three major work settings that they formed for the analysis were health maintenance organizations, schools and private practices. A similar grouping of the settings for this investigation was established taking into consideration the reimbursement structure, specialty of practice, work environment, and

peer/colleague systems.

The setting and specialty of practice are factors that have been included in prior research but in most instances they were used as natural boundaries for stratification of the sample or descriptive purposes. Celentano (1978) looked at the patterns of practice of two groups of mid-level providers educated at the same institution. Nurse practitioners prepared in certificate programs for one year were compared for practice patterns with health associates prepared at the baccalaureate level. As mentioned previously, the nurse practitioners were employed in the urban settings and the health associates in the rural settings. Celentano also identified that the health associates managed more primary care patients in these settings. He failed to consider the specialty of practice of these professionals as a variable that could influence the practice setting and type of patients managed by the providers. Only when the results were obviously biased did the specialty of practice become recognized as an influencing factor. The setting, which was a variable, was examined for the number of patients but did not address the parameters of each setting. This variable (setting), like specialty was recognized when the nurse practitioners demonstrated a significantly higher level of teaching in their practice settings.

Greenfield et al, (1978) in the study of cost and efficiency of the mid-level providers, compared nurse

practitioners and physician assistants to the physicians in a health maintenance organization. The nurse practitioners were prepared in an "on the job training" session and the physician assistants in a certificate program. The protocol (clinical algorithm) method of management was the system of decision-making used by the providers of this institution. The variable of time spent by each provider in the management of each client along with the time spent in consultation with a physician was the major focus of the study. However, no inclusion for decision-making style, personality preferences, education, or years of experience were measured or reported. The use of a protocol, or structured decision tree, was the only decision method measured in this study. No consideration for the "fit" of the individual provider in using this method was investigated. With the findings reported in decision style literature the "fit" is considered an influencing factor in the results of this type of investigation (Driver & Mock, 1975; Klempa, 1983; Mann, 1982; Rowe, 1985). The studies of Levine, Morlock, Mushlin, Shapiro and Malitz (1976) investigated the role of the nurse practitioner in a health maintenance organization, and Lewis and Cheyovich (1976) studied the nurse practitioner within the Veteran's Administration hospital. These are additional examples of research in different settings and with different specialties of practice but neither study recognized the decision-making style of these professionals as a variable.

In summary, studies have focused on settings and specialties and have considered both dimensions as descriptive entities but not as variables that could have an influence on an individual and how they process information or make decisions. The research has been directed at the professional and how they function within an organization for measures of effectiveness and efficiency. They have not examined the presence of factors in the work environment that could influence the individual's decision style or the process and outcome of the professionals' practice. With this lack of specificity in prior research and considering the decision-making model being tested, the setting and the specialty of practice were analyzed as separate factors to determine if there was a relationship between the nurse practitioner and the decision-making style.

Functions in Practice:

When investigating the percentage of nurses prepared and functioning in specialty areas outside their preparation (Sultz et al., 1980), only a small number was found. However, it must be noted that only a small number of functions were used to query the graduates and functions were limited to infant care, adult, and maternity tasks. Sultz also found that in the programs preparing the certificate nurse practitioner for complex functions (e.g. adjusting medications, providing immunizations, prescribing birth control pills) the time spent in the classroom and

anticipated time for consultation was more than double what was allowed the Masters' prepared nurse practitioner (Sultz et al., 1980).

The research investigating the similarities and differences in functions has involved the comparison of nurse practitioners and physicians, or nurse practitioners and other mid-level professionals, and nurse practitioners and registered nurses (Celentano, 1978; Greenfield et al., 1978; Levine et al., 1976; Lewis and Cheyovich, 1976; Perrin and Goodman, 1978; Powers, Jalowiec, Reichelt, 1984; Sackett, Spitzer, Gent and Roberts, 1977; Simborg et al., 1978). The abundance of research conducted was used to demonstrate quality, effective care, and safe care provided by the new mid-level professionals. The question of different levels of preparation and function within nurse practitioner education has entered the studies as a measure of time on task, quality, and competence with no significant differences concluded (Linn, 1976). The review of the literature made it very apparent that the nurse practitioner functions being measured were the tasks once belonging totally to the physician. Prescott and Driscoll (1979) brought this fact to the surface and made it very clear when they reviewed and reported on the criteria, methodology and standards of the comparative research.

More specifically, Russo et al, (1975) compared six emergency room physicians and nurse practitioners for discrepancies in triage or emergency diagnostic abilities.

They found three of the six identified tasks with a 15% difference. The three tasks were listed as problem identification, classification of severity, and monitoring of vital signs. All three functions rely on decision-making and the differences may evolve from the individual's decision-making style, educational variation, discipline of faculty or years of experience which were not considered as variables in this study. A physician with two years experience in an emergency room was compared to nurse practitioners with one year of education and six months of triage experience in the emergency room. The nurse practitioners surpassed the physician group in recording patient problems and the other two areas of ordering diagnostic tests and medication were equal.

Perrin and Goodman (1978) also investigated pediatric triage via the telephone interview. Using five common acute pediatric problems, a programmed caller contacted five pediatric nurse practitioners, 28 hospital physicians, and 23 physicians in the community and recorded the interactions of response to these problems. Each was evaluated for history taking, disposition of the patient, and interviewing skills. The decision-making style of the professionals was inherent in these processes although it was not considered specifically. The amount of information and complexity of data that had to be processed in a minimal amount of time all entered into the triage process that was tested in both investigations. In Perrin and Goodman, the nurse

practitioners were found to "obtain more historical information" and have higher weighted scores in all three areas than either of the physician groups (1978, p. 132). The age, sex of the provider, and experience of the groups were analyzed to determine if any significant relationships existed in the interviewing portion of the study. No significance was identified. The investigators noted that this study needed to be replicated for added credibility of the findings. In both studies (Perrin & Goodman; Russo et al.), groups of providers were matched to determine if one was equal to the other in performance of tasks. Yet the inequity of education, experience as a professional, and discipline of practice were identified as descriptors but they were not considered or measured as variables that could influence the performance or outcome of the investigations. The need to study these influences within the context of decision-making on one group of professionals was viewed by the investigator as an initial step in process and outcome research of the nurse practitioner.

The specific functions identified by Sultz et al. in 1974 as inclusive in the programs preparing nurse practitioners at the certificate and Masters' levels were obtaining a health history, performing a physical examination, ordering diagnostic tests, deciding to manage or refer, and assuming health care management, which included medication regimen, teaching and counseling. These functions have been referred to as "tasks" by Levine et al.

(1976), a "medical task index" by Linn (1976), and "health care activities" by Powers et al. (1984). The consistency of this listing in the literature over time established the basis for using these tasks as one of the potential forces that impacts the decision-maker style in arriving at a conclusion. See Appendix B for a composite of tasks investigated as part of the role of the nurse practitioner.

Psychosocial Factors:

A portion of the research devoted to the similarities and differences of nurse practitioners investigated the role, attitudes, and motivations of these individuals. The reasons cited most frequently as the motivating factors for pursuing current employment were role autonomy and that the setting (work environment) allowed for a creative approach to health care (Sultz et al., 1980). The literature is replete with research on the employment patterns, job satisfaction and salary scales of nurses employed within the hospital, the largest group of employees in the health care industry. Research into the employment practices of nurse practitioners is extremely limited. Roos and Crooker (1983) through a regression analysis found that the most important factor affecting salaries was the type of setting, but that education, geographic location, and length of time as a nurse practitioner also had some impact. In the past, this group of mid-level providers has not been an economic force in the health care industry and the number of 25,000 has

been too small to warrant that kind of attention from administrative groups (Selby, 1986). The only active focus of research into the economic work practices of the nurse practitioners has been in their efficiency and financial threat or boon to the physician.

In Phase III, Sultz et al. (1980) looked at the degree of satisfaction of the positions held by the two types of nurse practitioners. They identified the following in a priority ranking. The certificate graduates were satisfied with the location of their employment and the type of patients they served. They were satisfied least with the pay scale and lack of backup services available. Masters graduates were satisfied with the location and variety of activities required in the employment setting. They were satisfied least with the administrative climate and available facilities in their positions.

A major area of the psychosocial dimension of the nurse practitioner is the personality of the person pursuing the role of a new health professional. The literature addresses the issues in many opinion articles but research is difficult to locate. White (1975) identified that the nurse practitioners enrolled in a program at a major university in the western part of the country differ from the basic nursing student but demonstrated similarities with women entering professional careers in medicine and social work. She goes on to say that although this research is controversial, it is needed and that ..."more theory for

what we are measuring and why we are measuring it" also is needed (1975, p. 173).

Lewis and Cheyovich (1976) in a study replicating an earlier classic work of 1967, "Activities, Events and Outcomes of Ambulatory Care," found that the personality of the nurse practitioner demonstrated significant shifts in preference for services by patients rather than the care provided by the physician. The analysis into the particular contributions that were made by nurse practitioners who successfully integrated the role of nursing and medicine was identified as a research gap and remains so today. The dimension of personality preferences in decision-making style could add significance to these findings.

In another investigation looking into the effects of training on the attitudes and personality characteristics of the nurse practitioner, Bruhn, Floyd, and Bunce (1978) concluded that new skills may be learned in four months, but attitudes vary with perceived expectations of particular situations and do not persist over time. They used three instruments to measure the psychological factors: Rotter's internal-external focus of control scale; Budner's intolerance of ambiguity scale; and Myers-Briggs Type Indicator. The tests were administered on entry into the program, at the end of the program (four months later), and one year following graduation. This study also looked at a group of applicants who were not accepted into the program and were found to be homogeneous except in the dimension of

judging versus perceiving on the MBTI. The students enrolled in the program had a higher score on the judging and introvert scale. The findings of this study supported the investigator in considering the personality type instrument in this investigation.

Sullivan (1978) investigated the manifest needs of the nurse practitioners seeing if they continued over time or shifted as compared with physicians in primary care practice. Edward's personality preference schedule was used to measure specified concepts put forth in this facet of personality. The nurse practitioners' profile demonstrated a greater need for intraception, or the need to "take the lead, try new things, and succeed, while thoughtfully considering their own and other's motives" (p. 257). These dimensions were consistent with the expectations of the educators preparing these professionals. The physicians had a greater need for dominance, achievement, autonomy and nurturance. The rank order correlation between nurses and physicians in this sample was high ($r=.9$). Although the report did not pursue additional dimensions of role, the findings support the concept of personal needs found in the four force model introduced by Driver and Rowe (1979). This need to take the lead also is found in the individual using the combination of conceptual-behavioral styles and is referred to by Rowe as the "leadership" dyad.

In view of these investigations and the changing climate in the education and health care needs of today, the

study of decision-making styles of nurse practitioners was undertaken. Although the following observation was made eight years ago, the lack of follow-up for research into the personality types basically has been ignored. "It is a rare study indeed which has recognized the importance of individual style differences as an important factor in evaluating nurse practitioner performance" (Edmunds, 1976, p. 76). It was the goal of this investigator to fill a portion of that research need.

Decision-Making among Nurse Practitioners

Just as Edmunds (1976) noted that it was difficult to find a research study that recognized the importance of individual style of the nurse practitioner's personality, so too was it difficult to find a study that had investigated the decision style of nurse practitioners as a factor of performance, process or outcome. Grier (1984) has compiled the only review of the literature that could be identified on information processing in nursing practice. Even though this review was not limited to nurse practitioners, their basic education was nursing and this research is therefore pertinent. One additional drawback is that the research reviewed by Grier (1984) is organized around the steps of the decision process and does not address any forces outside of this process that influence the decision style of the individual as proposed in the decision model studied in this investigation.

During the mid-1960s, early research into the decision-making process of nurses had its origin generally in the normative model and specifically was based on Bayes theorem. This approach had been used in medical diagnosis "in order to optimize the information processing in the diagnostic process" (Aspinall, 1979, p. 183). Essentially the Bayesian theory uses a mathematical basis of induction and probability to determine the diagnosis of a patient problem given specified signs and symptoms (Lusted and Stahl, 1964). Since the climate for research during this era highly regarded quantitative studies, and scientific technology was advancing at a rapid pace, this model was followed and research in the decision-making process of nurses pursued this path.

Hammond, Kelly, Schneider and Vancini (1966) conducted a number of studies that investigated information-seeking strategies, cue recognition and evaluation of the cues into nursing judgments. The application of nurse judgments to the Bayesian model demonstrated on one part of their investigation that there were no consistent message units of cognitive tasks used by nurses in any discriminant manner. A wide variety of individual inference patterns existed. The question of what information units are used by nurses has fostered ongoing research in this area (Aspinall, 1976, 1979; Carnevali, 1984; Gebbie, 1984; Gordon, 1982; Tanner, 1984).

Several of the studies reviewed have identified a

number of variables that influence the decision-making process or planning for care of a patient. Hansen and Thomas (1968) identified the three constellations that influence the decision-making process as situational, contextual, and decision-maker variables. Although these variables were recognized, they were not investigated and Hansen and Thomas researched decisions by different levels of personnel and the priority the personnel assigned each decision. Hefferin and Hunter (1975) investigated the inclusion of three graduated amounts of data which were provided to the nurse and then evaluated the quality of written care plans at each phase. They concluded that added data in the form of a tool, patient interview and nursing history did not positively alter the nursing care plans for the hospitalized patients. Aspinall (1979) in her research using a decision tool and varying amounts of data stratified the groups by education, years of experience and knowledge. The conclusions of the study indicated that the nurses with higher education and most years of experience used the most data, most tools, and made the most correct decisions.

In the interim, the research into the effectiveness of the nurse practitioner generated studies comparing the decision process of the physician and nurse practitioner. The outcome of safe and quality care being provided by the nurse practitioner has been addressed in the prior section. The question of measuring the nurse practitioner's diagnostic ability, quality of care, and effectiveness based

on criteria and standards used by medicine was raised by Prescott and Driscoll in their review of comparative studies (1979). Bibb (1982), in response to these questions by Prescott and Driscoll, investigated the overall management of the nurse practitioners and physicians based on criteria that included problem assessment, diagnostic plan, therapeutic plan, health education, and follow-up. This is the one study identified that considers the "care" and "cure" criteria that have been stated to separate medicine and nursing disciplines. Simulated case study methodology was used to compare the process of planning care used by the nurse practitioner ($n=15$) and physician ($n=11$) sample. The written responses were compared to process criteria representing ideal practice which were developed by a panel of experts. The results generally supported that the expressive or "caring" processes would be more characteristic of the nurse practitioners than the physicians' management plans. The positive results of this investigation, that nurse practitioners incorporate supportive and affiliative measures in the management of patients, is perhaps the first step in the process and outcome research recently called for by Freund (1986). Additional theoretical models for differentiating the disciplinary approaches to decision-making and patient management have been discussed currently and can be found in the literature (Fagin, 1986; Soares, 1978).

The only other identified study that considers one of

the factors present in the decision style model developed by Driver and Rowe (1979) tested task complexity and nursing expertise as factors in decision-making (Corcoran, 1986). In this investigation, three questions were posed. Basically, they were designed to determine if the initial decision approach by experts compared with novices in three planning problems of varying complexity. A second question was posed to determine if there would be any comparison in the overall approach used, and third if there was any relationship between the overall approach and quality of the plans developed. Simulated case studies were used in this investigation with the correct decisions and plans being developed by a panel of experts. A coding system was developed and an interjudge agreement for reliability also was used. The results report that the initial approach used by the experts and novices did not vary across cases. "Consequently, there was no relationship between initial approaches and complexity of cases. However, experts used broad initial approaches significantly more often than did novices..." (Corcoran, 1986, p. 109).

In applying the cognitive contingency model tested in this study, Corcoran's findings suggest that each individual has one preferred decision style with some preferring low data input and others preferring high data input. In addition, the broad approach used by the experts would resemble the analytic and conceptual styles in the model; both use high levels of data in their decision-making

process.

The overall approach used by the experts in Corcoran's work demonstrated a significant variation across cases. The continuum of approaches ranged from "opportunistic and systematic" with systematic meaning more of a routine approach to planning the patient care (Corcoran, 1986). These two dimensions also can be compared to the task versus relational continuum in the contingency decision style model of this investigation.

The conclusions were that experts and novices did not vary their initial approaches to planning regardless of the complexity of the problem task. Experts used the broad approach and novices used a narrow initial approach. The dimension of the interrelation of data by the experts, enabling them to see the larger picture, was identified as a way of explaining their ability to be comprehensive in making the decisions and plans. The issue of experts developing quality plans versus the novices was demonstrated only as a trend.

The use of complexity of data, narrow and broad approaches, and patterns of decision-making support several of the hypotheses tested in the current study. Several of the factors being considered as predictors also compare to the expert versus novice classification. Finally, Corcoran (1986) called for additional research into the decision-making process of the individual to assist in the education of future nurses.

This concludes the review of the literature and the limited number of studies that address decision style of nurse practitioners has been recognized by the investigator. It also is important to note that the cognitive contingency decision style model that has been used in this study does not originate from a health related field but from the fields of organization and management. However, this model currently is being used to investigate the decision-making styles of nurse administrators in the Veteran's Administration, but the results have not been published (B. Bensen, personal communication, August 25, 1985).

CHAPTER III

Research Design and Methodology

In the previous chapters, the research problem was identified, the hypotheses and questions posed, and a review of the pertinent literature was presented in order to build the basis for this investigation. To reiterate, the purpose of this study was to investigate the decision-making style of nurse practitioners and the significant relationships between the personal preferences of judging and perceiving and the environmental influences that make up the individual's work area. One demographic questionnaire and two instruments were used to gather the information necessary for the investigation.

This chapter describes the design and methodology used in this investigation. The content has been divided in the following sequence: the descriptive correlational design; the sample; the instruments; the procedure; the treatment; and ethical considerations.

Design

This study utilized a descriptive correlational research design to investigate the decision-making styles of nurse practitioners and the relationships between their personal preferences of judging and perceiving and factors

in the work environment that influence the decision process. This method of inquiry has been used by many educational and behavioral researchers since the need to determine the alteration of attitudes and change are important to the advancement of progress in their respective fields (Borg and Gall, 1983). In view of the limited research in the area of decision-making styles among nurses, specifically nurse practitioners, the initial demonstration of the distribution of decision styles was essential. The descriptive approach was selected because of prior research and the need to generate systematic data describing the facts and characteristics of the decision-making styles of the population participating in the investigation. This approach yielded this baseline data for initial research in the decision-making styles in nurse practitioners.

The use of descriptive and correlational statistical techniques allowed for the identification of variables and testing of hypotheses to determine the significant predictors of the decision styles of nurse practitioners. The two instruments, one to measure the dependent decision-making styles and one to measure the independent variables of personality preference types, were used since they measured similar dimensions of the individual's cognitive processes. In prior research, the DSI and MBTI had demonstrated relationships that were "conceptually consistent" with findings that support certain decision-making styles and personality types (Dickel, 1983, p. 131).

The use of multiple regression followed by an analysis of covariance were the second statistical techniques applied to the dependent and independent variables. This measurement allowed the investigator to learn the effects of both the nonmetric independent variables (factors) and the metric variables (covariates) on the dependent variable at the same time (Kim and Kohout, 1975). The independent metric variables had been identified as personality preferences, age, years of experience, and education. The factors were identified as setting, specialty of practice, faculty discipline, and sex.

This approach allowed for control of the dependent variables and removal of any independent variables that did not demonstrate a meaningful effect prior to determining the relationship and predictive value of each independent variable. The investigator also considered the options and limitations of the statistical procedures in the computer program (Nie, Hadlaihull, Jenkins, Steinbrenner & Bent, 1975).

Sample

The sample of nurse practitioners was drawn from a four-county region in a southwestern state and met the delimitations as set out by the investigator. The sampling method was voluntary since a large number was desirable to implement the planned statistical techniques and "a large sample will more accurately reflect the characteristics of

the population" (Bartz, 1981, p. 152). Although the voluntary sampling method did not assure a large response rate, prior research using this technique with similar groups was successful and supported the investigator pursuing this approach. Examples of studies employing similar sampling methods and the return rates were Celentano, 65-90%; Roos & Crooker, 75%; and Sultz et al. with 85% student and 99% program response. The absence of a census type listing of nurse practitioners was a reality and to implement a more rigid and error-free method of identifying and randomizing a sample was not possible (Borg & Gall, 1983). The use of a volunteer sample provided a non-threatening approach for gathering data that had practical application and professional relevancy for the participants.

The investigator recognized the limitation of a potentially biased sample that often is associated with this technique. The respondents often are said to be different and have other motivations for participating in the study. Some of those characteristics of voluntary respondents were discussed in the previous chapter. Several of the characteristics were met by the participants as the demographic data will demonstrate. The potential study subjects ($n=517$) were located through the list of subscribers to the journal identified as the official nurse practitioner publication and which has an ample circulation within the specified geographic area. All individual

subscribers were assumed to be nurse practitioners and agency or organization subscribers were eliminated from the list by computerization. A return of materials from two non-nurse practitioners indicated that not all subscribers were nurse practitioners. These returns were sent a letter of thanks, but the data was not entered into the sample.

The potential for another bias was recognized by the investigator since only a certain type of nurse practitioner would subscribe to a professional journal. If this were the case, they indeed might possess characteristics that non-subscribers do not demonstrate and the sample would be biased. This limitation would have an impact on the generalizability of the findings and must be noted. However, until a census type listing of nurse practitioners on the local, state and national level is available and maintained, these limitations will be present. This approach did allow for clustering or categorizing of the 208 (40%) respondents who did return materials for analysis. The findings of the demographic data on the sample can be found in the following chapter.

The pursuit of a voluntary sample via the mail route identified other concerns and imposed limitations on the investigator and participants alike. Time involvement in completing the mailed materials was the prime deterrent given for not returning the materials and for not participating in the study. This was indicated in the feedback from the pilot study as well as in an informal

discussion between the investigator and potential participants at an organizational meeting of nurse practitioners. This discussion took place following the deadline date for submission of materials. The other imposed limitation using the mail was the expense when pursuing research without ample funding.

The primary care setting, also known as the ambulatory or outpatient clinic, was the practice setting for the nurse practitioner respondents. The settings were located within a major corporate health care facility such as a health maintenance organization, a free standing community clinic, a federal institution, or a private physician's office. The designations of federal, public, health maintenance organization, or private agency were used to collapse and categorize the ten settings queried in the demographic data form. Two additional settings had to be added because of the large number of respondents in each category. The practice specialties of nurse practitioners also demonstrated a need for establishing categories beyond the planned family, pediatric, and adult groups. These groups were selected based on prior research and the pilot study. The return data supported the addition of two groups. The geriatric and obstetrical/gynecological nurse practitioner practice specialties were added. The findings of the specialties of practice for the majority of respondents was consistent with past research and the pilot study. The three initial groups composed 79% of the nurse practitioners

and the remainder fell into the two additional groups.

Instruments

The biographical data form elicited information about the demographics of each individual, the work setting, educational preparation, faculty, preceptor characteristics, and specialty of practice (see Appendix C for sample). This instrument was developed using a direct questionnaire technique, reviewed by a panel of colleagues, and piloted for saliency and clarity prior to use. Following the pilot and review by the dissertation committee adaptations were made as suggested. Since the items on the questionnaire contribute directly to the solution of the problem being investigated as well as support the methods of data analysis, the development of pertinent and well-phrased items was essential. Another concern of the investigator was the necessity for concise answers to facilitate response time as well as coding and use of data in analysis (Borg and Gall, 1983). As a result, all but two items were closed form questions. When a participant selected "other" as a choice, the request for an explanation was added. These were kept to a minimum but assisted in identifying the additional two specialty practice groups within this sample. Instructions for completion of all of the instruments were included as the second page in the packet of materials mailed to the potential participants.

The Decision Style Inventory (Rowe, 1983) is a 20-item

forced choice, self-reporting paper and pencil tool that was developed to address the concepts found in the cognitive contingency model, Appendix D.

The Decision Style Inventory was designed to reflect the relationship between how people think (cognitive complexity) and what they value as important (technical or social factors). When these are combined, a picture of the individual's preference--that is, their preferred style for making decision in various situations--emerges (Rowe, Bennis & Boulgarides, 1984, p. 47).

Testing for the validity and reliability of the DSI has a long history which began in 1977 with the examination of leadership characteristics of military officers (Rowe, Weingart & Provenzano, 1977). The study included 59 officers who demonstrated decision styles on the DSI that corresponded to the rankings awarded by the military service. Mann (1982), in his study comparing strategic and financial planners found that the strategic planners scored significantly higher in the conceptual style than the financial planners. The conceptual style, indicative of complex and broad thinking style, was the anticipated outcome. Also in the same study the financial planner who traditionally used a focused approach demonstrated a significant difference in the analytic style at $p < 0.01$. The use of the DSI in additional research in the field has

consistently reported the instrument to measure what it purports to measure.

In a statistical analysis of the DSI recently undertaken by Hane, Rowe and Boulgarides (1984), a sample of 428 participants demonstrated mean scores to be very similar to the established norms. Intercorrelations between split halves of each scale were performed and were found to have 65% of the correlations exceeding 0.5 with over 40% of these approximately 0.7.

With the administration of this inventory to more than 10,000 individuals in different professions, it has been determined to have "over a 90% face validity and 70% test-retest reliability" (Rowe and Boulgarides, 1984, p. 5). The establishment of "a standard deviation of 15 has been found for each of the categories. Thus assuming a normal probability distribution, 49% of the scores will fall within the following ranges: directive, 68-82; analytic, 83-97; conceptual, 73-87; and behavioral 48-62" (Rowe, 1985, p. 233).

The question of the validity and reliability being established on only one segment of the population was a concern raised in the investigator's mind. The recent addition of two reports and the statistical analysis of the instrument have demonstrated the inclusion of women in the sample analyzed and one sample of 93 women demonstrated a higher mean score in the decision style known as behavior (Boulgarides, 1985; Rowe and Boulgarides, 1984). The mean

score reported was 64.

The factor of gender differences occurring in decision-making preferences has been investigated recently and since it was a variable in this study the population upon which the norms were established was a concern. (Gilligan, 1982; Hennig & Jardim, 1978). If the development of the tool, testing of the instrument, and establishment of the norms were carried out by only the male gender, the validity and reliability of the scores on a sample 98% female raised questions in the investigator's mind. In a discussion with the author of the DSI, Rowe noted that the trend of preference in decision style is tied closely to the profession or career as opposed to the gender of the individual (A. J. Rowe, personal communication, March 22, 1985).

The scoring of the DSI by the participants, although revised by the author in 1981 and 1983, proved to be the most problematic aspect in the mechanical portion of the investigation. Twenty-six (26) of the forms were scored wrong and returned to the participants for rescoring. Nineteen (19) were returned to the investigator a second time, with seven never returned for inclusion in the data analysis. This had been identified as a problem in the pilot study and extra precautions were taken to include explicit instructions for this investigation. With a face-to-face testing situation, this deterrent could be avoided.

The Myers-Briggs Type Indicator (MBTI) Abbreviated

Version (Form AV) was selected because it supports similar concepts of decision-making that are present in the dependent variables and has been demonstrated to be reliable and valid over years of testing and analysis. It was constructed for use with "normal" individuals, showed relation to specialty choice in health care fields, and measured personality variables of cognitive dimension (McCaulley, 1975; McCaulley, 1978; Myers & McCauley, 1985). Coan (1979) indicated through empirical research findings that the MBTI scores have been related to creativity, academic achievement, vocational preferences, values, and needs. Reports addressing validity can be found in Myers-Briggs (1962, 1980).

Extensive tests of reliability including internal consistency using split half and test-retest methods are presented in the manual describing the MBTI and were adequate for this investigation (Myers & McCaulley, 1985). The continuing process of evaluation was noted in McCaulley's report on the application of the instrument to health professionals when Myers conducted new item analysis for the scales of thinking-feeling and reweighing of the thinking-feeling was involved. This was undertaken following the 1960s when the changes in attitudes toward sex roles were considered to be impacting people's preferences. The one criticism that has been voiced about this instrument was the large population of students or young people who formed the basis for the development of types. Since the

establishment of the instrument in the 1960s, studies involving adults, longitudinal studies, cross professional studies, and specific to this investigation, the application to the health professionals, has helped in eliminating this concern.

The use of the Abbreviated Version (AV) was due to several positive points. This form was drawn from items that had the best predictive ability from Form G, a 126-item form. Reliability and validity testing had demonstrated discriminating and single index selection of the items, internal consistency, and a prediction ratio that gives the "goodness" of response to that preference (Myers & McCaulley, 1985). The final reason for the selection was that it had been developed as a "unisex" version of the MBTI and the sex of the faculty was a variable in this investigation. This test also permitted self-scoring, could be mailed to the participant, included clear instructions as part of the packet, allowed the participant immediate feedback, and if desired, there was access for further information from the investigator or publisher.

Permission to use these instruments was granted the investigator by the author and publishing firm. See Appendices E and I for additional information on this instrument.

Procedures

Following the proposal defense, the proposal was

forwarded and approved by the University of San Diego Committee on Protection of Human Subjects. The multiple disciplinary committee reviews each research proposal of student or faculty origin for "subjects of risk." The guidelines for review consider "at risk" any person who may be exposed to the possibility of mental, physical or social injury as a result of participating in the proposed project. The introductory letter to each person served as a consent form. A time-line had been established for mailings, meetings, return deadlines, data coding and additional procedures for implementing the investigation. At the end of February, 1986, 517 packets were prepared and shipped to the publisher for mailing. Each packet included a letter to the participant, instructions for completion of the biographical data form, Decision Style Inventory, Myers-Briggs Type Indicator (Form AV), and a return postage paid envelope. No coding was done prior to mailing, but was applied on return of the materials. Address labels and postage were affixed and mailed at bulk rate by the mailing firm of the publisher of the professional journal as contracted. The lack of speed of bulk rate mail versus cost for first class mail, and not having access to a master list of prospective participants must be considered when pursuing this method of gathering data. Additional factors that should be considered are holidays and a potential second mailing to increase the response rate.

Return of the instruments included applying a unique

number to all pages, tallying scores of the two instruments, coding the demographic questionnaires and developing a computer code sheet and entering the data on that form. This is an arduous task. However, it allowed the investigator to gain a "feel" for the data being generated as well as code the qualitative responses. As the forms were returned, the request for a courtesy compensation was noted and a master list of the participants was developed. Four choices of compensation were possible and a sample of the form can be found in Appendix F. These coded forms were separated from the instruments prior to the materials being tabulated and coded for the computer in order to protect participant confidentiality. Although an accurate number is not available, approximately 50% of the participants requested the DSI profile as the courtesy compensation.

Treatment

The data entered into the computer bank generally included the categories found in Table 7. These data were coded for entry into the computer. The DSI scores and MBTI (Form AV) continuous scores were added to the data bank for statistical analysis using the SPSSx (Statistical Package for Social Sciences), (Nie, et al., 1975). Since data were both metric and nonmetric, appropriate procedures were used to analyze the data. Please refer to the section on design for the discussion of procedures.

Table 7

Demographic Data for Computer Analysis

-
1. Sex
 2. Age
 3. Marital Status
 4. Total Years as a Registered Nurse
 5. Basic Nursing Education
 6. Further Education
 7. Type of Nurse Practitioner Program
 8. Focus of Education or Specialty of Practice
 9. Teaching Faculty-Discipline and Sex
 10. Length of Preceptorship
 11. Preceptorship Faculty-Discipline and Sex
 12. Employment Information-Pattern, Status, Function
 13. Peer Group
 14. Work Setting
 15. Professional Involvement
 16. Perceived Disciplinary Alignment--Self, Task, Patient
-

Initially frequency statistics were generated for baseline information, and scatter plots were developed for the dependent variables and independent variables. Product moment correlation was computed between these independent variables measured on the interval scale to determine the presence and degree of multicollinearity. The presence of high multicollinearity between age and years of experience

forced the elimination of the variable age from the investigation. Further discussion of this procedure can be found in Chapter IV. Multiple regression of the dependent variables and independent variables of personality types, years of experience and years of education were analyzed for the level of significance as predictors of decision style. Using this approach was in recognition of the limitation of the statistical program (Kim and Kohout, 1975). This procedure was necessary so that the next step of combining and analyzing the covariates and factors and proceeding with the analysis of covariance could be accomplished. This procedure was used to determine the relationship of the factors of discipline, sex of faculty, practice setting, and practice specialty on each decision style in concert with the significant covariates. See Table 8 for further clarification of the planned statistical procedures.

Table 8

Variables and Statistical Procedures

Dependent Variables: Decision Styles

Directive

Analytic

Conceptual

Behavioral

Independent Variables: (1) Product Moment Correlation (2)
(Metric) by Multiple Regression

Education

Years of Experience

Age

Personality Preferences:

Sensing/Intuition

Thinking/Feeling

Judging/Perceiving

Introvert/Extrovert

Independent Variables: (Nonmetric) by Analysis of Covariance

Discipline of Faculty and Preceptors

Sex of Faculty and Preceptors

Practice Setting

Specialty of Practice

The SPSSx package was used and the options and limitations of this computer program were followed in this analysis. The final statistical outcome is addressed in the following chapter.

Ethics

The ethical considerations were reviewed by the Committee on Protection of Human Subjects as addressed earlier in this chapter. The investigator saw no perceived risk to the participant when completing the research materials. The return of information relating to the individual's decision profile is self-explanatory and was made available to the participants requesting this information. A summary of the findings also was made available to interested respondents. Documents were coded and only one master list was maintained during the processing of information via the computer. Since the mailing list was not available to the investigator, confidentiality of the participants requesting return of a courtesy compensation were the only names on the master list. The risk/benefit ratio for the participant was favorable toward benefit scale since participation was voluntary and feedback was at the request of the participant.

Pilot

A pilot study of the biographical and the DSI instruments was undertaken to determine if the content questions were appropriate and the decision tool was applicable for health professionals. The pilot study yielded a sample of thirty participants who were attending a

national meeting for nurse practitioners.

The demographic data including sex, age, marital status, years of practice as a registered nurse, and educational preparation as a nurse practitioner are set out in chart form and can be found in Appendix G.

The pilot study was helpful in determining the applicability of the instrument with the professional population and in identifying difficulties in the use of these instruments. The generation of hypotheses and questions were affirmed following the inspection of the data.

This concludes the chapter addressing the design and methodology of the investigation. The next chapter will address the findings of the study.

CHAPTER IV

Analysis of Data

Overview

The analysis of data reported in the following section is in response to the research needs articulated in the first chapter. The investigation concentrated on two research needs: (a) the cognitive decision style of nurse practitioners; and (b) the influencing factors found within the individual and his/her work environment. The Cognitive Contingency Decision-Making Model was tested and the four decision styles that make up the model are the dependent variables (Rowe, 1985). Directive, analytic, conceptual and behavioral decision styles are the titles of the four decision styles and dependent variables. Descriptors of each style can be found in Appendix A.

The factors influencing the individual's decision-making process were formulated using the four force model and selective concepts identified through prior research investigating the nurse practitioner as a provider of health care (Aspinall, 1979; Bibb, 1982; Corcoran, 1985; Driver & Rowe, 1979). Personality types, years of experience as a nurse, nurse practitioner education, and age were included as dimensions influencing decision-making or the independent

variables. The inclusion of the MBTI AV instrument to measure the personality types allowed the investigator to hypothesize dimensions of judging and perceiving and test these preferences along with the other variables. In addition, the specialty of practice, setting of employment, faculty discipline, and faculty gender were identified as the remaining variables that influence the decision-making process of the nurse practitioners.

The investigation and findings relating to the eight hypotheses and two research questions are addressed in this chapter. General descriptive characteristics of the subjects are presented to establish a demographic baseline. The first four hypotheses address the characteristics and personal preferences of the individual in the complex process of decision-making. These independent (metric) variables were tested for their relationship to the dependent variables of decision styles, using multiple regression to identify the variables predictive of each decision style.

Independent nominal variables found in the second group of hypotheses represent dimensions of the nurse practitioner's peer and work environment that influence the decision-making style. These variables were tested for their effect on the decision-making styles using the procedures of analysis of covariance (ANCOVA), with subsequent one-way analysis of variance (ANOVA) to locate significant interactions.

Questions addressing the perceived decision-making style and professional alignment of the respondents also were evaluated using content analysis and descriptive techniques. The hypotheses that were tested are as follows:

H 1. The conceptual and behavior decision styles will be related significantly to the "E" Extrovert, "N" Intuitive, "F" Feeling, and "P" Perceptive personality types, whereas the directive decision style will be related to the "J" Judging and "S" Sensing types, while the analytic decision style will be related to the "I" Introvert and "T" Thinking personality types.

H 2. Age will be related positively to the analytic and directive decision styles and inversely related to the conceptual and behavioral decision styles.

H 3. Education will be related positively to the conceptual and behavioral decision styles and inversely related to the analytic and directive decision styles.

H 4. Experience will be related positively to the directive and conceptual decision style and inversely related to the analytic and behavioral decision styles.

H 5. Practitioners predominantly influenced by nursing (discipline) will have higher scores on conceptual and behavioral decision styles, whereas practitioners predominantly influenced by medicine (discipline) will have higher scores on analytic and directive decision styles.

H 6. Practitioners predominantly influenced by female faculty will have higher scores on conceptual and

behavioral decision styles and the practitioners predominantly influenced by male faculty will have higher scores on analytic and directive decision styles.

H 7. Practitioners in private and public health care facilities (settings) will have higher scores on conceptual and behavioral decision styles, whereas practitioners in federal and health maintenance health care facilities (settings) will have higher scores on analytic and directive decision styles.

H 8. Practitioners specializing in family and pediatric practice will have higher scores on conceptual and behavioral decision styles, whereas practitioners specializing in adult practice will have higher scores on analytic and directive decision styles.

The two questions that were posed and analyzed were as follows:

Q 1. How do nurse practitioners describe their own decision-making style and that of their physician colleagues?

Q 2. Do nurse practitioners align their role as providers of health care with the discipline of nursing or medicine?

Descriptive Characteristics

The descriptive characteristics of sex, marital status and basic education of the nurse practitioners participating in the study may be found in Table 9. The sample represents

subjects from a four-county area encompassing two major metropolitan communities as well as some rural settings. The subjects that responded identified their residence to be within the metropolitan areas when zip codes were reviewed.

Table 9

Descriptive Characteristics of Nurse Practitioners

Characteristics	n (208)	% (100)
Sex:		
Male	4	2
Female	204	98
Marital Status:		
Single	45	21
Married	139	67
Div/Sep	20	10
Widowed	4	2
Basic Nursing Education:		
Associate	29	14
Diploma	55	26
BSN	120	58
MSN	4	2

Table 10 identifies the mean and standard deviation of the subjects' age, years of experience as a registered nurse and the education pursued by the nurse practitioners. The

education represented in this table is based on the nurse practitioner program of either Certificate, Bachelor, or Masters' program. See Appendix H for further demographic data related to the descriptions of the sample.

Table 10

Characteristics and Distribution of Sample

	<u>M</u>	<u>S D</u>
Age	38	8.5
Experience	15	8.9
Education	17	.9

The frequency of the parameters of nurse practitioner education include program, length of the preceptorship, discipline of faculty both in the classroom and in the preceptorship, and gender or sex of the faculty in these settings. The specialty of practice for the sample was intended to focus on the three major groups of family, pediatric and adult nurse practitioners. However, two additional specialty groups were entered into the procedures due to the large number in the "other" category and the potential for erroneous statistics if the groups were collapsed. The geriatric nurse practitioners and obstetric/gynecological nurse practitioners were the groups added to the analysis. Table 11 provides the data about nurse practitioner education. Two interesting findings in

the data presented in the table were (a) the large number of Masters prepared respondents in the sample and (b) the near mirror image of faculty discipline in the classroom and preceptorship.

Table 11

Characteristics of Nurse Practitioner EducationEducational Programs:

	<u>n</u>	<u>%</u>
Certificate	76	37
BSN	22	10
MSN	109	53

Preceptorship Length:

0 - 9 months	89	45
10 - 19 months	96	48
20 - 29 months	23	7

Faculty Discipline:

Classroom			Preceptorship		
	<u>n</u>	<u>%</u>		<u>n</u>	<u>%</u>
Medicine	58	29	Medicine	138	69
Nursing	<u>139</u>	<u>71</u>	Nursing	<u>63</u>	<u>31</u>
Total	197	100		201	100

Faculty Sex:

Classroom			Preceptorship		
	<u>n</u>	<u>%</u>		<u>n</u>	<u>%</u>
Male	39	20	Male	112	56
Female	<u>158</u>	<u>80</u>	Female	<u>89</u>	<u>44</u>
Total	197	100		201	100

Specialty of Practice:

	<u>n</u>	<u>%</u>
Family	86	42
Pediatric	23	11
Adult	60	28
Geriatric	14	7
Ob/Gyn	<u>25</u>	<u>12</u>
Total	208	100

The work setting of the subjects also was hypothesized to affect the decision style of the nurse practitioners. The range of flexibility and rigidity of decision-making allowed within the organizations (work environment) was one guide that assisted in the categorization of the four groups. The community clinics, private practices, federal clinics, and health maintenance organizations formed the clusters for evaluating the participant's decision style in the work setting. In this category, as in the specialty category, the need to establish two extra groups was identified. The predetermined groups did not accommodate the large number of school nurses or nurse practitioners practicing in inpatient settings that were identified by the respondents. Table 12 identifies the six settings and the frequency of employment in each. The group identified as "other" represents the nurse practitioners employed in inpatient settings. The pattern of work and status within each setting also was tabulated and it is entered in the table. The fact that the majority of respondents were full-time employees as opposed to other potential work status options was of interest to the investigator.

Table 12

Employment Patterns of Participants

Setting of Employment:

	<u>n</u>	<u>%</u>
Community Clinics	55	26
Federal Clinics	16	8
Private Practice	20	10
Health Maintenance	48	23
Schools	43	21
Other	<u>26</u>	<u>12</u>
Total	208	100

Work Pattern:

	<u>n</u>	<u>%</u>
Full	152	73
Part Time	50	24
Unemployed	<u>6</u>	<u>3</u>
Total	208	100

Work Status:

	<u>n</u>	<u>%</u>
Employee	184	89
Partnership	6	3
Independent	11	5
Unemployed	<u>6</u>	<u>3</u>
Total	207	100

The subject of the peer group, as a factor potentially influencing the decision-making styles of nurse practitioners, was queried using direct and open-ended questions. Within these settings the peer colleague network was present 87% of the time. Predominantly registered nurse or nurse practitioner colleagues were named in this category. Additional data describing the work position can be found in Appendix H. The questions addressing the perceived decision-making style of the respondent, alignment of role, and task were recorded in the direction of nursing. The data demonstrating the response of this disciplinary alignment can be noted in the first two columns in Table 13. However, the nurse practitioners felt that their patient's perception of the role was a part of medicine rather than nursing and the percentages reflect the response. Table 13 provides the descriptive data related to these categories. The lack of response is reflected in the unequal totals.

Table 13

Perceived Alignment with Nursing and Medicine

Role-Self	<u>n</u>	<u>%</u>
Nursing	142	69
Medicine	<u>54</u>	<u>26</u>
Total	196	95
Task - Self		
Nursing	107	52
Medicine	<u>78</u>	<u>38</u>
Total	185	90
Patient's Perception of Role		
Nursing	79	39
Medicine	<u>114</u>	<u>56</u>
Total	193	95

This concludes the analysis of the descriptive data. Discussion of the analysis will follow in the subsequent chapter. The next section addresses the procedures used to analyze the criterion and predictor variables.

Testing Hypotheses 1 TO 4:
Multiple Regression Procedures

The subjects' scores were tested for normal distribution using the dependent variable decision-making styles and the mean scores, standard deviation, skewness and

kurtosis. The mean scores of the decision styles (DSI 1) directive, (DSI 2) analytic and (DSI 3) conceptual fell within three points of the norms of the general population established in prior research (Rowe, 1983). However, the behavioral (DSI 4) decision style was recorded at 10 points above the norm. Prior research populations including females demonstrated similar mean scores (Rowe, 1983; Boulgarides, 1985). The skewness of the directive and analytic scores was close to zero and the conceptual and behavioral scores were skewed slightly to the right. A mesokurtic curve was representative of the directive decision-making style, while the kurtosis of the other decision-making styles was represented by a platykurtic curve.

Statistics providing data on the independent variables of age, experience, education and the MBTI scores demonstrated the presence of a normal distribution in the sample of subjects participating in the study. Scatterplots were used to determine the linearity of the relationship between the criterion and predictor variables. The use of the continuous scoring of the four MBTI indices (E/I, S/N, T/F, J/P), with 100 as midpoint on the scale, allowed for this method of analysis. The bivariate product-moment correlation (r) technique then was computed to determine if any of the independent variables demonstrated multicollinearity. On the basis of this finding the need to eliminate either age or experience was identified. As a

result, age was eliminated as a predictor variable and the second hypothesis was no longer valid. The following table (Table 14) demonstrates the coefficients and intercorrelation of the independent or predictor variables. The underlying assumptions of regression and correlation were met and demonstrated in these procedures.

Table 14

Product Moment Correlation of Independent Variables

		MBTI I	MBTI II	MBTI III	MBTI IV	EXPERIENCE	EDUCATION	AGE
MBTI	I	1.000	-.182	-.016	.086	.005	.049	.010
MBTI	II		1.000	.091	.340	.044	-.078	.015
MBTI	III			1.000	.164	-.007	.072	-.024
MBTI	IV				1.000	-.133	.108	-.107
EXPERIENCE						1.000	-.334	.889*
EDUCATION							1.000	-.378
AGE								1.000

* High correlation between age and years of experience is the only example of multicollinearity between the variables.

The multiple regression of the dependent and remaining six variables is depicted in Table 15. The use of beta weights identified the significant predictive variables of each criterion variable (decision styles). The variance accounted for by the predictive equations ranged from .09 for the conceptual decision style to .26 for the analytic decision style. Predictor variables for the directive decision style were found to be experience, education, and the extrovert personality type on the E/I index. The introvert personality type on the same E/I index was a significant predictor of the analytic decision style as well as thinking on the T/F index of the MBTI. The intuitive personality type was found to be a significant predictor of the conceptual decision style, whereas the feeling type was highly significant as a predictive variable for the behavioral decision style. Following the regression procedures, the predictors for each decision style were entered as covariates in further analyses along with the remaining categorical independent variables using analysis of covariance.

Table 15

Effect of Predictor Variables on the Criterion Variables of Decision Styles

Predictor Variables	Decision Styles			
	I Directive	II Analytic	III Conceptual	IV Behavioral
Experience	-.163*	-.028	.147	.038
Education	-.172*	.116	-.028	.040
MBTI I	-.332***	.153*	.028	.083
MBTI II	-.133	.019	.218*	-.089
MBTI III	-.038	-.467***	.045	.463***
MBTI IV	.021	-.034	.052	-.024
R^2	.153	.258	.086	.227
Adjusted R^2	.126	.234	.057	.202
F	5.681**	10.869***	2.947*	9.186***

Directionality of the MBTI scales are as given in the MBTI manual, Myers & McCaulley (1985), e.g., a low score for E/I is extrovert, a high score is introvert.

^ Beta Weight
 * $p < .05$
 ** $p < .01$
 *** $p < .001$

The identification of the significant predictive variables for each decision style produced the following results related to hypotheses 1, 3, and 4. The "N" intuitive and "F" feeling indices of the MBTI personality preferences demonstrated a significant relationship to the conceptual and behavioral decision styles. Likewise, the "I" introvert and "T" thinking indices were related to DSI 2 or the analytic decision style. The remaining indices which were hypothesized to relate to decision styles did not demonstrate any significance as predictive variables.

Education was hypothesized to be related inversely to the directive decision style and significance was demonstrated between this variable and DSI 1. The other hypothesized relationships were not supported as predictors of the conceptual, behavioral or analytic decision styles. Experience, or years as a registered nurse, was hypothesized to be related positively to the directive and conceptual decision styles. A significant relationship was present and it was in the inverse direction to directive decision style or DSI 1. The remaining hypothesized relationships were not supported statistically as predictive variables of decision-making styles.

Testing Hypotheses 5-8: Analysis of Covariance

A series of analyses of covariance were performed with each decision style (DSI 1-4) as the dependent variables, the significant covariates for each style, and the

independent variables of faculty discipline, gender, setting, and specialty of practice. Discipline was found to be significant with both conceptual and behavioral decision styles at $p = <.05$ in a two-way interaction between the classroom faculty and preceptors. The mean scores of the groups are graphed in Figure 1. In hypothesis 5, the relationship between the discipline and conceptual decision styles was supported. However, there was only partial support since the combined disciplines of medicine and nursing both influenced the conceptual decision style and was not as had been hypothesized.

Figure 1. Discipline of Classroom and Preceptor Faculty
in Relation to Conceptual Decision-Making Style

In Figure 2, the mean scores of behavioral decision style of the nurse practitioners are reflected on the vertical axis and the faculty/preceptor discipline is graphed on the horizontal axis. The higher mean scores represent the group that experienced medical faculty in the classroom and nursing faculty in the preceptorship, and were significant at $p < .05$ in two-way interaction. This hypothesis of a relationship of the discipline of nursing influencing the behavioral decision-making style by higher mean scores was rejected.

F 4.337

$P < .05$

Figure 2. Decision of Classroom and Preceptor Faculty
in Relation to Behavioral Decision-Making Style

Faculty gender was found to be a significant predictor of conceptual decision style at $p < .001$. The mean scores indicate that hypothesis 6 was not supported as stated. The gender of the faculty influencing the conceptual decision style was the male faculty. The higher mean scores of these groups were found both in the classroom and preceptorship. Therefore, the hypothesized relationship between faculty gender and conceptual decision style was supported, but by the male and not female gender of the faculty. The mean scores of the groups have been graphed in Figure 3.

Figure 3. Gender of Classroom and Preceptor Faculty in Relation to Conceptual Decision-Making Style

The specialty of practice significantly affected the directive decision style at the $p < .05$. In order to identify which group exerted the significant influence, further analysis should be performed. Differences in the mean scores were found between the pediatric and obstetrical/gynecological practitioners. However, the directive decision style was hypothesized to be affected by the adult nurse practitioners rather than the pediatric. Hypothesis 8 stated that the decision styles of conceptual and behavioral would be present in family and pediatric specialty groups, whereas the adult nurse practitioners would demonstrate higher mean scores in the directive and analytic styles. The mean score for the pediatric specialty group was lowest in the directive style, but the group with the highest mean score had not been identified prior to the study, i.e. the obstetric/gynecologic group. The graph in Figure 4 demonstrates the mean scores of the specialties.

Figure 4. Specialty Groups of Nurse Practitioners in Relation to Directive Decision-Making Style

Hypothesis 7 which considered the setting of employment as an influencing variable did not demonstrate any significant findings and therefore was not supported. This concludes the report on the analysis of hypotheses 1-8 and discussion and conclusions will follow. The results of the questions relating to discipline alignment and perceived decision styles follows.

Descriptive Analysis of Questions 1 and 2

The individual's perception of his/her own decision style was evaluated by identifying a common list of descriptive terms and recording each time the term was repeated. The most frequent responses used to describe the decision style of the nurse practitioners were "gather all the data," "problem approach," "nursing process," and "collaborative." The terms used to describe the decision style of their physician colleagues were "knowledgeable," "confident," "scientific," "logical," "medical model," and "quick." The fact that 28% of the participants did not complete these questions or only portions of the questions will be addressed in the conclusions.

The data in Table 13 in this chapter speaks to the respondent's alignment with the discipline and both questions will be discussed in relation to the other findings in the following chapter. Discussion of the analysis, conclusions of the research, and suggested areas of continued investigation follow in Chapter V.

CHAPTER V

Discussion and Recommendations

Introduction

The purpose of this research was to investigate the decision-making patterns of nurse practitioners employed in primary care settings. Since a study of this type had not been done previously, and a knowledge of decision styles could assist the practitioner as well as the educator, the undertaking was valid and credible.

The cognitive contingency decision-making model put forth by Driver and Rowe (1979) was used in this investigation. The criterion variables were the four decision styles that make up the model and are referred to as directive (DSI 1), analytic (DSI 2), conceptual (DSI 3), and behavioral (DSI 4). The predictor variables selected to be tested for the relationship to the criterion variables were divided into metric and nonmetric groups to facilitate the statistical analysis. The selection of the independent variables was based on a framework of four forces that influence the decision styles of the individual. A review of the literature investigating the decision-making of nurses and nurse practitioners assisted in the operationalization of these variables (Aspinall, 1979);

Driver & Rowe, 1979; Grier, 1984; Lindeman, 1985; Molde & Diers, 1985; Rowe, 1985). The independent variables were the four personal preference indices of judging and perceiving derived from Jung's theory as well as age, experience, education, faculty discipline, faculty gender, specialty of practice, employment setting and self perception of decision styles. The chapter will proceed with an interpretation of the descriptive data and hypotheses.

Results and Interpretation

A voluntary sample of 208 nurse practitioners was drawn from a four-county area in one state in the southwestern part of the country. Linn (1976A) reported an educational distribution of 23% at the Associate Degree and Bachelor levels and 55% at the Diploma level in his research on educational dimensions of nurse practitioners drawn from within the same geographical boundaries as used in this investigation. The demographic data of this study shows similar frequencies of male to female nurse practitioners but a change in the profile of the marital status and basic education when compared to Sultz's longitudinal data. The range of age of the nurse practitioners in these studies did shift and demonstrated an increase in the number of persons over 35 and 45 years of age. Likewise the years of experience as a nurse increased by 24% when the sample was compared to the population of the longitudinal study. See

Appendix H for a table of the frequency comparisons.

Data on nurse practitioner education exhibited an increase in Masters' prepared professionals, nurse faculty in the classroom, and nurse preceptorships. The decrease in nurse practitioners prepared at the certificate level is attributed to three factors: (a) The professional role moved from the "exception" to the "standard" in nursing institutions of higher education; (b) The decrease of federal funding for certificate programs and the continued request for Masters' programs by the student consumer and employer; (c) The possible sample bias as the more highly educated do respond to research questionnaires.

Nurse faculty have increased in the classroom but the preceptorship period remains dominated by physicians. Although there is an increase from 8% of nurse only preceptors as reported by Sultz (1980) to 31% reported in this study, the increase in ten years was not at the same rate as faculty growth. Several extraneous factors can be identified as being responsible for the inconsistency: (a) The sample was drawn from a medically conservative part of the country; (b) That part of the country is known to have an oversupply of physicians; (c) Nurse practitioners are not precepting students; and (d) The physician remains the gatekeeper of the health care system.

The specialties and settings of employment demonstrate the clustering of the nurse practitioner as a provider of health care in the areas of greatest patient use. The care

of the young, adult women, and the aged are the patient groups most frequently seen in the health care centers. The small percentage of pediatric nurse practitioners responding in this investigation was not interpreted as a decrease in the size of this specialty within the region, but as a close alignment to that specialty. Since the mailing list was drawn from a publisher that reports on topics of general interest, the specialty groups may not subscribe to this type of journal. The addition of two groups to the investigation was in recognition of the presence of a significant representation of other specialties in the sample area.

The work setting category was similar to that found by Sultz et al. (1980). The pattern of a high percentage of nurse practitioners reporting that they were employees as opposed to being in partnership or independent practice is interpreted in light of the points made earlier in relation to the nurse preceptors. The nurse practitioners as a group also had the highest mean score in the behavioral decision style. Descriptors denoting a person who uses this style have been outlined in Appendix A. Persons using this decision style are not known for their entrepreneurial zeal, but are known for their supportive and affiliative manner and frequently are found in team or collaborative work settings. The reality of the legal and professional constraints that surround the nurse practitioner in the region where the respondents reside is seen as a factor

influencing the work pattern. Nurse practitioners cannot write prescriptions or collect reimbursement from an insurance health plan without physician direction or consultation. The payers (health insurance companies) and lawmakers retain the physician as the gatekeeper of the health care system.

The nurse practitioner role is said to be formed from two disciplines and as a result presented conflict within the professional and the professions. The incorporation of the programs into nursing institutions of higher education alleviated one conflict and the results of this investigation can be interpreted that the role and task are now perceived to rest within nursing. It has been twenty years since the introduction of the concept of this professional and the role is finally being viewed as it was intended by Ford, one of the initiators (Ford and Silver, 1985). The presence of a colleague network in the work setting mainly consisted of nurse practitioners and other nurses. Additional support for the role alignment with nursing was demonstrated by 85% of the sample indicating membership in a professional organization with the discipline of nursing named 96% of the time. The peer group and role affiliation is interpreted as demonstrating a strong alignment with nursing. The dominant decision style of the group also supports this interpretation. The tasks also support nursing, but demonstrate a stronger alignment with medicine and the "curing" portion of providing health

care. Patient perception of the nurse practitioner role, as seen by the practitioner, is aligned with medicine.

In summary, the descriptive statistics indicate a shift in the demographics and in the characteristics of nurse practitioner education. Limitations of the practice laws and extraneous factors that were beyond this investigation also influenced the findings. The peer group, task, and role alignment were interpreted to exist in nursing with the patient's perception aligned with medicine.

Hypotheses 1-8 Revisited

The cognitive contingency decision-making model identifies four styles of how an individual processes information and reaches a conclusion. The four styles, directive, analytic, conceptual and behavioral, were the dependent variables in this investigation. A framework which includes forces of work environment, peer group, tasks, and personal needs were the independent variables and were tested as predictors of each decision style (Rowe, 1985). The analysis can be reviewed in the design and analysis chapters.

The DSI, the instrument developed to operationalize the model, was tested in a pilot study and the results assisted in the formation of the hypotheses for this investigation. Table 16 represents the mean scores and standard deviations of each decision style of the respondents in this investigation, along with the established norms for the

instrument. The range for each respective decision style of the respondents is as follows: (a) Descriptive 37-121; (b) Analytic 43-128; (c) Conceptual 45-116; (d) Behavioral 35-125. Comparative data of the pilot study can be found in Appendix G. The dominant decision-making style of the 208 respondents of this study was the behavioral decision style. Therefore, the participants in this investigation are people-oriented, have strength in coordinating matters, and solving problems. The problem-solving would rely on feelings and instinct and the use of limited information. Concern about people's feelings and working within a people-oriented setting is characteristic of the group's behavioral style. The two styles used less frequently and called the backup styles are the analytic and directive decision styles. These styles come into action when the individual decision-maker experiences a stress in one of the areas influencing the process of judgment. Descriptors of these styles can be found in Appendix A. The interpretation of the analysis of the hypotheses follows the table.

Table 16

DSI Mean Scores of Study Group and Established Norms

	Study Group	Norm
	<u>n</u> =208	<u>n</u> =7000
Directive decision style		
<u>M</u>	72	75
<u>SD</u>	13.59	15
Analytic decision style		
<u>M</u>	87	90
<u>SD</u>	17.37	15
Conceptual decision style		
<u>M</u>	75	80
<u>SD</u>	13.95	15
Behavioral decision style		
<u>M</u>	65	55
<u>SD</u>	17.34	15

The Myers-Briggs Type Indicator was used to test the personality type of the respondents and to determine the relationship to the decision style. These preferences also support the personal need dimension of the framework. See Appendix I for descriptors of personality types. The four personality types, developed on four bipolar indices and each independent of one another, were used as continua. Each type was hypothesized recognizing that an opposite sign of the statistic demonstrated support of the index but of the opposite preference type.

Hypothesis 1 stated that the conceptual and behavioral decision styles would be related significantly to the "E" extrovert, "N" intuitive, "F" feeling, and "P" perceiving personality types, whereas the directive decision style would be related significantly to the "J" judging and "S" sensing types, while the analytic decision style would be related significantly to the "I" introvert and "T" thinking personality types. Cognitive style preferences that were supportive of the hypothesis demonstrated that the individual using the conceptual style as being related to the intuitive type and the behavioral style to the feeling type. Sensing and extrovert types were related to the individual using the directive decision style as a preferred manner in processing information. The introvert and thinking personality indices were found to be related significantly to the person using the analytic decision style who can be described as an innovative and creative

individual.

The judging and perceiving index was not found to be significant to any decision style in this sample of respondents. This index is implicit in Jung's work and was made explicit by Myers and Briggs to be used in conjunction with the E/I index to determine the individual's attitude toward the outside world (Myers & McCaulley, 1985). The potential that the group of respondents in this investigation did not support Myers and Briggs explicit criteria is a theoretical possibility. The need for further research into the patterns of judging and perceiving is warranted.

The conceptual consistency between the two instruments (DSI and MBTI) was supported in this investigation as was demonstrated in prior studies (Dickel, 1983; Klempa, 1983; Mann, 1982). Even though different methodology was employed in the earlier studies, the type profiles of the previously researched groups show a similarity to the current group under investigation. The combined preference indices of perceiving and judging, such as SN, ST, NF, and NT, have been investigated and the significance reported with different groups of professionals. The identification of single personality preferences on a continua as a significant predictor of decision styles is an addition to the literature on decision-making in nursing.

The respondents in this investigation, being 98% female and in a health service profession, represent the first

group of this type of individuals to respond to the DSI and MBTI. The hypotheses, supported in part, demonstrate significant predictors for each decision style hypothesized. The nurse practitioner who has a dominant analytic decision style will prefer complex data to problem solve and sees life from an inward view. Those with a directive decision style are interested in people and events all around them, as well as decision-making that involves detail, structure, and tasks. These persons are active and pursue power. The conceptual decision-makers are broad thinkers, innovative, and tolerate ambiguity well. The behavioral decision-maker is participative in the process and seeks validation and acceptance from the group rather than personal success. This style is the preferred decision style of the group participating in this investigation. The group generally would be described by the terms used above or found in the list of descriptors. The significant predictors of the personality types were more numerous for the backup decision styles of the group. A total of four personality preferences including the extrovert, introvert, thinking and sensing were found predictive of persons that use decision styles of either the directive or analytic pattern or the task/technical mode. The preferences of intuitive and feeling were predictive of the conceptual or behavioral patterns of the people/relational decision-makers.

The second hypothesis of age being related positively to the decision styles was not analyzed due to the exclusion

of this variable following the correlation procedures. The need to determine the variables accounting for the most variance required that age or experience be eliminated and age was omitted in the subsequent analyses. It was the belief of the author that experience was a more valuable variable to study in this investigation and has been confirmed as such in past research.

The third hypothesis stated that education would be related positively to the conceptual and behavioral decision styles and inversely related to the analytic and directive decision styles. The relationship of education to the directive decision style was supported. Therefore, the individual with fewer years of education will score highest in directive decision-making style. The individual using the directive decision style is described as a person who has a low tolerance for ambiguity, focuses on the technical aspects of tasks, may be autocratic and use small amounts of information in problem solving which is accomplished quickly and aggressively. The literature reviewed supports this outcome (Aspinall, 1979; Corcoran, 1985; Rowe, 1985). The other hypothesized relationships with the decision style were not supported. The interpretation that additional unknown variables account for the variance and non-significance with the other decision styles is a plausible conclusion.

The fourth hypothesis indicating that experience would be related positively to the directive and conceptual

decision styles and inversely related to the analytic and behavioral decision styles was not supported as stated. The significance of experience as a predictor of the directive decision style was present, however, in the inverse manner. The fewer the number of years of experience, the higher mean score of the directive decision style. The findings are consistent with the literature noted in the interpretation of hypothesis three. Corcoran (1986) did find that the novice used a more narrow initial approach in assessing the patient problem as opposed to the expert who was described as having more experience. Aspinall (1979) noted that the nurse with under two years experience scored highest with small data but when given additional data more than doubled the score. The nurse with greater than ten years of experience made the most improvement with the most data. These previously published studies were experimental in design and were focused on specific tasks of the participants and therefore were more specific in the findings. The participants in this investigation, a descriptive study, were not tested in that manner and therefore the area of unknown significance with the other decision styles is greater. However, the finding of the relationship of experience to directive decision style demonstrates that the individuals using this pattern had less years experience and less years of education. The employment settings are likely to have structured health management approaches and a similar patient population which

encourage the use of this decision style.

Hypothesis five stated that the practitioners predominantly influenced by nursing would have higher scores on the conceptual and behavioral decision styles whereas practitioners influenced by medicine would have higher scores on analytic and directive decision styles. The hypothesis partially was supported in that the discipline did indicate a significant relationship to the conceptual and behavioral decision styles. Since faculty of two disciplines and in two settings were tested for the relationship to the decision styles, four mean scores were generated as shown in Figure 1 in Chapter IV. The mean scores of the groups of only one discipline were not significantly different, but the mean scores of the groups of mixed disciplines did exhibit a significant relationship with the conceptual decision-making pattern. The same relationship was demonstrated between the behavioral decision style and the disciplines. These mean scores are graphed in Figure 2 in Chapter IV.

The influence of the mixed disciplines on the conceptual decision style demonstrated that when the student had nursing faculty in the classroom and medical preceptors the mean score was higher than when the disciplines were reversed. Table 11 indicates that the greatest percentage of the respondents fall into this category. The behavioral decision style had a similar response in the mixed discipline groups. However, the respondents with the

medical faculty in the classroom and nurse preceptors demonstrated the highest mean scores. In the findings, the scores of the individual preferring the conceptual decision style showed that they gained the preceptorship experience with members of the medical discipline, whereas the respondents preferring the behavioral decision style experienced a preceptorship with members of the nursing discipline. The absence of prior research to compare these findings is unfortunate, but identifies an area for future research. The mean scores of the analytic and directive decision styles were not significant with either discipline.

Practitioners predominantly influenced by female faculty would have higher scores on conceptual and behavioral decision styles and the practitioners predominantly influenced by male faculty would have higher scores on the analytic and directive decision styles reiterates the sixth hypothesis. The graph in Figure 3, found in Chapter IV, displays the significant mean scores of all the groups of one gender or both genders. Again the classroom and preceptorship settings were parameters of the groups. The findings of the combined groups repeat those demonstrated with the discipline as a variable. The greatest difference in the mean scores was demonstrated when female faculty were in the classroom with a male preceptor as opposed to the reverse settings. The respondents who preferred using the conceptual decision style or the broad thinkers who used a great deal of data in their problem-

solving processes were influenced most by the male preceptors. The mean scores of the all-male group compared with the all-female group were not significantly different but it should be noted that the higher mean score of the participants preferring the conceptual decision style was in the all-male category.

In interpreting the findings, the need to recall the literature of the initial role transition of the nurse practitioner is important (Anderson, Leonard & Yates, 1974; Bates, 1974; Ford, 1974; Spitzer, Gilbert & Kergin, 1975). The female nurse, moving from one discipline to another and learning a role associated with the dominant gender and discipline, was faced with conflict and ambiguity. The reasons cited for entering this role in Sultz's study indicated there was a challenge to learn more and at that time the preceptors were usually male and in medicine (1980). A method to achieve the goal was through the mentoring role and these settings allowed for this to evolve. The self-perceived decision styles indicated that the nurse practitioner considered and valued more data and patient concerns because the physician colleague did not take these factors into consideration. Therefore, the nurse using the conceptual decision style was influenced most by the male faculty and male preceptor in the processing of information. The lack of significance with other decision styles is unexplained at this time.

The seventh hypothesis was rejected and no settings

demonstrated significant relationships to the dependent variables of decision styles. The independent variable may need to be studied in another manner than implemented in this investigation in order to determine if a relationship between decision styles and settings exist.

The final hypothesis stated that practitioners specializing in family and pediatric practice would have higher mean scores on the conceptual and behavioral decision styles whereas practitioners specializing in adult practice would have higher scores on analytic and directive styles. The hypothesis as is stated was not supported. The addition of two groups altered the hypothesis and the analysis of one of the new specialties demonstrated significantly higher mean scores in the directive decision style. This specialty group presents one other characteristic found to be significant, that over 60% of the respondents in this group had the least number of years in education among the groups. This specialty group also cares for a consistent patient population that would allow for a structured and quick decision-making process. The remainder of the decision styles were not related significantly to the specialty groups and additional research is needed comparing specialty and general practice providers.

The questions addressing the self-perceived decision-making style elicited terms that could be equated with the descriptors of the behavioral and analytic cognitive patterns. The use of "nursing process," "a problem

approach," and "gathering all the data" were mentioned most frequently and are indicative of an individual using a good deal of data to solve a problem in a logical manner. These descriptors support the backup styles identified through the analysis of the group mean scores. The terms "collaborative," "patient concerns," and "intuitive" are affirmative descriptors of the behavioral decision styles. Since this was the dominant decision style of the group, the terms of the nurse practitioner respondents give additional support to the findings of the group means.

The descriptors of the physician colleagues are descriptors of individuals that use the directive or analytic decision styles. The terms "scientific," "methodical," "logical," and "knowledgeable" all refer to the nurse practitioner's colleague. It is interpreted that these are the characteristics the respondents observed in the colleagues but no value was queried or given in this investigation. Several respondents also identified the physician colleague as "collaborative," "supportive," and "emotional" but these were in the minority. In relation to the literature reviewed, the terms accurately reflect the perceptions of the practitioners (Perrin & Goodman, 1978; Russo, 1975; Sullivan, 1978). The lack of response to this item can be interpreted as too time consuming and therefore omitted, or a response was not arrived at easily and therefore it was left blank.

Summary

In summary, the decision-making style of nurse practitioners in primary care is most frequently the behavioral style. The backup styles are directive and analytic. The pattern of these three decision styles enjoins a people focus (behavioral) with a range of task orientation from low complexity (directive) to high complexity (analytic). Another way of interpreting this is to note that the respondents have blended the nursing focus of concern and caring with the medical tasks of curing in the new role. It is also the feeling of the investigator that the predictors of experience, education and personality types can assist in providing direction in the education and career goals of these professionals.

The presence of a decision-making style was confirmed and predictors identified, but additional research is needed for more conclusive results. This study may serve as a basis for developing a more comprehensive understanding of the decision styles of nurse practitioners and other health professionals. The decision style of teams, the mix of professionals needed to provide quality care, is a defined need for the present-day health care system in its process of change.

In the education of the nurse practitioner the use of the DSI can assist in directing students to utilize different learning tools during their didactic sessions. Likewise, the advisement of clinical placement between the

student and the preceptor can be facilitated when the preferred decision style is known. Although the variable of clinical setting did not demonstrate significance as a predictor of decision styles, the focus of "structure" or "flexible" diagnostic methodology that is used in each setting is common knowledge. Knowing the methodology and matching the student using a similar decision style would provide an atmosphere of learning having minimal conflict. Also, considering the significance of years of experience as a nurse and the preferred decision style of the student, this will allow clinical placement and career advisement with a greater level credibility for learning and job satisfaction.

The future alteration of delivering patient care in the primary care settings is continuing. The use of the DSI to identify the decision styles of team members who currently work well together, provide quality, efficient, and effective care may be a means for solving the "personal mix" for future teams. The DSI instrument is not an absolute answer to all the questions currently being raised in the delivery of health care, but it may be a tool to help unravel some of the problems. In view of the findings and projections, the following are viewed as initial considerations before pursuing further study in this area: (a) limitations of the design; (b) type and setting of the sample; and (c) refinement of the instruments used in this investigation. The decision-making style may be one method

to determine the differences in the process and outcome in the providers of primary care.

Recommendations for Further Research

The following are suggestions for further study in the arena of decision-making styles of health professionals:

1. Determine the decision-making styles of nurses in other areas of practice, as well as longitudinally through their career.
2. Compare the decision-making styles of other health professionals using some of the same variables and look at the efficiency and effectiveness of the care being provided.
3. Continue to investigate the influence of the faculty, gender and the mentoring influence on the decision styles of the health professional.
4. Replicate this study in states where practice laws are different and the medical community holds another view of health practice.
5. Examine the decision-making patterns of providers in several disciplines, in different settings while providing services for patients of different socioeconomic and cultural origins.

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APPENDIX A

DESCRIPTIVE CHARACTERISTICS OF DECISION STYLES

Directive:	Structure Speed Autocratic Satisficing Precept Detail Status Power
Analytic:	Challenge Problem-Solving Optimize Technological Alternatives Coping Logical Abstract
Conceptual:	Creative Long Range Relationship Innovative Unstructured Loose Control Independent Achievement
Behavioral:	Verbal Affiliative Supportive Persuasive Avoid Conflict Receptive Empathetic Communication

APPENDIX B

TASK SEQUENCE FOR DIRECT PATIENT CARE
BY NURSE PRACTITIONERS - ALL SPECIALTIES

Health History

Physical Examination

Laboratory or Screening Tests (+, -)

Diagnosis

Plan:

(a) Medication and/or Treatment

(b) Teaching/Counseling

(c) Evaluation

Attending Physician (+, -)

Consultation or Referral (+, -)

Dismissal

APPENDIX C

DECISION-MAKING DEMOGRAPHIC DATA

PLEASE CHECK APPROPRIATE RESPONSE AND ADD COMMENTS WHEN REQUESTED OR NEEDED

1. SEX: ☐ Female ☐ Male
2. AGE:
3. MARITAL STATUS:
☐ Single ☐ Married ☐ Widowed ☐ Divorced/Separated
4. TOTAL YEARS AS A REGISTERED NURSE
5. BASIC NURSING EDUCATION:
☐ Diploma ☐ ADN ☐ BSN ☐ Other
6. FURTHER EDUCATION: Degree: Yr of Completion

NURSE PRACTITIONER EDUCATION:

7. Type of Nurse Practitioner Program:
☐ Cert. ☐ BSN ☐ MSN ☐ Other (Explain)
8. Focus of Nurse Practitioner Education:
☐ FNP ☐ PNP ☐ ANP ☐ Other
9. Teaching Faculty (The majority [51%] of lecture time)
A. Discipline ☐ Medicine ☐ Nursing (Select only one)
B. Gender ☐ Male ☐ Female (Select only one)

PRECEPTORSHIP/CLINICAL EDUCATION:

10. Length in months of preceptorship
11. Clinical Preceptor (The majority [51%] of supervising time)
A. Discipline ☐ Medicine ☐ Nursing (Select only one)
B. Gender ☐ Male ☐ Female (Select only one)

CURRENT EMPLOYMENT INFORMATION:

12. Current Work Pattern:
☐ Full Time ☐ Part Time ☐ Unemployed
13. Current Work Status:
☐ Employee ☐ Partnership/Corp. ☐ Independent
14. Current Position: *
☐ Staff % ☐ Education %
☐ Administration % ☐ Research %

* If more than one category applies, indicate the percent of time for each position.

APPENDIX C-CONTINUED

15. Are you working in the specialty of your preparation?
_____Yes _____No
16. Do you have a colleague/peer network at work?
_____Yes _____No
17. Is your colleague/peer network a
_____Nurse Practitioner
_____Physician
_____Registered Nurse
_____Other (Explain)_____
18. Current Work Place (Primary Source of Income/Service)
_____Community Clinic (State/Local Funded)
_____Federally Supported Clinic (Military; Vet. Adm.;
PHS Corps)
_____Physician's Office (Private Practice)
_____Independent Practice (Nurse Practitioner)
_____Group Practice (Physicians)
_____Group Practice (Nurse Practitioners)
_____Health Maintenance Organization (Corp.)
_____School of Nursing
_____Public School System
_____Other (Explain)_____
19. Do you belong to a professional organization for health
providers? _____Yes _____No
20. Is this organization under the direction of nursing or
medicine? _____Nursing _____Medicine
21. In your work role do you consider yourself a part of
nursing or medicine? _____Nursing _____Medicine
22. In your work role do you consider your tasks a part of
nursing or medicine? _____Nursing _____Medicine
23. In your work role do your patients see you as part of
nursing or medicine? _____Nursing _____Medicine
24. In your own words briefly describe your physician
colleague's decision-making style. _____

25. In Your own words briefly describe your own decision-
making style. _____

Thank you for completing the demographic data portion of
this questionnaire. Please continue by completing the
Decision Style Inventory and the Myers-Briggs Type
Indicator.

APPENDIX D

DECISION STYLE INVENTORY III

© A.J. ROWE

8/8/81

REV. 3/2/83

PLEASE SCORE THE FOLLOWING QUESTIONS BASED ON THE INSTRUCTIONS GIVEN. YOUR SCORE REFLECTS HOW YOU SEE YOURSELF, NOT WHAT YOU BELIEVE IS CORRECT OR DESIRABLE, AS RELATED TO YOUR WORK SITUATION. IT COVERS TYPICAL DECISIONS THAT YOU MAKE IN YOUR WORK ENVIRONMENT.

1. MY PRIME OBJECTIVE IS TO	HAVE A POSITION WITH STATUS	BE THE BEST IN MY FIELD	ACHIEVE RECOGNITION FOR MY WORK	FEEL SECURE IN MY JOB
2. I ENJOY JOBS THAT:	ARE TECHNICAL & WELL DEFINED	HAVE CONSIDERABLE VARIETY	ALLOW INDEPENDENT ACTION	INVOLVE PEOPLE
3. I EXPECT PEOPLE WORKING FOR ME TO BE:	PRODUCTIVE AND FAST	HIGHLY CAPABLE	COMMITTED AND RESPONSIVE	RECEPTIVE TO SUGGESTIONS
4. IN MY JOB, I LOOK FOR	PRACTICAL RESULTS	THE BEST SOLUTIONS	NEW APPROACHES OR IDEAS	GOOD WORKING ENVIRONMENT
5. I COMMUNICATE BEST WITH OTHERS:	IN A DIRECT ONE TO ONE BASIS	IN WRITING	BY HAVING A GROUP DISCUSSION	IN A FORMAL MEETING
6. IN MY PLANNING I EMPHASIZE:	CURRENT PROBLEMS	MEETING OBJECTIVES	FUTURE GOALS	DEVELOPING PEOPLE'S CAREERS
7. WHEN FACED WITH SOLVING A PROBLEM, I:	RELY ON PROVEN APPROACHES	APPLY CAREFUL ANALYSIS	LOOK FOR CREATIVE APPROACHES	RELY ON MY FEELINGS
8. WHEN USING INFORMATION I PREFER:	SPECIFIC FACTS	ACCURATE AND COMPLETE DATA	BROAD COVERAGE OF MANY OPTIONS	LIMITED DATA WHICH IS EASILY UNDERSTOOD
9. WHEN I AM NOT SURE ABOUT WHAT TO DO, I:	RELY ON INTUITION	SEARCH FOR FACTS	LOOK FOR A POSSIBLE COMPROMISE	WAIT BEFORE MAKING A DECISION
10. WHENEVER POSSIBLE, I AVOID:	LONG DEBATES	INCOMPLETE WORK	USING NUMBERS OR FORMULAS	CONFLICT WITH OTHERS
11. I AM ESPECIALLY GOOD AT:	REMEMBERING DATES & FACTS	SOLVING DIFFICULT PROBLEMS	SEEING MANY POSSIBILITIES	INTERACTING WITH OTHERS
12. WHEN TIME IS IMPORTANT, I:	DECIDE AND ACT QUICKLY	FOLLOW PLANS AND PRIORITIES	REFUSE TO BE PRESSURED	SEEK GUIDANCE OR SUPPORT
13. IN SOCIAL SETTINGS I GENERALLY:	SPEAK WITH OTHERS	THINK ABOUT WHAT IS BEING SAID	OBSERVE WHAT IS GOING ON	LISTEN TO THE CONVERSATION
14. I AM GOOD AT REMEMBERING:	PEOPLE'S NAMES	PLACES WE MET	PEOPLE'S FACES	PEOPLE'S PERSONALITY
15. THE WORK I DO PROVIDES ME	THE POWER TO INFLUENCE OTHERS	CHALLENGING ASSIGNMENTS	ACHIEVING MY PERSONAL GOALS	ACCEPTANCE BY THE GROUP
16. I WORK WELL WITH THOSE WHO ARE:	ENERGETIC & AMBITIOUS	SELF CONFIDENT	OPEN MINDED	POLITE & TRUSTING
17. WHEN UNDER STRESS, I	BECOME ANXIOUS	CONCENTRATE ON THE PROBLEM	BECOME FRUSTRATED	AM FORGETFUL
18. OTHERS CONSIDER ME	AGGRESSIVE	DISCIPLINED	IMAGINATIVE	SUPPORTIVE
19. MY DECISIONS TYPICALLY ARE:	REALISTIC & DIRECT	SYSTEMATIC OR ABSTRACT	BROAD AND FLEXIBLE	SENSITIVE TO THE NEEDS OF OTHERS
20. I DISLIKE:	LOSING CONTROL	BORING WORK	FOLLOWING RULES	BEING REJECTED

APPENDIX D-CONTINUED

ROWE - DECISION STYLE INVENTORY SUPPLEMENT

March 21, 1983

Instructions:

1. Use the following numbers to answer each question:
8 - when the question is MOST like you
4 - when the question is MODERATELY like you
2 - when the question is SLIGHTLY like you
1 - when the question is LEAST like you
2. Each of the numbers must be inserted in the box following the answers to each question.
3. DO NOT repeat any number on a given line.
4. For example, the numbers you might use to answer a given question could look as follows:
8 2 1 4
5. Notice that each number has been used only once in the answers for a given question.
6. In answering the questions, think of how you NORMALLY act in your work situation.
7. Use the first thing that comes to your mind when answering the questions.
8. There is no time limit in answering the questions and there are no right or wrong answers.
9. Your responses reflect how you feel about the questions and what you prefer to do, not what you think might be the right thing to do.

PLEASE COMPLETE THE FOLLOWING INFORMATION;

Name/Code _____ Age _____ Male/Female _____
Field of Study _____ Highest Degree _____
Subject enjoyed most _____ Subject enjoyed least _____
Present job title _____ Years in the job _____
Previous job _____ Total Yrs Experience _____
Salary: Below 25,000 _____ Below 50,000 _____ Above _____ Lft/Rt Hand _____
Father's job _____ Mother's _____
Your favorite hobby _____ Single/Married/Divorced _____

APPENDIX E

MYERS-BRIGGS TYPE INDICATOR (MBTI)
FORM AV

The MBTI is proprietary and cannot be reproduced here.

Copies may be obtained from:

Consulting Psychologists Press, Inc.
577 College Avenue
Palo Alto, CA 94306

APPENDIX F

COURTESY COMPENSATION

1. _____ Personal Decision Style Profile (Computer Printout)
2. _____ Report of Myers-Briggs Type Indicator (Must be
returned unopened)
3. _____ Summary of research findings
4. _____ "Thank You"

If you have selected item 1, 2, or 3, you will need to complete the following in order for the material to be returned. Since the mailing list is confidential, I do not have access to the list and cannot return your selection unless you provide this information. Complete confidentiality will be maintained through a coding of your selection. This portion of the form will be stored separately from the group data. Thank you again for participating in this investigation on decision-making.

Name _____

Address _____

City/State/Zip _____

(Please print or use a return address label.)

APPENDIX G

PILOT STUDY

Biographical Data:

Sample Size: n = 30

Sex: Female = 28 Male = 2

Age Range: 27-60 years of age Mean age = 39.6

Years	n	%
20-25	0	0.0
26-30	3	10.0
31-35	8	26.6
36-40	8	26.6
41-45	4	13.3
46-50	2	6.6
51-55	2	6.6
56-60	3	10.0

Marital Status:

	n	%
Single	5	16.6
Married	17	56.6
Widowed	0	0.0
Div/Sep	8	26.6

Total Years as a Nurse:

Years	n	%
0- 5	0	0.0
6-10	5	16.6
11-15	13	43.3
16-20	4	13.3
21 +	8	26.6

Nurse Practitioner Education:

	n	%
Master's Program	15	50
Non-master's Program	15	50

APPENDIX G-CONTINUED

Scores of participant decision-making: ("n" of 30)

	Mean	Norm
Directive Pattern	73.5	75
Analytic Pattern	79.2	90
Conceptual Pattern	86.7	80
Behavioral Pattern	61.7	55

APPENDIX H

DEMOGRAPHIC DATA

	Sultz (1980)	Linn (1976)	Goodyear (1986)
<u>n</u>	777	31	208
	<u>%</u>	<u>%</u>	<u>%</u>
Sex:			
Male	3	7	2
Female	97	93	98
Marital Status:			
Married	59	48	67
Unmarried	41	52	33
Basic Education:			
Associate	12	23	14
Diploma	33	55	26
BSN	50	23	58
MSN	5	--	2
Age:			
<25	19	--	.5
25-34	44	--	42
35-44	27	--	33
45-54	9	--	19
>54	1	--	5.5
<u>M</u>	33	34	38
Experience:			
<1	1	--	0
1-5	39	--	8
6-10	29	--	30
11-15	13	--	20
16-20	10	--	20
>20	8	--	22
<u>M</u>	8	10	15

APPENDIX H-CONTINUED

	Sultz (1980)	Linn (1976)	Goodyear (1986)
<hr/>			
Specialty of Practice:			
FNP	37	--	42
PNP	11	--	11
ANP	32	--	28
GNP	--	--	7
O/GYN	16*	--	12

* Incomplete frequencies reflect Psychiatric and Emergency nurse practitioners in this study.

Work Patterns:

Full time	90	--	73
Part time	15	--	24
Unemployed	10	--	3

Work Positions:* (Frequency)

Staff			
0	--	--	11
1-50	--	--	12
51-100	--	--	77
Administration			
0	--	--	74
1-50	--	--	20
51-100	--	--	6
Education			
0	--	--	68
1-50	--	--	24
51-100	--	--	8
Research			
0	--	--	89
1-50	--	--	10
51-100	--	--	1

* Only data available are from the current investigation

APPENDIX H-CONTINUED

	Sultz (1980)	Linn (1976)	Goodyear (1986)
<hr/>			
Employment in specialty of preparation:			
The same	43	--	70
Not same	57	--	30

Setting of Employment:

Comm. Cl.	40	--	26
Fed. Cl.	--	--	8
Pvt. Practice	17	--	10
HMO/Group	4	--	23
Schools	10	--	21
Inhospital	16*	--	12

* Categories in this study were not classified in the same manner as the present investigation and therefore the frequencies do not equal 100%.

APPENDIX I

MBTI DESCRIPTORS

Descriptors for the personality preferences of judging and perceiving.

Extrovert/Introvert: E/I Index measures the complementary attitudes of orientations toward life.

Extrovert "E"

Attention is outward.
Concerned with people
and objects in the
environment.
Interest to act on
the environment.
Awareness of the
surroundings and
reliance on it for
stimulation and
guidance.
Action-oriented.
Impulsive, frankness.
Ease of communication.

Introvert "I"

Energy is drawn inward
from the environment.
Main interest rests in
concepts and ideas
within the individual.
Concerned with clarity
of ideas and endurance
as opposed to
transitory external
events.
Thoughtful, contempla-
tive, enjoys solitude
and privacy.

Sensing/Intuition: S/N are two kinds of perception and were described by Jung as the "irrational functions." These functions can be found when rational direction is absent and the individual is free to respond to events spontaneously. Brainstorming is an example of an "irrational function."

Sensing "S"

Use of observation.
Using the senses to
establish what exists.
Focus on the immediate
experience and as a
result are realistic,
practical, have acute
observation abilities,
and memory for detail.

Intuition "N"

The perception of
possibilities, meanings,
and relationships using
insight.
May present as a "hunch" or
creative discovery.
Allows for what goes beyond
the senses, and can be
identified as theoreti-
cal, future-oriented,
and abstract persons.

Thinking/Feeling: T/F are described as the rational functions and are used to bring life events into harmony or aligned with reason. This is a judging function.

Thinking "T"

Links ideas together via logical connections.
Uses cause and effect and tends to be impersonal.
Has analytic ability, objective approach, concern with principles of justice and fairness.
Critical, concern for time in linking past, present, and future.

Feeling "F"

Weighs relative values and merits of issue.
Rests on understanding of personal/group values.
Subjective focus.
Has an understanding of people, human versus technical focus.
Need for affiliation.
A capacity for warmth and a desire for harmony and preservation of values and past.

Judging/Perceiving: J/P were not explicit in Jung's theory but were developed by Myers and Briggs when the instrument to measure the personality types evolved. Two uses of this index are identified, (a) described identifiable attitudes and behaviors to the outside world and (b) used in conjunction with the E/I index to identify the individual's dominant function. Therefore, this index is operationalized through the functions of S/N and T/F.

Judging "J"

Concerned with making decisions, coming to conclusions, planning operations or organizing activities.
Logical or people-focused depending on T/F alignment.
Shuts off perception as soon as able to make a decision.
Organized, purposeful, decisive.

Perceiving "P"

Concerned with incoming information, either immediate realities or new possibilities.
Has an open attitude, curious and interested.
Spontaneous, adaptable, open to new events and change and misses nothing.