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DIFFERENCES IN TYPOLOGY AMONG NURSES AT DIFFERENT LEVELS OF MANAGEMENT IN ACUTE CARE INSTITUTIONS AS MEASURED BY THE MBTI

by

Catherine Marie DeVet

A Dissertation Submitted to the Faculty of The Graduate College in partial fulfillment of the requirements for the Degree of Doctor of Education Department of Educational Leadership

Western Michigan University Kalamazoo, Michigan August 1985

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DIFFERENCES IN TYPOLOGY AMONG NURSES AT DIFFERENT LEVELS OF MANAGEMENT IN ACUTE CARE INSTITUTIONS AS MEASURED BY THE MBTI

Catherine Marie DeVet, Ed.D.
Western Michigan University, 1985

This survey research study explored differences in personality types between staff nurses and nurse managers in acute care institutions (hospitals). The study tested a theory about expected differences which was based on an extensive literature review of nursing administration and type theory as developed by Jung and measured by the Myers-Briggs Type Indicator (MBTI).

Eight acute care institutions were selected randomly from hospitals listed by the American Hospital Association (1983) as having 400–600 beds and located in the state of Michigan but outside of Wayne County. Of the eight hospitals approached, permission to conduct the study was obtained in five. The sample for the study consisted of all female middle nurse managers, all female first-line nurse managers, and two randomly selected full-time female staff nurses from each clinical area in the institutions. The three groups comprised the levels of nurse management, the independent variable. The final sample consisted of 36 middle nurse managers, 97 first-line nurse managers, and 210 staff nurses.

Data on the dependent variable, the types of the individuals, were obtained using the Myers-Briggs Type Indicator. A second research instrument, the Personal Data Survey, was used to collect

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demographic information important in the interpretation of the re­search findings.

Analysis of the data collected resulted in the following conclu­sions:

1. Parts of the theory developed from the literature review were supported.

2. Staff nurses had a majority of sensing, feeling, and judging types, consistent with the expected tasks of the direct care giver.

3. More intuitive types, intuitive plus thinking types, and less sensing plus feeling types were in the composite group of nurse managers than the staff nurse group.

4. Middle nurse managers had more intuitives and perceptsives but fewer sensing plus feeling types than first-line nurse managers.
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Catherine Marie DeVet
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CHAPTER I

PROBLEM STATEMENT AND RATIONALE FOR THE STUDY

Acute care institutions (hospitals) are experiencing a myriad of social and technological forces which are causing substantial changes in their philosophy, scope, services, and the expertise expected of their administrative team. Historically, the scope of nursing administration has been limited to the daily clinical concerns of patient care units. In the modern hospital, however, nurse managers must assume a greater breadth and depth of responsibility. The purpose of this research study was to explore whether current nurse managers have the personality types that would be congruent with their role expectations. The study also addressed factors in the personality profiles of staff nurses which can be significant in successfully managing them. The findings of the research can be used to help build the effective administrative team necessary to meet the challenges faced by hospitals in the rapidly changing health care system.

Evolution of the Modern Hospital

Initially created as a physicians' workshop around 1900, the modern hospital is currently viewed as a multipurpose health care agency. The explosion of scientific and technical knowledge has resulted in the proliferation of specialties, departments, and professionals which interact on behalf of the client (patient) and must be coordinated to render both effective and efficient care (Ernst &
Whinney, 1982; Skillicorn, 1981). Control by regulatory, accrediting, and governmental agencies has placed major constraints on private hospitals as well as public institutions and added an important political dimension to the role of hospital administrators.

While the complexity of acute care institutions has been increasing as a result of these social and technological forces, the most significant factor in revolutionizing this industry has been the economic changes within the past few years. Historically, the Hill-Burton Act of 1947 and the Medicare legislation of 1965 stimulated the physical growth in the number and size of acute care institutions and the expansion of services to a larger population (Hamilton, 1984). Reimbursement for these services was retrospective and based on the number of charges rendered. This system rewarded high utilization of multiple services. Neither purchasers (patients) nor providers (physicians and hospitals) felt pressured to purchase or provide health care thoughtfully and prudently since the services rendered were paid by a third party, such as federal and state governments, Blue Cross/Blue Shield, and private insurance companies.

Hospital management, during this time, focused on the recruitment of physicians, especially specialists, and the proliferation of departments providing more services. Also, administration within acute care institutions limited itself to routine business management functions leaving program and quality control totally in the hands of physicians (Austin, 1974; R. Johnson, 1983). The major, and often only, criterion for pursuing expansion of facilities, equipment, or personnel was if it were deemed clinically necessary by a physician.
Beginning in the early 1970s, a shift in attitude began as the federal government became alarmed at the escalation of health care costs. Attempts to control the burgeoning health care industry by seeking voluntary cooperation of hospitals and physicians failed to constrain prices within the industry (Hamilton, 1984). Facing the certainty of bankruptcy in the Medicare system by the late 1980s, Congress passed legislation in the spring of 1983 that introduced a prospective system of reimbursement for Medicare patients. Systems of this type are currently expanding to other third party payers as well. In this reimbursement method, hospitals will be paid a flat fee for a particular patient stay or procedure.

Impact of Changes on Hospital Administration

Hospitals have become suddenly at risk to control their costs (Davis, 1983a). This economic reversal has thrust hospitals into a position of a new type of industrialization. The injection of market incentives, price competition, and profit maximizing behavior into health markets has mandated new and expanded roles for hospital administrators (Alpert, 1983).

To manage the increasing complexity of acute care institutions and assure their future financial viability will require a level of business and economic acumen among health care administrators commensurate with that of other competitive private enterprises. Skill in effectively managing human resources as well as the nonhuman resources will become more critical because the role and scope of responsibility of physicians and other health care professionals will
significantly change, creating new stresses in the system (Goldsmith, 1983; Hamilton, 1984; R. Johnson, 1983; Olsen, 1984). To meet the economic, political, personnel, and technical challenges with which it is faced, hospital administration must also foster a cooperative team effort at all levels of the organization (Austin, 1974; McNerney, 1976; Mershon, 1983). Department managers within the institution, who have operated in isolation and independently of one another, must coordinate their efforts and work cooperatively.

The Role of the Nurse Manager in Modern Hospitals

A key department whose managers will play a significant role in this process is nursing services. Nursing personnel comprise over half the personnel in the acute care setting and 30% or more of the institution's budget. Nurses are the only professionals who are responsible for patient care 24 hours a day, 7 days a week. Nurses affect and are affected by most, if not all, inpatient departments (Hamilton, 1984; Joseph, Shannon, & Svendson, 1983).

Nursing As an Emerging Profession

While the current evolution of the modern hospital has been unfolding, nursing, as an emerging profession, has been striving to cope with multiple stresses of its own. It has tried to establish its definition, knowledge base, and distinct service to consumers in the health care industry. Since over 60% of practicing nurses are in acute care settings, this struggle has impacted the role of nursing in the hospital.
Historically, the health care industry has evolved to one of the largest industries in the United States. Although the majority of health care workers are women and nurses, the dominance of physicians and nonnurse hospital administrators over nursing directors and staff has fostered a passive, handmaiden role for the department of nursing in many hospitals (Grissum & Spengler, 1976; Marks, 1980; Nyberg, 1982). Nurse managers, until recently, have had no control over budgets for their departments and standards of patient care have been set "by bureaucrats and nurses under physician-dominated state agencies" (Toth, 1984, p. 198).

While nurses are expected to assume increasing responsibility and accountability for the care patients receive, the authority needed to do so has often been withheld. Dissatisfaction and turnover of nurses in the acute care setting have been associated with multiple factors. These include the lack of autonomy and professional recognition, poor relationships with physicians, and poor leadership by nurse managers at all levels in the organization (Araujo, 1980; McCloskey, 1974; Wandelt, Pierce, & Widdowson, 1981; Wold, 1981). The challenges facing acute care institutions and nursing as a profession mandate that these negative forces be reversed so that the nursing services provided within the organization are effective and efficient.

The Necessity for a Profile of Nurse Managers

In this time of rapid change and ambiguity, strong leadership from nurse managers is critical. As Nyberg (1982) stated, staff
nurses today are a conglomerate of "values, skills and abilities that can either compliment each other or cause great strife and hostility" (p. 692). However, selection and preparation of first-line nurse managers (head nurses or clinical unit nurse managers) and nurse middle managers (directors) have often been arbitrary, capricious, and focused on clinical expertise (del Bueno & Walker, 1984; Ertl, 1984). However, the necessity for effective nurse management is well documented in the literature (del Bueno & Walker, 1984; Feldman & Goldhaber, 1984; Hamilton, 1984; Olser, 1984).

While necessary qualities of nurse managers are well documented in the literature, little information seems available on profiles of current nurse managers, methods to identify them, traits they possess, and how they become competent (Hanson & Chater, 1983; McClure, 1979). Also, the necessity for or the existence of different profiles by level of nurse managers in the institution has not yet been determined.

Type Theory and Nurse Managers

Part of assessing an individual's managerial capability and potential style includes identifying and analyzing their personality characteristics (McGee, 1984; Stevens, 1981). Jung, a Swiss physician-psychologist, developed a theory by which this may be done called the Psychological Type Theory. This theory is based on Jung's belief that behavior that seems to be random is actually orderly, consistent, and caused by inherent basic differences in mental functioning (Jung, 1923/1971; Myers, 1962).
Attitudes and Functions of Type Theory

Jung (1923/1971) postulated that there are four basic psychological functions. Two of these, sensing and intuition, represent dichotomous ways of perception or becoming aware of oneself and the environment. The other two functions, thinking and feeling, are dichotomous methods of judgment or making decisions about what has been perceived. These functions occur in attitudes of either introversion or extroversion. While Jung theorized all humans have these attitudes and functions to some extent, he felt that one attitude and one function were more developed, complete, and preferred by the individual.

Differences in perception among individuals result in divergent interests, motivations, and knowledge of situations (McCaulley, 1978). Persons preferring sensing use their five senses actively to attend to facts, details, and actual experiences. Persons preferring intuition exhibit imagination, insight into complexities and abstractions, and are less interested in detail or reality as it currently exists. Differences in judgment affect the content and style of decision making in individuals. Persons preferring thinking judge perceptions objectively, impersonally, and analytically. Those preferring feeling judge perceptions subjectively, basing them on the values and feelings of themselves and others. Differences in the two attitudes reflect whether one's primary focus is outward toward the environment (extroversion) or inward toward the world of concepts and ideas (introversion) (Myers, 1962).
McCaulley (1978) reported a study on the Jungian types of a composite sample of 7,625 nursing students and 2,635 practicing nurses, 204 of which were classified as nursing administrators and consultants. While important insights into type for staff nurses and nurse managers can be gained from these results, substantial changes in nursing in the past 6 years raise questions about the validity of these results for current nurse populations. Also, gaps in the information on the samples used in the composite for the study limit the application of the results.

Problem Statement and Rationale for the Study

The purpose of this survey research study was to add to the knowledge of the characteristics of nurse managers and the staff nurses whom they manage. To do this, the study, using type theory, sought answers to the following research questions.

Research Questions 1 and 2

1. What is the psychological typology of staff nurses on in-patient clinical units in acute care institutions? Staff nurses in this study are registered nurses (RNs) who are giving direct patient care on an assigned clinical unit and are under the supervision of a head nurse. Registered nurses are graduates of either a two-year associate degree program (ADN), a three-year diploma program, or a baccalaureate program in nursing (BSN) and currently have a license from the state in which they are practicing.
2. Are these typologies different from the typologies for female registered nurses and typologies for nurses in a hospital work setting as reported by McCaulley (1978)?

Rationale for Research Questions 1 and 2

The basic unit of management in nursing in acute care institutions is the inpatient clinical unit. These may be variable in size, ranging from less than 10 beds to over 60 beds. Clinical units often segregate patients according to some criterion. For example, age segregation would include the nursery, pediatrics, and adult care units. Patients with medical and surgical conditions may be separated either by body system involved (cardiology, neurology, orthopedics, etc.), and disease process manifested (oncology), or the acuity of the patient (cardiac step-down unit, rehabilitation unit, intensive care unit).

Knowledge of the typology of staff nurses in hospitals can be essential for nurse administrators for several reasons. First, the population of staff nurses serves as a primary source from which future nurse administrators will be selected. Currently, the task of selection and development of head nurses is often overwhelming because of the inadequacy of available tools (Sheridan, DiJulio, Vivenzo, McGarth, & Cole, 1984). Knowledge of the typology of individual staff nurses can become a useful tool in this task because it assists administrators in assessing the special strengths and potential weaknesses of its candidates. In a more global sense, knowing the typology of staff nurses generally can give the nursing
profession important information on whether the types needed for leadership in the future are generally available.

Knowledge of the typology of staff nurses may be critical for nurse administrators to be effective managers. Changes that nurse managers may wish to implement may need to be modified and/or presented in a different manner so they are congruent with the typology of the staff. For example, two present trends in nursing in hospitals, primary nursing and decentralization of nursing administration and clinical units, present potential conflict for staff nurses. McCaulley (1978) reported that, of the 528 in a sample of nursing personnel who reported working in a hospital setting, 48% were sensing-feeling types. These types need social contact in their immediate work groups and both primary nursing and decentralization may disrupt groups which have formed on clinical units which were more functionally and structurally centralized in the past.

Different typologies have different goals, hence different motivations and different meaningful rewards. Therefore, knowledge of typology can facilitate the creation of a work environment and rewards system by management which is so extensively discussed in the literature as critical to productivity, job performance, and job satisfaction (McCaulley, 1975, 1978; Myers, 1962).

Research Questions 3 and 4

3. Is there a difference between the psychological typologies of staff nurses and nurse managers in acute care settings? If there are differences, are they related to a specific level of nurse
management in the institution?

4. Is there a difference between the psychological typologies of first-line nurse managers (head nurses) and middle nurse managers (directors) in acute care settings?

Rationale for Research Questions 3 and 4

The identification of the type profiles of individual nurse managers or groups of nurse managers can yield useful information as to how they will tend to exhibit the conceptual abilities and skills necessary for successful management and team building. It can also help identify whether working relationships between staff and managers, and among managers at different levels in the organization, will be facilitated or handicapped. Compatibility among types is likely to result in better communication. Type differences, because they yield differences in interests, values, and problem-solving techniques, are likely to result in clashes (Myers, 1962).

Understanding this phenomenon among a group of interdependent nurse managers and staff nurses is crucial for several reasons. First, these differences can be very useful in any team effort because what one type of person is going to overlook, the other type will see and vice versa. Problem solving and decision making are enhanced. McCaulley (1978) reported that in two pilot projects, the predictions made for each team based on knowledge of type were affirmed as true by the team members. No quantitative analysis of the study was done but McCaulley felt her results supported more rigorous and systematic testing.
A second reason for needing this knowledge is that insight as to why conflict occurs and the utility of courting views other than one's own can facilitate cooperation among individuals so mutual goals and objectives can be achieved. Doering (1972) reported on a case study of a team of engineers in an industrial setting which was formed to concentrate on special projects involving technology in a specific area in which they all had expertise. He found that during team meetings persons of identical type communicated effectively but conflict occurred among types varying on two or more aspects of type. The conflict became so intense that one member eventually transferred to another position. This type of intragroup conflict could be detrimental for nursing in its struggle for professional status and recognition among consumers and other health care professionals.

A third point is that certain types have been associated with particular skills, occupations, and aptitudes. Knowing typologies of individuals and groups can help identify if the perceptual and judgment functions available are those most compatible with the demands of the situation. If they are not, other types may be recruited and/or the special educational experiences and supports needed by the existing individual or group to do the task can be planned.

Assessment and analysis of any profiles of nurse managers are not widely discussed in current popular nursing journals. While the need for effective management and the critical qualities of nurse administrators in hospitals are well identified, "pictures" of persons currently in nurse management positions are lacking.
Assumptions in the Study

A major assumption underlying this study is that hospitals are rational in their selection of nurse managers from the population available. As Etzioni (1964) stated, "Selection is based on the qualities of the participants" (p. 70) and employs formal mechanisms as "examinations, psychological tests, probation periods" (p. 69). In reality, personnel selection may not be objective due to constant pressures that encourage individuals to follow norms other than those set by the organization. However, despite this limitation, one can assume that bureaucratic institutions such as hospitals tend to be highly selective in their recruitment of personnel and this selection, on the whole, is based on a rational process (Etzioni, 1964). This process would attempt to discern the candidate whose knowledge, experience, interest, values, and capabilities are best suited for the position.

A second major assumption is that nursing at the staff nurse level and within the administration structure in acute care settings has changed in the directions depicted in the literature and at the rate necessary for this change to be measured. For example, the impact of the movement toward increased academic preparation and professional status at all levels in nursing in the hospital will be evident in the nurses at those levels. The characteristics and qualities of staff nurses and nurse managers that are considered essential for effective functioning in the complex environment of the
hospital have had sufficient time to manifest themselves in the persons currently within the organization's structure.

Rationale for Use of Type Theory in Study

Support for the validity and use of Jungian typology as a means of understanding and developing a knowledge base for nursing administration can be found in the literature. In certain instances, different Jungian types were inadvertently described by an author as he/she described profiles and characteristics needed or found in nurse managers (Cochran, 1982; LeBreton, 1982; Nyberg, 1982, Stevens, 1981, Traska, 1982). Other authors specifically describe types based on Jung's (1923/1971) theory who are found in other professions within health care or other industries and match those types needed in nursing management (Hellriegel & Slocum, 1975; Kerin & Slocum, 1981; Kilmann & Mitroff, 1976; Lawrence, 1982). McCaulley (1978) reported that differences in types existed between typologies of staff nurses and nursing administrators and consultants. Most of these differences were in the direction hypothesized based on type theory and these differences held the potential for conflict or synergism among the groups studied.

Outline of the Dissertation

In the next chapter Jung's (1923/1971) type theory and the development, reliability, validity, and use of the Myers-Briggs Type Indicator, an instrument produced to ascertain the typology of individuals are described. A description of the modern hospital and the
nursing profession and the implications for nurse managers are covered in Chapter III. Also explored is the applicability of type theory to select models related to the qualities needed in nurse managers. Hypotheses appropriate to each research question in this chapter are developed based on this literature review. In Chapter IV the proposed methodology for this survey research including a description of sample, research instrument, and procedure is outlined. A report of the research findings and their analysis are discussed in Chapter V and the conclusions and recommendations derived from them are covered in Chapter VI. Appendices are included for reporting additional pertinent information.
CHAPTER II

A REVIEW OF THE LITERATURE ON TYPE THEORY AND
THE MYERS-BRIGGS TYPE INDICATOR

The purpose of this chapter is to give an overview of Jung's theory of typology and review the development of the Myers-Briggs Type Indicator (MBTI), its relationship to Jungian typology, its validity and reliability, and the rationale for its use in this research study.

Jungian Typology

In the early 1920s, Jung published his theory on psychological types, a personality theory in which he proposed that variation in human behavior which appeared random was actually orderly and the differences observed were caused by certain basic differences in mental functioning (Jung, 1923/1971; Myers, 1962). Jung postulated there were two attitudes which he termed extroversion (E) and introversion (I). Within these two attitudes were four psychological functions: sensing (S), intuition (N), thinking (T), and feeling (F). Jung felt all individuals were capable of using both attitudes and all four functions; in fact, he viewed this capability as necessary for mental wholeness and health (Stedall, 1972c). However, in normal development, an individual would use, practice, perfect, and mature the attitude and functions to which he/she had a natural, possibly inborn, disposition (McCaulley, 1978; Myers, 1962).
The basic differences in mental functioning involve the preferred way of using one's mind; namely, one's perception of the world and one's judgment of the perceptions made. "Perception" in this context means the processes by which one becomes aware of things, people, occurrences, and ideas; and judgment means the processes by which one comes to conclusions about what has been perceived. Therefore, perception and judgment constitute a large part of the total mental activity of a person and thus must determine a large part of his/her behavior. Perception determines what is "seen" in a situation and judgment determines what is to be done about it. Differences among people can then be anticipated and explained by the differences in their ways of perceiving and judging (Jung, 1923/1971; Myers, 1962).

The Functions of Perception

Jung postulated that there were basically two ways to perceive, sensation or intuition. Individuals are capable of using both of these functions but they prefer one over the other, practice it, use it more often, and trust it more implicitly. The sensing (S) type becomes aware primarily through the acute use of his/her five senses. He/she wants and trusts facts and attends to detail. He/she is firmly grounded in reality and believes in experience, both global and personal. This type characterizes "real" intelligence as soundness, accuracy, and common sense and values the development of one's usefulness (Keirsey & Bates, 1978; Lawrence, 1982; Myers, 1962).
The intuitive (N) type, while using his/her five senses, becomes aware by subjecting sensations to processing by the unconscious. Rather than perceiving the actuality of the situation, the intuitive type sees all the possibilities within it. These types are usually characterized by insight into complexity and ability to deal with abstract and theoretical relationships, and have the capability to see into future, often creative possibilities. "Real intelligence" for them is characterized by gaining insights into complex situations and they value the development and use of imagination (Jung, 1923/1971; Keirsey & Bates, 1978; Lawrence, 1982).

Individuals, by a natural sequence of events, practice, develop, and become "adult" in one of the two perception functions while the other function remains "childish." As individuals follow one or the other of these divergent paths, each type acquires surface traits which are based on their preference but which differ significantly from the opposite type (Myers, 1962). In fact, Keirsey and Bates (1978) believed that differences in sensation and intuition are the source of most "miscommunication, misunderstanding, vilification, defamation and denigration. This difference places the widest gulf between people" (p. 17).

The Functions of Judgment

Jung (1923/1971) postulated that there were two ways one might judge or make decisions about what one perceived, thinking (T) or feeling (F). Although a person is capable of using both judging functions, he/she would be naturally disposed to prefer one over the
other. This preferred mode would be practiced and more trusted than the alternate mode. Thinking types, according to Jung, judge situations in a logical, impersonal manner. They tend to have good powers of analysis and the ability to weigh facts objectively.

Feeling (F) types also judge perceptions but their judgment is based on subjectivity and their personal values or that of others. Individuals with this type usually are good at understanding people, desire harmony and affiliation with others, and demonstrate warmth and compassion (Keirsey & Bates, 1978; Lawrence, 1982; Myers, 1962).

As with the perceptual function, individuals mature in one of the two judging functions by its frequent and preferred use while its opposite remains less developed and immature. Even if two persons use the same perceptual function, they can diverge in their judging functions. Divergent paths in the preferred manner of judging results in different traits and behaviors (Myers, 1962). The potential for conflict between thinking and feeling types may not be as great as between sensing and intuitive types. The thinking function is developed in feeling types in the Western school system and the rationality and scientific method approach used by thinking types is valued in the Western world. Therefore, feeling types may be more likely to understand and value thinking types and thinking types may not perceive a great difference between themselves and feeling types if the thinking function in the latter has been developed sufficiently through school (Hellriegel & Slocum, 1975; Keirsey & Bates, 1978).
The functions of perception and judgment are entirely independent of one another. Therefore, either kind of perception may be paired with either kind of judgment resulting in four possible pairs. These are:

1. Sensing with thinking (ST)
2. Sensing with feeling (SF)
3. Intuition with thinking (NT)
4. Intuition with feeling (NF)

The interaction resulting from these combinations of how one perceives and how one judges the perceptions manifests itself in differing attitudes, interests, behaviors, values, habits of the mind, and surface traits. Individuals who have both functions in common are likely to understand each other and communicate well because their "world" is similar. Individuals sharing one of the two functions may exhibit less understanding of one another and more differences and conflicts but will also have similarities related to the shared function. Persons who differ on both preferences have the greatest likelihood for conflict, misunderstanding, and miscommunication because they are using opposing perceptions and opposing judgments. Conflicts such as these may be unimportant if the persons involved are mere acquaintances. However, if they are colleagues, supervisor-subordinate, close associates, or members of the same family, constant strain can develop. Myers (1962) felt that understanding the
basis of these differences could help resolve these conflicts and promote mutual respect among types.

Sensing With Thinking (ST)

Persons with this type are mainly interested in perceiving by using their five senses acutely. They seek out facts and real experiences and make decisions about them using objective, logical analysis. These persons gravitate to law, surgery, economics, business, accounting, production, and areas requiring the manipulation of machines and materials (Myers, 1962).

Sensing With Feeling (SF)

Individuals with this type also use the real world with observable facts and concrete experiences as a base of perception. However, they judge the worthiness of these perceptions subjectively in light of their personal values and feelings and those of others. The personalities of SF individuals are usually friendly and sociable and they tend to gravitate to occupations such as sale of tangibles, teaching (especially at the elementary level), nursing, social work, pediatrics, and "service-with-a-smile" jobs (Myers, 1962).

Intuition With Thinking (NT)

Individuals using intuition for perception tend to see all the possibilities of the situation although they may miss details that the sensing person would note and value. When intuition is teamed with thinking, an ingenious intellectual emerges who strives to
understand, control, predict, and explain realities, especially in nature. These types gravitate to occupations involving research, usually in a specific field, and then vigorously pursue competence in that field. They are found in larger numbers in science, technology, research and development groups, engineering, philosophy, mathematics, criminology, and securities analysis. They also tend to be the pioneers in technical and administrative areas (Keirsey & Bates, 1978; Myers, 1962).

**Intuition With Feeling (NF)**

As with the NT, this type, in using intuition as the preferred manner of perception, centers attention upon new possibilities such as new projects or new truths, things or knowledge not yet known but discoverable in the future. Sensations are filtered through the unconscious of the intuitive and reemerge into the conscious in the form of an inspiration. The person who judges these inspirations using feelings in Jungian terms tends to be enthusiastic as well as insightful, verbally competent, and have their best chances of success and satisfaction in occupations dealing with possibilities concerning people. They tend to gravitate toward teaching (especially secondary and college levels), preaching, the ministry, clinical psychology, counseling, writing, and many fields of research. Persons of this type strive toward development of their "true" self and assisting others to that goal as well (Keirsey & Bates, 1978; Myers, 1962).
The Two Jungian Attitudes

Jung (1923/1971) postulated two orientations to life which he felt were both valuable and needed by individuals for mental health and balance in their personality. He called these orientations "attitudes" and named them extroversion and introversion. However, as with the functions, Jung postulated individuals naturally preferred one orientation over the other, used it, developed it, and trusted it.

The extrovert is oriented by the "object" in the environment so that decisions and actions are determined by objective conditions rather than subjective (self-oriented) views. An extrovert thinks, feels, acts, and lives in a way correlated with objective (environmental) conditions and their demands (Jung, 1923/1971). Extroverts tend to focus on and scan the environment. They tend to create a life of action, social contacts, and a wide range of acquaintanceships. Their interests are directed outward, to the world of actions, people, and things (Hellriegel & Slocum, 1975; Lawrence, 1982; Myers, 1962). Managers who are extroverts like variety and action, tend to communicate well, and are often impatient with long, slow jobs.

Introverts, according to Jung (1923/1971), base perception and judgment in terms of self rather than the external world. While extroverts tend to interpret an introverted orientation as egocentric and egotistical, Jung argued that this narrow perspective was a weakness in the Western mind. Jung felt that a subjective orientation was equally important and as defensible as an objective
orientation. The subject (self) in Jung's theory was broader than a single person's conscious self and referred more to a condition in which perception and judgment were based on the collective of humanity which Jung felt existed in us all.

Myers's (1962) explanation of introversion as an orientation in which the person's main interests are directed toward the inner world of concepts and ideas is perhaps more understandable, albeit simpler, than Jung's (1923/1971) explanation. Introverts tend to do their best in their inner world of reflection and tend to be more complicated and exhibit more depth in the directions they take. Managers who are introverts usually need quiet to be most productive and like to work alone without interruption (Hellriegel & Slocum, 1975).

Each pair of perception and judgment functions may exist in the extroverted or introverted orientation. The preferred orientation of the individual affects the manner in which the characteristics, interests, and traits of the particular perception-judgment pair are expressed (Myers, 1962).

Dominant/Auxiliary Processes

Jung (1923/1971) theorized that individuals, in their preferred extrovert or introvert orientation, would have one of their two preferred functions, either perception (P) or judgment (J), dominate. The remaining preferred function would serve as an auxiliary function, to be used as a supplement for the dominant function and in situations where the dominant function would be insufficient. The dominant process in extroverts would be readily apparent to others.
since it would be outwardly directed. The best abilities of extroverts, therefore, are easily identifiable. The dominant process in introverts would be inwardly directed and may be apparent only to an astute or close few.

The auxiliary process, according to Jung (1923/1971), assumed the opposite orientation to the dominant one in order to maintain balance in the personality. Therefore, an EST whose judging function was dominant would be balanced with an auxiliary sensing function which would be introverted. For an IST type whose judging function was dominant, the thinking would be introverted and hidden from casual observation. What would be readily apparent to the world about this introverted type would be the extroverted auxiliary function, in this instance, sensing. In other words, what the world usually sees in introverts is their auxiliary process. To tap the major strengths of the introvert, one must probe deeper than the surface.

The dominant process is used, trusted, practiced, and enjoyed by the individual more than any of the other processes (functions). This phenomenon results in traits, behavior patterns, and values in the individual which may be independent of the E-I orientation, S-N, and T-F functions, and adds to the fundamental differences among types. Those who prefer perception "shut out" judgment for the time being to assure that any new data, sensations, or inspirations are not missed. Those who prefer judgment "shut off" perception in order to come to some conclusion. Once the decision is made to judge,
other data, sensations, and inspirations become irrelevant (Myers, 1962).

The Myers-Briggs Type Indicator (MBTI)

The Myers-Briggs Type Indicator (MBTI) is a self-report inventory developed by Briggs-Myers and Briggs over a 20-year period. It was first published in 1962 for research purposes by the Educational Testing Service. In 1975, Consulting Psychologists Press decided that sufficient research on the MBTI had substantiated its appropriateness for professional use by psychologists, educators, and other qualified persons, and assumed the task of publishing and distributing it. The purpose of the MBTI is to implement Jung's theory of type so that individual preferences for perception and judgment could be ascertained and the effects of these preferences could be researched and put to practical use (McCaulley, 1981; Myers, 1962; Webb, 1964).

The instrument currently exists in two forms, Form F and Form G. The main differences between the two forms is their length: Form F has 166 items; Form G has 126 items due to the omission of the research items found in Form F (McCaulley, 1981). Both contain phrase questions and word pairs requiring a forced choice response. Each question or word pair tests for an individual's preference for one of four independent indices (scales). The first three are directly derived from Jung's theory of typology: extroversion-introversion (E-I), sensing-intuition (S-N), and thinking-feeling (T-F). The fourth scale, judgment-perception (J-P), was devised by
Myers (1962) to determine which of these two processes was used by an individual as "a way of life, a method of dealing with the surrounding world" (p. 58). The items in the instrument reflect seemingly inconsequential, everyday attitudes and behaviors because Myers felt they would more likely reflect the person's true preferences. Myers devised the forced choice format for the responses because she felt the preferences for E-I, S-N, T-F, and J-P were independent of one another and reflected an habitual choice between opposites, not a set of traits that could be scaled along a continuum. Therefore, each item on the instrument represents one of the four scales, responses reflect a preference for one or the other of the attitude or function being tested, and no item compares across dimensions.

The responses to the items on the MBTI are weighted 2, 1, or 0 to control for the effect of omitted answers, the social desirability of a particular answer, and the efficiency of each answer to predict the total scale. After completion of the instrument by the individual, the points for the attitude or function in a dichotomy are summed separately and the one having the greater score is the reported preference. The strength of the reported preference can be obtained by transforming the difference between the two point totals using a table devised by Myers (1962) to eliminate zero scores. The same keys for scoring can be used for all subjects except for the T-F scale in which there is a different key for males and females based on different item weights.

Myers (1962) considered the conversion of raw scores to the letters that correctly reflected an individual's true type as the
most important outcome of the MBTI. To this end, through research study and analysis, she focused on the correct identification of the midpoint of each index so that a person making equal or nearly equal choices for each pole would have the best chance to be assigned his/her true preference.

While Myers (1962) stressed that the scale scores of the MBTI are merely interim data to be used to determine the dichotomies, she also recognized the need for continuous scores for research purposes. Therefore, she devised a method for converting preference scores to continuous scores. The preference scores for E, S, T, and J are subtracted from 100 and the preference scores for I, N, F, and P are added to 100. Myers recommended extreme caution in any quantitative interpretation of the results of the instrument. Her concern is echoed by Carlyn (1977) who found that frequency distributions of continuous scores varied considerably among different samples. She recommended that any researcher using these scores should display the frequency distribution of a particular sample for more accurate interpretation of the findings.

The MBTI reports the 16 types that can result from all combinations of the four indices. These combinations are reported in a standard format as depicted in Figure 1. An individual's type is obtained by combining the letters of the preference scores for each of the four indices. The first letter depicts the dominant attitude, E or I, the next letter the preferred mode of perception (S or N) followed by the letter indicating the preferred mode of judging (T or F). The last letter, J or P, reflects the preferred method of
THE LOCATION OF THE 16 PREFERENCE TYPES ON THE TYPE TABLE

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<th>ISTJ</th>
<th>ISFJ</th>
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EXTRAVERSION-INTROVERSION

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SENSING-INTUITION

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THINKING-FEELING

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JUDGMENT-PERCEPTION

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Figure 1. Standard Type Table Format.
(Reproduced by special permission of the Center for Applications of Psychological Type)
dealing with the environment and would indicate the dominant process in the extrovert and the auxiliary process in the introvert.

A basic tenet of type theory is that the different preferences interact. "Each of the dichotomies modifies the effects of others in predictable ways" (McCaulley, 1981, p. 314). To assist in this interpretation, Myers (1962) wrote capsule summaries for each type in the type table as a basis for explaining similarities and differences among types as well as their respective strengths and weaknesses (see Figure 2). The type table was arranged to facilitate these comparisons since each type shares three of the four preferences with all adjacent types.

**Reliability**

Reliability of the MBTI can be difficult to ascertain for several reasons. Individuals who are immature in type may be unable to discriminate choices sufficiently to be typed accurately. Or those with highly developed states can cloud the picture with compensations and integrations (Brawer & Spiegelman, 1964). Answers to items may vary if one is in a crisis or life change—that type reported may reflect one's current focus rather than more enduring patterns of attitudes, values, interests, and behaviors. Deliberate falsification of items by the individual or falsification of true preferences due to family and cultural pressures can occur. The instrument itself has limitations of the extent to which it can accurately test dimensions of a very complex theory (McCaulley, 1981). As Myers (1962) stated, "The experimenter is faced with the question of how
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Figure 2. Descriptions of the 16 Types.
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much any given result is the reliability of the Indicator and how much is the reliability of the person taking it" (p. 19).

Myers (1962) felt that immaturity of type development would be the greatest hindrance in establishing the reliability of the MBTI. She felt that item statistics would be the least desirable method for determining reliability. In such instances one would be unable to determine to what extent an individual's response was a result of random selection because their type was insufficiently developed to govern their responses. Myers recommended that "retests, at different ages, over different time intervals, and with samples of different caliber, would contribute valuable information as to the stability of preferences" (p. 19). Carlyn (1977) echoed this sentiment. She felt internal consistency studies on the MBTI have usually produced acceptable reliability for both continuous and dichotomous scores but more longitudinal research is needed in this area.

Reliability of the MBTI has thus far been based on studies of internal consistency and test-retest reliabilities of separate scales and type classifications. Myers (1962) used the Spearman-Brown prophecy formula to obtain correlations for split halves of the instrument in various groups of high school and college students. Correlation coefficients for E-I scale ranged from 0.77-0.87; for the S-N scale from 0.70-0.87; 0.44-0.86 for the T-F scale; and 0.71-0.94 for the J-P scale. The coefficient of 0.44 for the T-F scale was for a group of underachieving eighth graders. When their result is eliminated, the range of the coefficients becomes 0.60-0.86. Myers felt these results were credible for a self-report instrument. She
conjectured that low reliabilities for the T-F scale were because that function took the longest to mature.

Stricker and Ross (1963), in their study of the internal consistency reliability of continuous scores, used a coefficient alpha and reported coefficients in the 0.70s and 0.80s with the lowest coefficients for the T-F scale, 0.64-0.74. They concluded that the reliability of the continuous scores on the MBTI is about the same as the 16 Personality Factor Test (16PF) by Cantrell and the Minnesota Multiphasic Personality Inventory (MMPI). Webb (1964) reported similar results using a split-half reliability study in college students. For the E-I, S-N, and J-P scales, he reported correlation coefficients of 0.81-0.85. The coefficient for the T-F scale for males was 0.78 and 0.69 in females. McCaulley (1978), in a comprehensive monograph on the application of the MBTI in the health professions, reported internal consistency reliability estimates for a number of populations which echo those already stated (see p. 34). Mendelson (1965), in a review of the MBTI, concluded that reported reliabilities were about the same as those for other self-report instruments.

Carskadon (1977) studied the reliability of continuous scores of the MBTI using a test-retest methodology with college students. Form F of the instrument was completed by the 64 males and 70 females twice with a 7-week interval between each reporting. Correlation coefficients ranged from 0.73-0.87 except for the males in the T-F scale whose coefficient was 0.56.
Although the consistency of the MBTI individual scales are important, of greater concern is the reliability in type classification since the accuracy of typing is the major purpose of the MBTI. Myers (1962) used a tetrachoric $r$ combined with the Spearman-Brown prophecy formula to compute correlations of type classifications. She defended using this statistic rather than using Guttman's lower bound estimate procedures because the answers in the MBTI are not categorical in nature plus the statistic used must be sensitive to scores near a cutting point. Split-half reliabilities for type categories computed by Myers on a variety of samples of high school and college students were 0.74-0.88 for E-I; 0.77-0.87 for S-N; for T-F, 0.66-0.90; and for J-P, 0.76-0.93. McCaulley (1978), combining the results of four researchers, reported that from 70-88% of all the cases in the samples had three or all four preferences in common on retest. Stricker and Ross (1963), using a Guttman's lower bound reliability estimate, reported reliabilities for type classification in the 0.40-0.50 range. However, they indicated the difference between their results and those of others were due to differences in reliability estimation procedures, samples, and versions of the MBTI used.

In summary, the reliability of the continuous scores and type classifications of the MBTI have been satisfactorily established by numerous studies. Changes in type classification from test to retest are usually in one letter, if at all. The T-F scale appears to be least stable but this, according to Myers (1962), is most likely
caused by immaturity in the function rather than unreliability in the instrument.

Validity

The subject of the validity of an instrument is complex and controversial (Kerlinger, 1973). Validity measures concerned with the validation of the constructs of Jung's (1923/1971) theory of type are the most meaningful and appropriate to the MBTI since the purpose of the instrument is to ascertain an individual's type (McCaulley, 1978). Kerlinger (1973) stated, "In a sense, any type of validation is construct validation" (p. 466). Construct validation of the MBTI has been through correlating the MBTI with other personality instruments (concurrent validity) and through predicting certain relationships with other variables (predictive validity).

Myers (1962) reported correlations between MBTI preference and five well-known psychological tests. Correlations between the MBTI and the Gray-Wheelwright Psychological Type Questionnaire, another instrument based on Jungian psychology, included 0.79 for E-I, 0.58 for S-N, and 0.60 for T-F. Comparison with the J-P scale was not possible since the Gray-Wheelwright questionnaire does not have a corresponding scale. Of 108 correlations between the MBTI and the Strong Vocational Interest Blank (SVIB), 103 were found significant beyond the .01 level. Myers stated all the correlations in this study were reasonable in light of type theory. Myers found types, especially the S-N and T-F indices, correlated in the predicted direction with values as measured by the Allport-Vernon-Lindzey Study.
of Values (AVL). Of the 24 correlations done, two-thirds were significant at the .01 level. Correlations done between continuous scores in the MBTI and needs as measured by the Edwards Personal Preferences Schedule (EPPS) were consistent with type theory. Of the 60 correlations, 24 were significant at the .01 level. In comparing the MBTI with the Personality Research Inventory (PRI), all 25 scales of the PRI correlated significantly with one or more type indices.

Myers (1962, pp. 21-27) reported correlations between the type indices and non-test variables such as faculty ratings of characteristics of students, turnover in different types of jobs, and creativity. In the manual (Myers, 1962) type classification was also related to three aspects of scholastic achievement; namely, aptitude, application, and interest (pp. 35-50).

Other studies corroborate Myers's (1962) findings. Bradway (1964) found a high congruence among the MBTI, Gray-Wheelwright questionnaire, and the self-typing of 28 practicing Jungian analysts, especially for the E-I index. Richelk and Bown (1968) found support for the E-I, S-N, and J-P indices when correlating it to the Bown Self-Report Inventory (SRI). Carlson (1980) supported the construct validity of the MBTI in a study in which judges were able to significantly classify subjects' written descriptions of emotional events and their type based on E-F and I-T combinations. The E-I, S-N, and T-F scales were found to correlate at a statistically significant level with a form describing Jungian types developed for the study by Cohen, Cohen, and Cross (1981). McCaulley (1981) summarized numerous studies reporting significant correlations in the predicted direction.
with career choices and academic measures.

Bruhn, Floyd, and Bunce (1978) attempted to use the MBTI to measure personality traits or attitude changes for successful applicants completing a 4-month program for pediatric nurse practitioners. If indeed the MBTI measures basic and possibly inborn preferences, the typology of the sample would be expected to remain the same. While some differences in type reporting did occur at the end of the 4-month program and at a follow-up 1 year later, the authors concluded the MBTI remained relatively stable and differences were mainly in one letter.

**Criticisms of MBTI**

While studies supporting the construct validity of the MBTI are numerous, several criticisms are worthy to note. Despite the fact that Myers (1962) hypothesized that the four different indices are independent of one another, several authors have found intercorrelations, specifically between the S-N and J-P scales and, in some instances, the T-F and J-P scales (Bruhn, Bunce, & Greaser, 1978; McCaulley, 1978; Myers, 1962; Stricker & Ross, 1963; Sundberg, 1965). Several authors support the usefulness of the MBTI for research and counseling, especially in interpreting its results in terms of empirical relationships, but question its assumed theoretical base (Coan, 1978; Mendelson, 1965; Stricker & Ross, 1964). They suggest the E-I index may actually measure extroversion along "social" extroverted lines as talkativeness, gregariousness, and sociability rather than Jung's (1923/1971) definition of "orientation to the object."
An "I" preference may reflect a facility with concepts and ideas but not necessarily an interest in them. Items related to intuition (N) may be narrowly confined to a tendency for abstraction, and feeling (F) may be represented on the instrument as a sentimental approach to life rather than reflecting Jung's description of it. In summary, research findings in these studies were consistent with the definitions of the indices as described by Myers (1962). However, there was empirical support for the alternative interpretation that the indices of the MBTI are strongly subject to influences outside the typology (Stricker & Ross, 1964).

Despite these limitations, reviews of the MBTI in The Sixth Mental Measurements Yearbook (Buros, 1965) and The Eighth Mental Measurements Yearbook (Buros, 1978) and numerous authors support further research and use of the MBTI. The accumulated evidence has established acceptable levels of reliability and validity and has supported the theoretical constructs on which it is based (Carlson, 1980; Carlyn, 1977). The instrument is easy to administer and has the potential to yield information on matters of significance as creativity, achievement, and success. Item content would be seen as nonthreatening to individuals taking it (Sundberg, 1965).

Applications of the MBTI

Current applications of the MBTI include: counseling tool for personal understanding and career planning; technique for improving educational practice by understanding type differences in teaching and learning; a device for working with families to improve
interpersonal interactions; and a device for working with groups to improve communications, leadership, and teamwork (McCaulley, 1981). Myers (1962) suggested that the indicator could be useful for the appropriate selection and placement of persons in business and industry due to the correspondence of type characteristics to salient aspects of work roles. Administrators who were interested in establishing optimal educational, training, and work situations could use the knowledge of the typology of their employees to guide their efforts. Myers felt that team building and productive problem solving could result from an understanding of type differences among the individuals involved. Knowledge of type could help cut out irrelevant friction and promote mutual respect for the special contributions each type brought to the task at hand.

Studies of the personality traits of nurses and related health professionals, both students and practitioners, have been reported by a variety of authors using a variety of instruments. The Strong Vocational Interest Blank (SVIB), Omnibus Personality Inventory, 16 Personality Factor Questionnaire (16PF), Rotter's Internal-External Locus of Control, Budner's Intolerance of Ambiguity Scale, California Personality Inventory (CPI), and Fundamental Interpersonal Relations Orientation (FIRO), as well as the MBTI, have been the most common ones used (Bruhn, Bunce, & Greaser, 1978; Bruhn et al., 1980; Buhmeyer & Johnson, 1977, 1978; O'Hara, Devereaux, Brown, Mentink, & Morgan, 1978; Wittmeyer, Camiscioni, & Purdy, 1971; White, 1975). Hanson and Chater (1983) used Holland's Vocational Preference Inventory (VPI) to study personality attributes of 122 female registered
nurses in a master's in nursing program who were divided into a management-oriented group and a non-management-oriented group based on their scores on the Strong Campbell Interest Survey (SCII).

While each of the instruments cited offers a different picture of personality traits, both similar and dissimilar among various samples, the breadth of information that can be obtained from the MBTI and its affirmed validity and reliability establish it as the instrument of choice in this research study. Also, adding to the accumulated research available on nurses in which the MBTI has been used can serve as a basis against which future studies can be compared. The use of the same instrument in different research samples can be advantageous in building a solid empirical base of information because a major variable is controlled, namely, the measuring instrument.

Prior to focusing on the specific research available on leadership, management, nursing administration, and the MBTI, a brief description of the use of the MBTI in nursing, as reported in the literature, can serve to give an overview of its applications in this area thus far.

**The MBTI in Nursing Research**

The MBTI was used by several investigators to study what biographical, personality factors, and/or vocational interests were associated with family and pediatric nurse practitioners, specialized roles for nurses that emerged in the early to mid 1970s (Bruhn, Floyd, & Bunce, 1978; Bruhn et al., 1980; O'Hara et al., 1978). In a

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study at Ohio State University, certain indices of the MBTI, in combination with other factors, were found to be predictive of attri-
tion, grade point average, and state board examinations for 119 student nurses matriculated into the nursing program in their sopho-
more year in 1966 (Wittmeyer et al., 1971). Reekie (1970) reported that feeling, intuition, and introversion on the MBTI correlated positively with the clinical performance ratings given senior nurses and new graduates by instructors and nursing supervisors. The sub-
jects were 169 volunteers from six baccalaureate schools of nursing who were followed from their senior year at college to up to one year post graduation. A meaningful difference in type was found between nurses and medical staff on different shifts in a volunteer sample of 34 nurses on day shift and 36 nurses on night shift at a large metropolitan hospital in southern California (R. Murphy, 1975).
There were more introverts found on the night shift and a greater number of extroverts found on the day shift.

The most extensive report of research findings associated with use of the MBTI in samples of student nurses and practicing nurses is by McCaulley (1978) in a comprehensive monograph on the application of the MBTI to medicine and other health professions. A total of 10,260 individuals were included in the sample of nurses. Of these, 7,625 were student nurses and 2,635 were practicing nurses. This sample was a composite of samples submitted by various researchers to the data bank at the Center for Applications of Psychological Type (CAPT), a nonprofit organization established in 1975 at the University of Florida for the purposes of providing education, research,
and services to MBTI users. Of the 7,226 students for which level of education was known, 70 were in programs for licensed practical nurses (LPN); 1,345 were in two-year associate degree programs (ADN); 3,171 were from Myers's sample of diploma nurses from 1964-65; 2,074 were in baccalaureate nursing programs (BSN); and 566 were in graduate programs in nursing. The nurse practitioners reported were classified in the following manner: 2,351 were registered nurses (RN); 113 were licensed practical nurses (LPN); and 171 were nursing assistants.

The typologies for the student populations, nurses in the hospital setting, administrators and consultants, and nurse educators will be covered in the next chapter. Other nurse practitioner groups reported which appeared to be outside acute care settings included a sample of 60 nurses specializing in maternal-child health, a sample of 79 nurses practicing in psychiatric settings, and 95 nurses practicing in a public health setting or school. In each of these samples more intuitive types were found than would be expected when compared with the entire sample of 2,635 practicing nurses.

Summary

This chapter gave an overview of Jung's (1923/1971) theory of typology, reviewed the development of the Myers-Briggs Type Indicator (MBTI), its relationship to Jungian typology, its validity and reliability, rationale for its use in this research study, and the use of the MBTI in samples of student nurses and practicing nurses in work settings other than the acute care setting.
Jung (1923/1971) proposed that variation in human behavior that appeared random is actually orderly and the differences observed are caused by certain basic differences in mental functioning. Jung postulated there are two attitudes which he termed extroversion and introversion. Within these two attitudes are four functions, two related to one's perception and two related to one's judgment of the perceptions. The perception functions are sensing (S) and intuition (N); the judgment functions are thinking (T) and feeling (F). The individual, possibly due to an inborn tendency, tends to prefer, trust, use, and mature one of the two attitudes and one of the two functions in perception and judgment. These preferences result in different values, interests, and behaviors among individuals.

The Myers-Briggs Type Indicator is a self-report instrument first published in 1962 and currently published and distributed by Consulting Psychologists Press which seeks to operationalize Jung's (1923/1971) theory for accurately ascertaining an individual's type. The MBTI, described in detail in this chapter, after being subjected to extensive research, has been established by multiple authors as having satisfactory reliability and validity. The MBTI can yield useful information on a wide range of topics as creativity, motivation, problem-solving and decision-making approaches, team building, and work behaviors associated with different types. It is simple to administer and nontoxic and reports type in an easily understood table format which can be used for comparisons of individuals within and between samples. These characteristics of the MBTI, combined with its application to different nurse samples, support
its use for this research study.

The next chapter, the second part of the review of literature, examines the relationship of selected leadership models to type theory. It also examines research studies which have used the MBTI and type theory in studying nurses in acute care settings and managers in other types of settings.
CHAPTER III

A REVIEW OF LITERATURE ON ADMINISTRATION
IN NURSING AND TYPE THEORY

Peters (1982), in a speech highlighting aspects of his book, *In Search of Excellence*, emphasized that good management does make a difference in the productivity and success of an organization. Acute care institutions (hospitals), originally begun as a mechanism to concentrate the expensive technology needed by physicians for the accurate diagnosis and treatment of disease, have evolved to complex bureaucratic institutions requiring a high level of sophistication in management expertise in all members of the administrative team. Management, according to Hersey and Blanchard (1982), is "working with and through individuals and groups to accomplish organizational goals" (p. 3). They explained that management is "a special kind of leadership in which the achievement of organizational goals is paramount" (p. 3). Technical, human, and conceptual skills are needed at all levels of management to accomplish the managerial functions of planning, organizing, motivating, and controlling effectively and efficiently. This concept is the context in which the terms "management" and "administration" are used in this research study. Therefore, for a hospital, the "good" management of which Peters spoke is the use of appropriate technical, human, and conceptual skills in ways that effectively achieve the organizational goals through people.

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In Chapter I, research questions were proposed that would expand the present knowledge about nurse administrators and the staff nurses whom they manage by using type theory as developed by Jung (1923/1971). In Chapter II, Jung's theory of typology was explained as well as the Myers-Briggs Type Indicator (MBTI), a self-report instrument used to determine type. The validity, reliability, and use of the instrument in studies of health care professionals were also covered. In this chapter, type theory will be related to the concept of management just discussed, selected models in management, and to nursing administration. Research using type theory in management will be reviewed and related to each research question. Hypotheses, based on this discussion, will then be developed.

The Environment of the Nurse Manager

The acute care institutions in which nurse managers work are unique and complex, offering a rapidly changing and uncertain environment. To a greater extent than many other human service industries, hospitals must individualize their services to the client. This necessitates a labor and technology intensive organization which must be responsive to a wide range of emergency and uncertain outcomes. Heightened public awareness of the level of sophisticated therapies available make failure to meet these expectations a grave legal and financial risk.

Acute care institutions, being one of the most professional organizations in Western society, must successfully meet the criteria of a number of accrediting and regulatory agencies. Also they must
be responsive to the goals and needs of multiple professional groups whose commitment and loyalties focus primarily on their professional relationship with individual clients rather than the institution's mission of providing quality health care to a total patient population. Physicians, a professional group which significantly impacts the hospital in financial terms and intensity of utilization of services, are often independent practitioners and not under direct control of the institution (Austin, 1974; McNerney, 1976). Over 60% of hospitals in the United States are privately owned, yet public policy and governmental regulations impinge substantially on their activities daily (Ernst & Whinney, 1982). Expenditures for capital equipment, plans to expand services, and other major decisions must be submitted to external agencies for review and approval (Alpert, 1983; McNerney, 1976).

In addition to these factors which have been developing gradually over the past 10 years, hospitals have had to cope with the Medicare legislation passed in April 1983. Reimbursement for services is rapidly changing from a retrospective, cost-based system to a prospective payment system (Davis, 1983a). Historically, if physicians deemed a service, procedure, or technology necessary for quality care, it was a sufficient reason to purchase it. This narrow decision base, together with the lack of competitive market forces, a consumer group whose payment for services was from a third party, a shortage of physicians, and a payment system based on charges for services rather than actual costs permitted the survival of many inefficient institutions and discouraged aggressive and sophisticated
management by hospital administrators (Alpert, 1983).

However, with prospective pricing systems growing in popularity, hospitals must suddenly be concerned with maintaining market shares in an environment of declining inpatient days, overbedding, and a shift in the health delivery system to outpatient care and alternative systems of health care such as hospices and free standing emergicenters and surgicenters. They now need to be more innovative and aggressive in controlling costs, increasing efficiency, and taking calculated risks to maintain their economic bases (Alpert, 1983; Goldsmith, 1983; R. Johnson, 1983). For survival, acute care institutions must foster increased productivity. A critical key to achieving that is good management (Peters, 1982).

In summary, the environment of nurse managers in acute care institutions is one of complexity and uncertainty. Multiple forces—social, political, and economic—affect what daily decisions must be made and how they should be implemented to achieve maximum effectiveness and efficiency. Nurse administrators manage not only technical but also professional staff whose focus, goals, and priorities may be very divergent from those of the institution.

Evolution of the Staff Nurse Role

The move of health care into the hospital setting during the early to mid 1900s changed the role of the majority of nurses from one of an independent or community-based practitioner to a practitioner that was based in a bureaucratic organization controlled by medicine (Marks, 1980). The education of nurses became primarily
hospital-based. Nurses were socialized throughout their hospital education and work life to be passive, obedient, and subservient (Oparnica, 1978). However, the move of nursing education to the college and university setting over the past 20 years, the impact of the women's movement, plus the changes in the health care system and hospital industry have resulted in the potential emergence of nursing as a profession separate from medicine with independent, autonomous, and accountable practitioners (Stevens, 1979).

Trends in Nursing Education and Practice in Hospitals

Since 1965, the American Nurses Association (ANA), the professional association for registered nurses, and many of its state organizations have advanced the resolution to establish the baccalaureate degree in nursing (BSN) as the entry level for the status of professional nurse. A second level of nurse, the technical nurse, would act under the supervision of the professional nurse and would be a graduate of an associate degree program in nursing (ADN). This proposed change in the educational preparation of nurses has caused substantial controversy within nursing and between nursing and the hospital industry (Smith, 1977). However, hospital-based diploma nursing schools are currently dwindling and graduates at the baccalaureate and graduate levels in nursing are increasing (American Nurses Association, 1983).

The ideal of nursing as a full fledged, practicing profession in hospitals is not a current reality but is progressing. This is evidenced in several trends. Legislation in many states has
established nursing regimens and practice as independent from medicine. Standards of practice issued by professional organizations in nursing and regulations issued by accrediting agencies for hospitals mandate that nurses make nursing assessments, nursing diagnoses, and nursing judgments (Stevens, 1979). Primary nursing, a care delivery system becoming more popular in acute care institutions, establishes a specified nurse as accountable for the plan of care of a group of patients throughout their hospital stay. Relationships with physicians are changing from a hierarchical and authoritarian structure to egalitarian collaboration (Morgan & McCann, 1983).

Staff Nurses and Nursing Administration

Nurse administrators are clearly expected to facilitate a climate which promotes the practice of professional nursing (American Nurses Association, 1983; National Commission on Nursing, 1983). The failure to do this has resulted in nurse dissatisfaction on the job and high turnover (Hallas, 1980; McCloskey, 1974; Wandelt et al., 1981; Wold, 1981). Myers (1962) stated how knowledge of Jungian type could facilitate communication, understanding, and mutual respect among individuals who must work interdependently to achieve mutual goals. The knowledge of type of staff nurses, therefore, could be useful to nurse administrators in their creation and management of an environment conducive to the practice of nursing.
Typologies of Staff Nurses

Myers (1962) published research findings on multiple correlations between the MBTI indices and scales on other personality tests. Based on these findings, she surmised nursing would have an abundance of SF types who would focus their attention on facts which they would then handle with personal warmth. McCaulley (1978) reported the results of type research on a composite sample of 7,625 nursing students. In this composite there were 3,171 from diploma nursing schools; 1,345 from associate degree programs; 2,074 in baccalaureate nursing programs; and 566 in graduate level programs in nursing.

The composite sample of 7,625 students, when compared to a population of high school juniors and seniors of both sexes, were found to have significantly more extroverts and sensing, feeling, and judging types. This trend was identical when the nursing student sample was compared to a sample of college freshmen. Nursing student samples, who were in the higher levels of educational programs, showed an increase in intuitive and thinking types. At all levels, high numbers of feeling and judging types were found with an under-representation of perceivers.

McCaulley (1978), when comparing the student nurse sample to the sample of 2,635 practicing nurses, found that the latter group had significantly more introverts, thinking types, and judging types. In the sample of 2,635 practicing nurses, 2,351 were registered nurses, 113 licensed practical nurses, and 171 nursing assistants. The registered nurses, when compared to the other two segments of the
sample, were found to have less SF types. However, 528 nursing persons in the total sample, who identified themselves as working in a hospital setting, were found to have more SF and SJ types than the total sample of practicing nurses. Since the sample of nurse types in the hospital were not classified as to who were nursing assistants, licensed practical nurses, and registered nurses, it is difficult to formulate a definite picture of the typologies of staff nurses in acute care settings.

Despite the size of the nursing samples and the extensive analysis of their types by McCaulley (1978), research on the typologies for staff nurses currently practicing in hospitals is warranted. The distribution of the sample of student nurses among the different types of nursing programs in McCaulley's study is not representative of the distribution of the student population today. Since practicing nurses emerge from student populations, the typologies reported for nurses in the monograph may not be indicative of the current picture of practicing nurses. Also, McCaulley's study did not report the typologies of registered nurses in acute care settings as a distinctive group.

In summary, trends in nursing education and practice suggest that staff nurses in hospitals today may be different from those of 5 years ago. More nurses are pursuing a baccalaureate or graduate degree in nursing than at any time in the past. The increasing complexity of health care and the change of the delivery system of nursing care in acute care settings to a primary care system has accelerated the movement of nursing practice toward a profession.
Myers (1962) and McCaulley (1978) reported that intuitives are usually found in greater numbers in higher academic levels. Also, McCaulley found more thinking types in nurses with advanced education.

Hypotheses Related to Typologies of Staff Nurses

Research Question 2 addressed whether typologies of staff nurses would be different from the typologies of female registered nurses and those of nurses working in a hospital setting as reported by McCaulley (1978). Based on the information cited in the literature about trends in the staff nurse population, a difference is expected to be found when comparing the proportion of types in the type table of staff nurses in this study to either the proportion of those found in the type tables of female registered nurses or nurses working in a hospital setting. If the anticipated differences are found, additional analysis will be done on individual type comparisons to ascertain which ones contribute substantially to this difference. Staff nurses in this study are also expected to display greater proportions of the following type preferences (groupings) than nurses working in a hospital setting as reported by McCaulley (1978): N, T, NT, NJ, and TJ.

The information obtained by testing these hypotheses must be evaluated carefully. While McCaulley's (1978) study had the most comprehensive information found in the literature on the use of the MBTI with nursing groups, the two type tables used from her study are not representative of the sample in this study. The type table of

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the 807 female registered nurses in McCaulley's report were drawn from the total population of 840 nurse practitioners for whom sex was known. These female nurse practitioners were not necessarily working in acute care institutions and were comprised of staff nurses, nurse educators, and nurse managers. As already stated, the sample of 528 who reported their work setting as a hospital contained nursing assistants and licensed practical nurses, although the majority were registered nurses.

Evolution of Nursing Administration

The Head Nurse Role in the Past

Historically, management of the clinical unit has been delegated to a head nurse. The appointment of this person was ordinarily based on their seniority (Toth, 1984). With the rapid turnover that has been experienced in nursing until recently, this individual often had been practicing for only a few years at best, often was a female in her early 20s, and a graduate of a diploma nursing program. While the head nurse served as a clinical resource to the nursing staff, s/he was also responsible for staffing, obtaining sufficient supplies for the unit, and providing an environment which supported the physicians in their work. These functions were often done with no required additional education, no budget, no direct formal access to other departments affecting the unit, and no collaboration with the physicians.
Until the advent of the associate degree in nursing in community colleges in the 1950s, nurses predominantly were educated in diploma schools in nursing located in the hospitals. This meant that head nurses were often graduates of the particular hospital in which they practiced and were a relatively homogeneous group (Cleland, 1984). With the influx of community college nursing programs and a greater emphasis on baccalaureate preparation for nurses spurred by the American Nurses Association, the complexion of both staff nurse and head nurse populations began to change.

The Modern Role of the Head Nurse

Nyberg (1982) stated that the change of nurses from the 1960s to the 1980s has resulted in a group of nurses having a conglomerate of values, skills, and abilities representing a wide range of educational and experiential backgrounds. This diversity and the move of nursing toward a profession require that head nurses today and in the future must possess management capabilities far different from those of the past. Head nurses are beginning to assume greater authority, responsibility, and accountability for the units to which they are assigned. This includes budget preparation, fostering creativity and innovation in the staff, planning and implementing meaningful change, and creating an environment in which nursing staff can function more autonomously. Also, the head nurse is expected to be clinically expert and assist staff in their management of patient care (Johnston, 1983; LeBreton, 1982; Traska, 1982). Required educational preparation for head nurses is becoming a bachelor's or master's

**The Role of Director of Nursing in the Past**

The highest administrative level available to nursing in acute care institutions until recently was that of director. This meant that nursing, the department with the largest number of employees and representing 30% or more of the hospital's budget, was afforded the same status as pharmacy, radiology, dietary, clinical laboratory, housekeeping, and maintenance. Nurse directors were under the auspices of a nonclinical hospital administrator who usually was responsible for some financial or operational area. Unlike pharmacy, radiology, or clinical laboratory which had physicians directly and intimately in the control of the functions of the department, nursing had no powerful clinical voice to represent its goals, objectives, or needs to top level hospital administration.

The directors of nursing usually had one or more supervisors on each of the three shifts in 24 hours. These supervisors primarily functioned in resolving staffing and personnel issues on their respective shift as well as acting as a resource for clinical problems. However, directors of nursing were ultimately responsible for the quality of nursing care but could only ask permission for resources needed to provide that care. Directors rarely were involved in the formal planning processes of hospitals at any level (Lukacs, 1984).
Characteristics of Directors of Nursing

The critical shortage of nurses in the 1970s led to a number of studies for reasons for turnover and job dissatisfaction in nursing. While multiple factors were identified, recurrent themes relevant to this study included: poor leadership in nursing at all levels, poor relationships with physicians, and lack of autonomy in practice (Hallas, 1980; McCloskey, 1974; Wandelt et al., 1981). In 1978, the American Hospital Association convened an invitational conference on the role of nursing service administrators. The conference surfaced concerns that hospitals were failing to solicit nursing's input on significant policy-making decisions, program planning and design, and financial management. It concluded that the qualifications of nurse administrators should include: graduate level educational preparation; ability to communicate effectively in the formal and informal communication network of the organization; the ability to maintain collegial relationship with peers, other administrators, and physicians; and financial management ability (Gugenheim, 1979).

In 1979, the American Hospital Association formed the National Commission on Nursing which completed one of the most extensive studies on nursing in 1983. In its report, several recommendations related specifically to the type of nursing administration needed in modern hospitals (National Commission on Nursing, 1983). First, the top level nurse administrator should be part of the top level management team and on an equal footing with medicine. Second, nurse administrators at all levels should be participants in policy-making
and planning processes. Third, nurse administrators should be given the responsibility and authority to create an environment in which nurses can practice their profession. Nurses in managerial positions should also be effective in communication and conflict resolution so collaboration between nursing and medicine is facilitated. Finally, the education and experience of the nurse administrator should be commensurate with the requirements of the position.

Other authors echoing these qualities also stress the need for financial capabilities in budget preparation and control (LeBreton, 1982; Traska, 1982). In addition, they emphasize that the capabilities of fostering creativity and innovation are essential. An important responsibility cited for upper level nurse administrators, such as directors, was the development of the confidence, self-esteem, and managerial expertise of head nurses. To accomplish this, the nurse director must share power and authority, facilitate supportive and cohesive relationships with the head nurse, and provide them with the resources needed to fulfill their job (Johnston, 1983; Nyberg, 1982). Another recurring theme in the literature on effective managers indicates that they are capable of building team effort within their staff and among other managers, both within and without their specific disciplines (Cochran, 1982; Johnston, 1983; Nyberg, 1982).

In summary, first-line nurse managers (head nurses) are assuming increasing managerial functions in addition to their traditional one of being a clinical resource to staff nurses. These expectations include: management of human resources (their staff) so a climate for maximizing nursing practice is created and sustained; management
of financial resources including input into budget preparation and control; and creative and innovative input into planning policy and programs necessary to advance their unit and the hospital as a whole.

The director position in nursing has evolved to a middle management position in which all the expectations at the head nurse level are expanded across several units. In addition, these middle managers are expected to participate in more global long range and strategic planning and integrate their respective areas with other departments in the hospital and with the medical staff so specific organizational goals can be identified and achieved. Directors must also advance professional nursing practice by creating a climate which fosters such practice and promotes nursing research (Stevens, 1979).

Stevens (1981), in a series of interviews with 100 nurse executives, identified five role categories for nurse executives. These were: the innovator role involving primarily creative moves; the expander role involving primarily political moves; the refiner role, consisting of formalizing policies and procedures and tying up loose ends; the stabilizer role, focusing on maintaining harmony and equilibrium; and the revolutionary role, necessary for tearing down outmoded practices and instituting radical change. Stevens also reported the specific skills associated with each role category. These were, respectively: goal setting or visionary skill; bridging or setting up personal and political linkages needed to advance the department; analyzing or putting the pieces of the organization into logical patterns and providing the intellectual "glue" to keep it
together; skill in handling issues and resolving problems; and negat­
ing or "nest cleaning" skill.

Directors of Nursing in Modern Hospitals

The traditional role of the director of nursing in the hospital is being phased out. The top level nursing administrator in acute care settings is now likely to have a position at the level of associate administrator or vice president. The position of director of nursing is evolving into a middle management position, especially in larger, more complex hospitals. These directors are usually directly accountable to the top level nurse administrator and are responsible for the management of a cluster of clinical units or a staff support department such as continuing education, research, and recruitment and retention of nursing personnel. These middle managers share in the responsibilities of the top nurse executive, but the breadth and depth of that involvement is more limited. Therefore, all the qualities discussed in the literature as necessary for a nurse administrator must be evident to some degree in modern directors of nursing. Their educational and experiential requirements often are higher than those necessary for the head nurse role.

Nursing Administration and Type Theory

The characteristics of nurse managers cited in the nursing and health care administration literature can be related to descriptions of Jungian types in management. McCaulley (1978) stated that individuals of all types are necessary in health care because of the
complexity of the field; therefore, differences are both valuable and necessary. However, successful career choice would be one in which the majority of activities are in the area of the natural interest and developed skills of each type.

**Research Related to Typologies and Personal Characteristics**

Myers (1962), citing multiple studies comparing the typology of individuals to variables tested by other psychological measurements, found significant relationships in areas of vocational interest, values, needs, personality traits, and such nontest variables as creativity and turnover in certain jobs. McCaulley (1981) also cited multiple studies in which choice of career, personal choice for work partners, and creativity were significantly related to type in the predicted direction. While many of the hundreds of correlations reported could be enlightening in studying type differences among staff nurses and nurse managers, several emerge as especially meaningful in this study.

In correlations using the MBTI and the Strong Vocational Interest Blank (SVIB), business detail and business administration were significantly correlated with sensing (S) and judging (J), the strongest association being with sensing. Other correlations were ES with business contact interest and verbal or linguistic interest with N. Economic values were correlated with the sensing function, political values with extroversion, and social values with feeling using the MBTI and Allport-Vernon-Lindzey study of Values (AVL). In correlating the indicator with needs as measured by the Edwards
Personal Preference Schedule (EPFS), order correlated significantly with SJ, autonomy with NP, endurance with T, and nurturance with F. Tolerance of Complexity, a scale on the Personality Research Inventory (PRI) was significantly correlated with perception (P). Creativity, in multiple studies, was most strongly correlated with intuition (N). Intuition (N) was also found strongly associated with the academically gifted. Although intuitives are found in about 25% of the total population, the percentages found in the college populations tested with the MBTI were much higher. Using the 16 Personality Factor (16PF) test, intuition was associated with radicalism, leadership with E-J types, and experimentation with -NTP types. A summary of these findings is depicted in Table 1.

Research Findings on Type Theory and Functions of Managers

Differences based on type in problem solving and decision making styles of managers have been reported by several authors. McKenney and Keen (1974) found that managers differed in cognitive styles in both their manner of information gathering and information evaluation. In a sample of 20 MBA students who had well defined cognitive styles, they found thinking (T) types strongly correlated with a structured and systematic style of problem solving and feeling (F) types correlated strongly with a more flexible trial and error problem solving style. They concluded both types of managers are important to the organization, systematic styles being more effective where predetermined methods work and the more flexible styles where problems are ill-structured.
Table 1
Research Findings of Associations Between Various Psychological Tests and the MBTI

<table>
<thead>
<tr>
<th>Test correlated with MBTI</th>
<th>Factor correlated with MBTI</th>
<th>Preference of type from MBTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Vocational Interest Blank</td>
<td>Business detail and business administration</td>
<td>SJ</td>
</tr>
<tr>
<td></td>
<td>Business contact</td>
<td>ES</td>
</tr>
<tr>
<td></td>
<td>Verbal or linguistic</td>
<td>N</td>
</tr>
<tr>
<td>Allport-Vernon-Lindzey Study of Values (AVL)</td>
<td>Economic values</td>
<td>S</td>
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<tr>
<td></td>
<td>Political values</td>
<td>E</td>
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<tr>
<td></td>
<td>Social values</td>
<td>F</td>
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<tr>
<td>Edwards Personal Preference Schedule (EPPS)</td>
<td>Order</td>
<td>SJ</td>
</tr>
<tr>
<td></td>
<td>Autonomy</td>
<td>NP</td>
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<td></td>
<td>Endurance</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Nurturance</td>
<td>F</td>
</tr>
<tr>
<td>Personality Research Inventory (PRI)</td>
<td>Tolerance of complexity</td>
<td>P</td>
</tr>
<tr>
<td>16 Personality Factor (16PF)</td>
<td>Radicalism</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Leadership</td>
<td>E-J</td>
</tr>
<tr>
<td></td>
<td>Experimentation</td>
<td>N-TP</td>
</tr>
<tr>
<td>Multiple studies</td>
<td>Creativity</td>
<td>N</td>
</tr>
</tbody>
</table>


Kerin and Slocum (1981) reported that, in a sample of 40 graduate students in business, the mean number of requests for quantitative data in making a decision was significantly higher for thinking types than for the feeling (F) types. This supported their hypothesis that types will differ in the information sought for making decisions. Taggart and Robey (1981) found physiological differences using electroencephalographic readings of the brainwaves of different types. Thinking (T) judgment was associated with left hemisphere activity and feeling (F) judgment with right hemisphere activity. Their sample size was small (14) and more data is necessary to substantiate these findings. However, they are consistent with both type theory and right brain-left brain theory (E. C. Murphy, 1985; E. C. Murphy & Newhauser, 1985a, 1985b).

Kilmann and Mitroff (1976) found stories written by three groups of managers about their ideal organization could be classified according to their respective typologies. Qualitative rather than quantitative analysis methods were used in the study so the significance of the results was not statistically determined. The same types had similar stories and different types had dissimilar ideals to the point where one person's ideal organization could be another person's least preferred situation.

Steckroth, Slocum, and Sims (1980) also used the story telling methodology. In their study they found significant correlations between problem-solving styles measured by the MBTI and cognitive roles of managers as determined by raters' typing based on the managers' stories of their ideal organization. The authors found the TF
index was significantly related to the organizational function of the manager. Personnel functions was relatively low on the thinking attribute, but economics, operations management, operations research, and planning functions were relatively high on this attribute. However, they did not find any other significant relationships between organizational functions or levels and the perception functions or the attitudes of extroversion and introversion.

Characteristics of Different Managerial Types

Based on these research findings, a description of manager by type has emerged.

**Sensing With Perception (SP) Managers**

These managers have a high sense of reality, negotiate with ease, and are usually natural negotiators, diplomats or troubleshooters in an organization. They are very flexible, change easily, and are enthusiastic in crises or when taking risks. S/he is not a maintainer and is most effective in a position offering variety where statements of philosophy, goals, and policies and procedures and written work are deemphasized (Keirsey & Bates, 1978).

**Sensing With Judgment (SJ) Managers**

These managers, being patient, thorough, steady, reliable, and orderly, value policies, contracts, and standard operating procedures. They offer stability to the organization, creating and maintaining traditions, and resisting too much change. SJ managers can
absorb, manipulate, and manage data well, are industrious workers, and are systematic and predictable (Keirsey & Bates, 1978).

**Sensing Plus Thinking (ST) Managers**

Managers with an ST profile are usually methodical in problem solving, using a step-by-step approach which flows from cause to effect. Like SJ managers, they tend to prefer and support a structured, bureaucratic, hierarchical system which is well ordered and explicit. Their occupational life is directed toward rigorous application of rules, regulations, and procedures either in a science or in the detail of running the day-to-day operations of an organization (Hellriegel & Slocum, 1975; Kilmann & Mitroff, 1976; Mitroff & Kilmann, 1975).

**Sensing Plus Feeling (SF) Managers**

Managers with this type enjoy using data, especially about people and/or for the purpose of helping people. They focus on harmonious interrelationships among people. While they prefer a hierarchical organization as the STs, they attend to how the personality of individuals in different positions and the rules of the organization benefit the personnel, especially the personnel with whom the SF type specifically works (Hellriegel & Slocum, 1975; Kilmann & Mitroff, 1976; Mitroff & Kilmann, 1975).
Intuition Plus Thinking (NT) Managers

Managers of this type usually are open to new ideas and organizational change if it is based on logic. They are good in positions involving long range, strategic planning and searching for new goals. This type of manager is likely to have high expectations for perfection in him/herself and others and may strive relentlessly for competency in his/her specialty. Often a visionary leader, NT managers enjoy engineering new systems, are often intellectually ingenious, and can be a pioneer in technical and administrative areas (Hellriegel & Slocum, 1975; Keirsey & Bates, 1978; Mitroff & Kilmann, 1975; McCaulley, 1981).

Intuition Plus Feeling (NF) Managers

NF managers tend to be most comfortable in decentralized organizations with loose lines of authority which are flexible and have few rules and standard operating procedures and are, therefore, natural participative and democratic leaders. They focus on new goals, projects, and approaches that will meet the personal and social needs of persons in general (as opposed to the SF type who focus on specific individuals). They tend to feel that organizations should serve the personal and emotional needs of individuals. NF managers exhibit enthusiasm and tend to be excellent communicators, both in speech and written word. They can be charismatic leaders, committed to the development of others in the organization. They highly value autonomy and are sensitive to structure and authoritarianism (Keirsey
Research Findings on Type Preferences in Health Administration

McCaulley (1978), in a combined sample of 60 health administration students and practitioners, found significantly more intuitives and judging types when compared to a normed population of high school students. In analyzing a composite sample of 204 practicing nurses who were classified as administrators or consultants, McCaulley found the group had significantly more NT types and relatively fewer SF types when compared to other nurses. The academic IN preference and tough minded TJ group (often associated with administrators) were also represented significantly more frequently. The ISFJ, the most frequent nursing type, were significantly fewer in this group. Beck (1976), however, did not find significant type differences between supervisory nursing personnel and staff nurses. However, her small sample of 97 nurses (31 supervisors and 66 staff nurses) was located in one agency and may have been too homogeneous for true differences to be detected.

In summary, multiple research findings have related type preferences as measured by the MBTI to values, interests, career choices, needs, and problem-solving and decision-making styles of individuals. The integration of this information has resulted in descriptions of managers based on type. This information can be merged with the qualities of nurse administrators cited in the literature as
necessary for effective management. Table 2 relates type to the role categories of nurse executives and skills associated with each as reported by Stevens (1981) to the typologies of managers. Table 3 displays qualities of nurse administrators by other authors and the expected type preferences associated with them. These matrices depict both the differences among types and the importance of their mix for an organization.

Table 2
Type Preferences Associated With Identified Role Categories and Associated Skills of Nurse Executives

<table>
<thead>
<tr>
<th>Role category</th>
<th>Associated skill</th>
<th>Expected type preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator</td>
<td>Goal setting or visionary skill.</td>
<td>NT or NF</td>
</tr>
<tr>
<td>Expander</td>
<td>Bridging and setting up personal and political linkages needed to advance the department.</td>
<td>P</td>
</tr>
<tr>
<td>Refiner</td>
<td>Formalizing policies and procedures.</td>
<td>NT at higher managerial levels ST at lower managerial levels SJ</td>
</tr>
<tr>
<td>Stabilizer</td>
<td>Maintaining harmony and equilibrium, resolving issues and problems</td>
<td>NF at higher managerial levels SF at lower managerial levels SJ</td>
</tr>
<tr>
<td>Revolutionary</td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

Table 3
Qualities Necessary for Nurse Administrators and Expected Type Preferences

<table>
<thead>
<tr>
<th>Quality of nurse administrator</th>
<th>Expected type preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity and innovation</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>NT</td>
</tr>
<tr>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>NF</td>
</tr>
<tr>
<td>Financial ability</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>SJ</td>
</tr>
<tr>
<td>Effective communication</td>
<td>NF</td>
</tr>
<tr>
<td></td>
<td>SF</td>
</tr>
<tr>
<td></td>
<td>SP</td>
</tr>
<tr>
<td>Planning and policy making</td>
<td>NT</td>
</tr>
<tr>
<td></td>
<td>NF</td>
</tr>
<tr>
<td>Development of other nursing personnel</td>
<td>NF</td>
</tr>
<tr>
<td>Tolerance of complexity</td>
<td>P</td>
</tr>
<tr>
<td>Risk taking</td>
<td>SP</td>
</tr>
<tr>
<td>Academic aptitude</td>
<td>N</td>
</tr>
</tbody>
</table>

Management Models Related to Nursing Administration

Stevens (1979) stated, "Since there are not many (if any) well-developed models unique to nursing administration, it is useful to identify the generic managerial characteristics (borrowed elements) that seem most applicable in constructing nursing administration models" (p. 113). The managerial models of several noted authors can be useful in supporting the anticipated type differences between
staff nurses, first-line nurse managers, and nurses in middle management positions. While these authors do not directly relate their models to type theory, integrating the models and type theory can be defended by the research findings cited on types measured by the MBTI.

Zaltman and Duncan (1977) proposed a contingency model for designing organizations for innovation. Drawing on multiple research studies, they constructed a model in which the initiation stage of innovation, to be effective, must be associated with higher complexity, lower formalization, and lower centralization. Once the innovation has been decided and the organization shifts to an implementation stage, the authors stated that the organizational structure must switch to one of lower complexity, higher formalization, and higher centralization to be successful. This model was supported by McCaulley (1975), who reported that faculty teams working at the innovation stage of building curricula had a preponderance (69%) of intuitives. She also stated that perceptive types should also be involved in the early stages of a team project to assure tasks are well understood until decisions are made.

Evered (1977) supported this model also. With a sample of 96 students in a new graduate program in management, he correlated the students' MBTI with the dual reality framework constructed by Lewin. Intuitives significantly correlated with Lewin's Reality II, a reality associated with the limitless world of symbols and imagery. Evered termed these persons diversity-generators and viewed them as stimulating change. Sensing types, labeled as diversity regulators
by Evered because of their tendency to be change managers, were significantly correlated with Reality I, defined as finite, sensible, and material reality.

Bhola (1972) proposed a model of change theory in which a hierarchy of change agents was developed. In this model, those who are initiators of change and organization builders are termed absolute elite and are at the top of the hierarchy. The authorized elite, the next level, act on behalf of the absolute elite to achieve the results determined or desired by them. The lowest level in the change process are the instrumental elite who are responsible for the maintenance of the change. While Bhola's theory was primarily directed toward societal change, the principles can be adapted to an organization as well.

The models of change theory and the associated research cited suggest that top level and middle managers in an organization would have more intuitive and perceptive types and lower level managers would more likely be sensing and judging types. Figure 3 illustrates these anticipated relationships.

As Figure 3 portrays, initiation of innovation by diversity generators and implementation of innovation by diversity regulators can occur at all levels of the organization. However, based on Bhola's (1972) theory, a greater amount of initiation occurs at the upper levels of the administration and implementation at lower levels. A weakness in the figure is that it implies that intuitive types are always innovators and sensing types and judging types never are. This indeed is not true but intuition is more likely to be
associated with creativity and innovation and sensing and judgment are more likely to be associated with the present reality and maintaining it.

Figure 3. Anticipated Relationship of Type Preferences to Change Theory and Levels in Nursing Administration.

Note. The area on each side of the dividing line in the figure is not to demonstrate the actual proportion of the activities depicted.

Katz (1955) identified three types of skills that are necessary for carrying out the management process: technical skills, human skills, and conceptual skills. He postulated that a different mix of these skills was needed as one advanced to higher managerial levels. Specifically, the need for conceptual skills increases while the need for technical skills and human skills decreases although the latter is more in quantitative rather than qualitative terms. Type preferences have been shown in research to be associated with the skills.
discussed by Katz. Figure 4 shows Katz's theorem as it may relate to levels of nursing administration and the expected type preferences associated with each skill at each level.

<table>
<thead>
<tr>
<th>Nurse executive</th>
<th>Nurse executive</th>
<th>Nurse executive</th>
<th>Nurse executive</th>
<th>Nurse executive</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ</td>
<td>NF</td>
<td>NF</td>
<td>NF</td>
<td>NP</td>
</tr>
<tr>
<td>ST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Middle nurse managers (directors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EST EST ESF ESF ISF</td>
</tr>
<tr>
<td>NFJ ESP INFJ ENFJ HUMAN ENP NT NF</td>
</tr>
<tr>
<td>NT NF NT NF</td>
</tr>
<tr>
<td>INF P</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First-line nurse managers (head nurses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISJ SF ESJ SF ESF SF NF</td>
</tr>
<tr>
<td>SP ESF SF NF</td>
</tr>
</tbody>
</table>

Figure 4. Management Skills for Nurse Administrators at Different Organizational Levels and Expected Type Preferences.
Note. Type preferences in each cell are for demonstration only and do not represent expected numbers or proportions.

As Figure 4 depicts, one would expect greater numbers of sensing and judging types in lower levels of management since these individuals, at those levels, are responsible for the day-to-day operations of the organization. Greater attention to detail and enforcement of policies and procedures are expected of first-line managers as well. As one moves up in the administrative structure, greater numbers of intuitives would be anticipated due to the increased importance of conceptual skills. Some perceptsives should begin to appear in greater numbers due to their penchant for autonomy and risk taking.
Extroverts are likely to be well represented due to the association of the attitude with business administration and leadership.

In summary, the literature supports that different type preferences are associated with different qualities and functions needed by nurse managers. This information, when merged with aspects of models related to management, support that these type preferences may be associated with one's administrative level in the organization. By a process of self-selection, therefore, individuals would tend to aspire to the level of management most congruent with their type preferences. Based on this information, research hypotheses can be generated for Research Questions 3 and 4 in this study.

Hypotheses Related To Type Differences Among Staff and Managers

Research Question 3 dealt with differences that might exist between the psychological typologies of staff nurses and nurse managers within acute care institutions. A difference between the proportions of types in the type tables of staff nurses and nurse managers is anticipated. If the expected difference is found, additional analysis will be done to ascertain which individual types in each table contributed substantially to the difference. Also, nurse managers are expected to have greater proportions of the following type preferences (groupings) than staff nurses: E, N, EP, ST, NF, NT, NP, NJ, TJ, and EN. When staff nurses are compared to each level of nurse manager, the first-line nurse managers (head nurses) are expected to have proportionately more type preferences of E, ST, and
TJ than the staff nurses. Nurses in middle management will show proportionately more E, N, EP, NF, NT, NP, NJ, TJ, and EN type groupings than the staff nurses.

The differences in psychological typologies of first-line nurse managers and middle nurse managers are addressed by Research Question 4. Based on the literature reviewed, middle nurse managers are expected to have proportionately more of the type preferences of N, P, NF, NT, and NP and proportionately less of the SF grouping than first-line nurse managers.

Summary

Chapter I provided an introduction to the challenges nurse managers face as administrators in complex, acute care settings (hospitals). The need to ascertain the profiles of these key managerial personnel and the staff nurses for whom they are responsible was discussed. Research questions guiding this survey research study were stated. The theory of type developed by Jung (1923/1971) was defended as an appropriate framework in which to seek answers to the research questions since it included the major mental functions of an individual.

In Chapter II, type theory by Jung (1923/1971) was covered in greater depth. The major instrument used to ascertain Jungian types, the Myers-Briggs Type Indicator (MBTI), was reviewed. Its development, reliability, validity, and major uses were discussed as well as its perceived limitations. The forms in which it is available and the scoring procedure were explained also.
In this chapter, material on the evolution of hospitals, the nursing profession, and nursing administration expanded on the information presented in Chapter I. Qualities deemed critical for nurse managers were outlined. Research studies relating type theory to the characteristics of managers both within health care and outside of it were cited. Several models in management and change theory, pertinent to the qualities identified as essential to nursing administrators, were discussed and related to type theory. Each research question was again stated followed by the hypotheses related to it and supported by the literature review. The next chapter, Chapter IV, will discuss the methodology, in detail, for this research study.
CHAPTER IV

RESEARCH DESIGN AND METHODOLOGY

The literature supports the need for additional information about nurse managers and the staff nurses for whom they are responsible, information which could be used toward maximizing the contributions of varying personality types. Differences in Jungian types can result in conflict or synergism. A more complete understanding of type theory and its application in the administration of a nursing department may facilitate the level of sophisticated management needed by the department and the acute care institution to achieve their goals and remain effective in a competitive market place.

This survey research study contributed to the fund of knowledge about Jungian typology of nurse administrators and staff nurses by seeking the answers to the following research questions and testing the hypotheses appropriate to each question.

Research Questions and Hypotheses

Research Question 1

1. What is the psychological typology of staff nurses on inpatient clinical units in acute care institutions?
Research Question 2 and Hypotheses

2. Are the present typologies of staff nurses different from the typologies for female registered nurses and typologies of nursing personnel in a hospital work setting as reported by McCaulley (1978)?

Null Hypotheses

1. No difference will be found when comparing the proportion of types in the type table of staff nurses in this study and the type table of female registered nurses as reported by McCaulley (1978).

2. No difference will be found when comparing the proportion of types in the type table of staff nurses in this study and the type table of nurses working in a hospital setting as reported by McCaulley.

3. Staff nurses in this study and nurses in a hospital work setting as reported by McCaulley will have the same proportions of the following type preferences (groupings): N, T, NT, NJ, and TJ.

Alternate Hypotheses

1. A difference will be found when comparing the proportion of types in the type table of staff nurses in this study and the type table of female registered nurses as reported by McCaulley (1978).

2. A difference will be found when comparing the proportion of types in the type table of staff nurses in this study and the type table of nurses working in a hospital setting as reported by McCaulley. If differences are found in either comparison 1 or 2,
additional analysis will be done on the individual type comparisons to ascertain which ones contributed substantially to this difference.

3. Staff nurses in this study will have greater proportions of the following type preferences (groupings) than nurses in a hospital work setting as reported by McCaulley: N, T, NT, NJ, and TJ.

**Research Question 3 and Hypotheses**

Is there a difference between the psychological typologies of staff nurses and nurse managers in acute care settings? If there are differences, are they related to a specific level of nurse management in the institution?

**Null Hypotheses**

1. No difference will be found when comparing the proportion of types in the type table of staff nurses and the type table of nurse managers.

2. Staff nurses and nurse managers will have the same proportions of the following type preferences (groupings): E, N, EP, ST, NF, NT, NP, NJ, TJ, and EN.

3. First-line nurse managers (head nurses) and staff nurses will have the same proportions of the following type preferences (groupings): E, ST, and TJ.

4. Nurses in middle management (directors) and staff nurses will have the same proportions of the following type preferences (groupings): E, N, EP, NF, NT, NP, NJ, TJ, and EN.
Alternate Hypotheses

1. A difference will be found when comparing the proportion of types in the type table of staff nurses and the type table of nurse managers. If a difference is found, additional analysis will be done on the individual type comparisons to ascertain which ones contributed substantially to this difference.

2. Nurse managers will have a greater proportion of the following type preferences (groupings) than staff nurses: E, N, EP, ST, NF, NT, NP, NJ, TJ, and EN.

3. First-line nurse managers will have a greater proportion of the following type preferences (groupings) than staff nurses: E, ST, and TJ.

4. Nurses in middle management will have a greater proportion of the following type preferences (groupings) than staff nurses: E, N, EP, NF, NT, NP, NJ, TJ, and EN.

Research Question 4 and Hypotheses

Is there a difference between the psychological typologies of first-line nurse managers (head nurses) and middle nurse managers (directors) in acute care settings?

Null Hypotheses

1. Middle nurse managers (directors) and first-line nurse managers (head nurses) will have the same proportions of the following type preferences (groupings): N, P, NF, NT, and NP.
2. Middle nurse managers and first-line nurse managers will have the same proportion of the type preference (grouping) of SF.

**Alternate Hypotheses**

1. Middle nurse managers will have a greater proportion of the following type preferences (groupings) than first-line nurse managers: N, P, NF, NT, and NP.
2. Middle nurse managers will have a lesser proportion than first-line nurse managers of the type preference (grouping) of SF.

**Independent and Dependent Variables**

**Independent Variable**

The independent variable for this research study is the level of management in the structure of a nursing services department in an acute care institution. Three levels of the variable are studied. The first level is that of staff nurse, full-time registered nurses who give direct patient care in an assigned clinical unit and are under the supervision of a head nurse. This nonmanagement position in the nursing administration hierarchy represents the population from which the other levels of nurse management in this study are often derived. The staff nurse level is also a major part of any nurse manager's responsibility. Knowledge of similarities and differences between this level and the managerial levels in nursing can be used to facilitate effective leadership strategies and team building efforts (McCaulley, 1975; Myers, 1962).
The second level of the variable is the first-line nurse manager level (head nurse). The first-line nurse manager is responsible for the staffing and nursing care delivered on a specified clinical unit (medical unit, surgical unit, or intensive care unit) or in a specified area (emergency room, recovery room, or operating room). The knowledge and skills expected of this level of nurse management are different from those expected of the staff nurse. Although the head nurses' abilities are primarily oriented to technical and human resources, some degree of business acumen and participation in the planning for the unit's future within the organization is also expected (Johnston, 1983; Katz, 1955; Traska, 1982).

The nurse middle managers (directors) represent the third level of the independent variable. These managers can be in line or staff positions. In a line position, one director is responsible for the management of a designated group of clinical units or clinical areas. In staff positions, one director manages a specific function or set of functions in the nursing department, such as continuing education for nursing personnel, patient education, research in nursing, or recruitment and retention of nursing personnel. The abilities of the nurse middle manager are expected to be less technically oriented and more conceptually and financially oriented (Gugenheim, 1979; Katz, 1955; LeBreton, 1982; Nyberg, 1982). The breadth of their responsibilities is wider than that of first-line nurse managers and their involvement in planning and policy making is on a more institution-wide basis.
Nurse administrators at both levels of management are expected to be registered nurses with at least a baccalaureate degree in nursing and, preferably, a master's degree in nursing administration (American Nurses' Association Commission on Nursing Services, 1978). The extent to which these academic credentials exist in the present nurse management population is variable. In 1980, nurses in administration and supervision were the most likely group to hold less than a baccalaureate degree in nursing as their highest educational credential as well as the group of nurses holding positions primarily involving direct patient care activities (American Nurses Association, 1983). However, these statistics do not reflect degrees held in nonnursing majors nor necessarily the current picture. The impetus for greater academic and experiential preparation of nurse managers has grown throughout the 1980s with the increasing emphasis placed on credentials from regulatory and professional agencies such as the Joint Commission on Accreditation of Hospitals (JCAH), the American Nurses Association (ANA), and the National Commission on Nursing of the American Hospital Association.

The level of nurse management positions within an organization are ranked in a hierarchical structure. These assigned ranks suggest that the independent variable in this study is an ordinal level of measurement. However, the levels of nurse management are treated as nominal data because the classifications, not the rankings of the groups, are the important elements of consideration.
Dependent Variables

The dependent variables in this research study are the typologies (types) and the type preferences (groupings) of the three levels of nurse management as determined by the Myers-Briggs Type Indicator and based on the theory of personality type by Jung (1923/1971). Differences in these variables are expected to be related to the various levels of the independent variable since different knowledges and skills needed by each are reflected in Jung's type theory.

The dependent variables, as thoroughly explained in Chapters II and III, are typologies (types), represented by the four indices of E-I, S-N, T-F, and J-P, and type preferences, represented by groupings of specific indices such as NT, NF, and SJ, of the three levels of management in the nursing department of a hospital. The measurement instrument for the dependent variables, the Myers-Briggs Type Indicator, was described at length in Chapter II.

Briefly, type theory attributes seemingly random behavior to orderly and consistent inherent basic differences in the mental activities of individuals (Jung, 1923/1971). Individuals differ on four basic functions, two attitudes in which these functions can occur, and the tendency to use one function over another when dealing with one's outer world (Myers, 1962). The four functions represent two opposite ways of perceiving the world—sensing (S) or intuition (N)—and two opposite ways of judging the perceptions—thinking (T) and feeling (F). The individual's preferred function can occur predominantly in an extroverted (E) attitude or an introverted (I)
attitude. An individual prefers one function over all, possibly because of an inborn tendency. This function of perception or judgment serves as the dominant process with the other, less preferred function serving as an auxiliary process. One of the functions serves as a primary orientation when the individual deals with the "outside world" and this is either perception (P) or judgment (J).

Differences in type result in individual differences in interests, values, attitudes, and problem-solving and decision-making styles (Kerin & Slocum, 1981; McCaulley, 1981; Mitroff & Kilmann, 1975; Myers, 1962; Robey & Taggert, 1981). While all types are found in nursing, certain types seem more naturally suited for different functions in the organization (McCaulley, 1978). These differences may be evident in groups on different levels of nursing management.

The type differences were measured using the Myers-Briggs Type Indicator (MBTI). The MBTI has four indices which determine type preference as reported by the individual. While numerical scores are produced for each preference, the score indicating the stronger preference for each dichotomous pair determines the letter preference for that pair. Although continuous scores can be computed with the MBTI, Myers (1962) stressed the importance of using the letter of the preference rather than numerical scores. Therefore, only the letter preferences, a nominal level of measurement, were used in the analysis of the data in the study.

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Population and Sample

Population

The population for this study was comprised of all female nurse middle managers, all female nurse first-line managers, and all female full-time (4 days or more per week) staff nurses in the inpatient care areas of acute care institutions (general hospitals) listed as having between 400-600 beds by the American Hospital Association (1983) and located in the state of Michigan but outside Wayne County. Both single site and multisite facilities were included if listed as having a single administrative entity and the specified bed size. For this study, a general hospital was defined as an institution providing a full range of services to patients having any of a variety of medical conditions, both surgical and nonsurgical. In addition, it is an establishment with permanent facilities that include inpatient beds, medical services, and continuous nursing services. Care is rendered to patients who are primarily acutely ill and have a stay on the average of 30 days or less (Ernst & Whinney, 1982).

Hospitals and the Selected Population

The population was selected from hospitals of a specific size and location for several reasons. First, institutions of this size are more likely to have the hierarchical structure in nursing needed for this study. Hospitals with less than 400 beds often do not have a developed nurse middle management layer.
A second reason for defining the institution's size was to control for effects that the environment of the institution may have on the dependent variable. The types of services an institution provides and the area in which the institution is located can affect the type of nurse who may select to work in that institution. McCaulley (1978) reported a limited number of studies relating type preferences of medical students and medical practitioners to both the work setting selected (i.e., primary care physician, technical specialist, medical teacher, etc.) and the geographical area (i.e., rural, metropolitan, etc.) of residence. While these study results are preliminary at best, according to McCaulley, they do suggest that certain types may be attracted to specific work settings and locations. Therefore, the population from which the sample was drawn for this study were from acute care institutions which were thought to be as homogeneous as possible.

The identification of a group of homogeneous hospitals was extremely difficult. Institutions tend to develop and adapt in response to the expressed needs of the community and region in which they are located. Specialty services that are provided by hospitals are dependent, to a great extent, on the type of physicians that can be attracted and supported by an area. Despite these difficulties, acute care institutions of 400–600 beds in Michigan and outside the large metropolitan area of Detroit (Wayne County) are likely to be located in metropolitan areas in which the institution serves as both a community and regional facility. They are likely to be a tertiary health care institution offering a variety of specialty as well as
general medical services and involved in the education of medical professionals and some research. While these institutions have their own particular idiosyncracies, their goals, general structure, levels of technology, and the size of the geographical area in which they are located were thought to be generally similar. These factors were the ones cited by McCaulley as possibly affecting the predominant types found in a particular area and specialty.

Acute care institutions of less than 400 beds are often secondary health care agencies, serving a circumscribed geographical area and providing general, acute care treatment modalities. They usually have few specialty areas and often have limited association with medical schools. Institutions of over 600 beds in Michigan are either large, public institutions for veterans or multifacility referral centers for a large geographical area. The private ones tend to be associated with universities and have a wide range of specialties, affiliation with many medical students, and include extensive research as a major goal.

A third reason the population for this study was limited to hospitals of a certain size was because of limitations in the economic and human resources available for the study. Ideally, the population would have been drawn from a larger geographic area so the results could be generalizable to a larger group. Also, a study which included comparisons of populations among institutions of varying size would have been preferable to the more circumscribed population described for this study. However, available resources limited the scope of the research to the population defined.
Sex, Work Status, and the Selected Population

The population for the study was restricted to females. Women comprise about 96.4% of the registered nurse population in the United States and about 65.7% of the registered nurse population work in hospitals (American Nurses' Association, 1983). Given these statistics, it was unlikely that the population for this research study would have had sufficient males to permit adequate analysis of type preferences related to sex. McCaulley (1978) reported that male student nurses had significantly fewer extroverts, feeling types, and judging types than female student nurses. Males also had better representation in the groupings of ST, NT, IN, and TJ than females. Myers (1962) reported that the male population in the United States has approximately 60% thinking types and 40% feeling types and the female population has approximately the opposite configuration. Based on these research findings, the sex of the nurse may affect type as well as the characteristics used to generate the hypotheses for this study. The restriction of the population to females was done to control this potential confounding variable.

The population included full-time (4 days or more per week) registered nurses because this is the group from which nurse managers are most likely to emerge. While it is possible that part-time registered nurses may acquire a nurse management position, it probably is an infrequent occurrence. Licensed practical nurses and nursing assistants, while important components of the makeup of the
staff on a unit, are not direct sources of nurse managers, and therefore, were not included in the study.

Sample

McCaulley (1978) reported the distribution of the typologies for a composite sample of 807 female registered nurses. All 16 typologies were represented, the least frequent type being 1.73% of the sample. If McCaulley's sample is assumed to be a "normed" group and all 16 types need to be represented for appropriate data analysis, then a minimum of 100 subjects for each of the three groups in this study—staff nurse, first-line nurse manager, and nurse middle manager—would have been necessary to assure that all cells would have at least one person. If each acute care institution in the sample has an average of six to eight female nurse middle managers, then approximately 16 hospitals would be needed for the study with the whole population from this level included. However, due to limitations in the economic and human resources for this study, the samples for the three groups needed were drawn from five hospitals meeting the criteria for size and location. While less than ideal, this sampling provided 36 middle nurse managers (directors), 97 first-line nurse managers (head nurses), and 210 staff nurses. Combining the typologies of the two groups of managers for specific parts of the analysis and using type preferences (groupings) within each group for other aspects of the analysis were done to compensate for the anticipated small sample size of the director group.
Selection of Institutions

Fifteen hospitals meeting the specifications of 400-600 beds in Michigan, exclusive of Wayne County, were identified using the directory of hospitals published by the American Hospital Association (1983). This list was numbered from 1-15. Using a table of random numbers, the hospitals were ordered randomly and the first eight on the list were contacted for permission to conduct the study to help assure that at least five positive responses would be obtained.

A personalized letter of introduction was sent to the nurse executive (top level nurse administrator) of each institution selected. It briefly outlined the nature of the research, the credentials of the researcher, and the fact that an appointment would be scheduled with him/her within 2 weeks to more fully explain the study and methodology (see Appendix A). Each nurse executive was contacted by telephone for an appointment within 5 days of the mailing of the letter of introduction.

Of the eight institutions contacted, one refused permission because of the current multiple changes occurring in their nursing department, and one was disqualified because it was strictly a psychiatric setting. Of the six remaining hospitals, three appointments were obtained with the top nurse executive and three appointments were made with the nurse responsible for coordinating research in the institution.

At the appointment, the study was described fully including its purpose, the type and number of personnel involved, the data
collection instruments to be used, and the procedure for data collection to be followed. An internal contact person was requested to be designated who would be perceived by subjects as nonthreatening and confidential. This person was to assist in the specific identification of subjects within the institution and the distribution and collection of the instruments. As an incentive to grant permission for the research and to promote internal commitment to a high response rate, the nursing department was offered the option of having a follow-up in-service program for the nurse managers involved in the study. This in-service was to be either a formal seminar offering continuing education units (CEUs) or a more informal 1 to 2 hour presentation. The nursing department was asked to verify their willingness to participate in writing (see Appendix B) and a cover letter of support for the study from the top nurse executive was requested to accompany the packet of research materials to the subjects. Also, information was obtained on requirements to seek approval from an internal human subjects committee in the hospital and/or the individual consent of the participants.

In four of the six institutions, the study needed approval by one or more internal research committees. Three of these four hospitals granted permission within the time limits established. The fourth hospital was unable to complete the entire review process within the time constraints of the study and was therefore eliminated. In the two institutions in which formal review was not required, permission was obtained as a joint decision between the top nurse executive and the nurse management team. Therefore, five acute
care institutions meeting the criteria were used for this research study. All five were in the lower peninsula of Michigan. Two of the institutions were in the eastern half of the state with the other three being in the western half.

**Selection of Subjects**

Once permission was obtained from an institution to do the research study, the internal contact person was contacted and asked to gather the following information:

1. The names of the directors (middle nurse managers) and head nurses (first-line managers) of the inpatient care areas including the emergency room, operating and recovery rooms, special care units, and psychiatric inpatient units, as well as the general and specialty nursing care units.

2. The office or department designations of each of the managers.

3. The names of all the female, full-time registered nurses by shift for each unit listed in #1.

At the time set for the delivery of the research materials to the institution, the staff nurse sample from that hospital was selected. McCaulley (1978) reported several studies indicating that the typologies of staff nurses in particular patient units such as special care units and in specialties such as psychiatric nursing, maternal-child health nursing, and medical-surgical nursing may differ. R. Murphy (1975) reported that nurses working day and night shifts differed significantly on the E-I index.
Since this study was concerned with the staff nurse population as a whole, the random selection of subjects from all units was necessary to control for differences related to specialty area, type of unit, or shift. Therefore, using a table of random numbers, 5 subjects from each unit were selected from a list of all full-time female registered nurses from all shifts on a unit. The first 2 nurses selected in each unit were the first to be contacted as subjects. However, in instances where one or more subjects within a unit refused to participate or were nonrespondents, the next randomly selected person was approached so at least 2 subjects per unit could be obtained.

Of the 116 units used in the study, 73% of them were represented by staff nurses in the first group contacted. Another 18% of the units had one participant from the first group contacted and one "replacement." Only 5% of the units were totally represented by staff nurses who were "replacements." Five of the 116 units had no staff nurse participants.

The total populations of female nurse middle managers (directors) and female first-line nurse managers (head nurses) from each institution in the study were used as the samples representing these two groups. Since head nurses are associated with a specialty or single type of unit, it was essential to assure that their representation was comparable to the representation of staff nurses from the different specialties or types of units. Otherwise, in testing the hypotheses related to these two groups, representation of one or more specialties in greater proportion in one of the groups could alter
the results. Nurse middle managers (directors) are responsible for a number of clinical units or a particular function such as continuing education or the recruitment and retention of nursing personnel. While their response rate was important for appropriate hypothesis testing, the issue of representation by specialty was not applicable to them.

Response Rate of Participants

The response rate of the participants in each of the three groups of management levels was greater than 80% (see Table 4). The range of response rates for nurse middle managers (directors) was 82-100% with four of the five participating hospitals having a rate of 100%. This resulted in a total of 36 usable responses. The response of first-line nurse managers (head nurses) ranged from 81-96% across the five acute care institutions with a mean response rate of 90% and 97 usable responses. The response rate of staff nurses was based on obtaining at least two usable responses from each clinical unit. From the five hospitals, staff nurse response rates ranged from 80-94% with a mean of 87%. Since the procedure for follow-up in some instances resulted in the return of more than two responses from a unit, there was a total number of 210 usable responses from the staff nurse group.

While none of the three groups had a response rate of 100%, the rate from each was sufficient for the sample obtained to be considered representative of the sample selected. Also, nonrespondents in the group of first-line nurse managers and the group of staff nurses

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were not clustered into one specialty or type of unit so representation of specialties was deemed comparable (see Table 5).

Table 4

Response Rates and Number of Usable Responses by Level of Management

<table>
<thead>
<tr>
<th>Level of management</th>
<th>Range of response rates (%)</th>
<th>Mean response rate</th>
<th>Frequency of usable responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse middle manager (director)</td>
<td>82-100</td>
<td>96</td>
<td>36</td>
</tr>
<tr>
<td>First-line nurse manager (head nurse)</td>
<td>81-96</td>
<td>90</td>
<td>97</td>
</tr>
<tr>
<td>Staff nurse</td>
<td>80-94</td>
<td>87</td>
<td>210</td>
</tr>
</tbody>
</table>

Research Instruments

The data collection instruments for this study consisted of two self-report questionnaires—the Personal Data Survey (see Appendix C) and the Myers-Briggs Type Indicator (MBTI). McCaulley (1978) and Sigmund (1968) reported that certain type groupings were related to the level of academic degree completed. McCaulley also reported a difference in type between student nurses and practicing nurses. She conjectured that retention of certain types and/or loss of specific types over time may occur. Therefore, data on length of employment in nursing may be important. Sigmund found a statistically significant difference in type preferences among certain age groups. Therefore, data on these variables and other pertinent demographic data

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Table 5
Nonrespondents by Type of Unit and Level of Management

<table>
<thead>
<tr>
<th>Type of unit</th>
<th>Number of nonrespondents&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Level of management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical-surgical&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5</td>
<td>First-line nurse managers</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Staff nurses</td>
</tr>
<tr>
<td>Special care</td>
<td>1</td>
<td>Staff nurses</td>
</tr>
<tr>
<td>Maternal/child</td>
<td>3</td>
<td>First-line nurse managers</td>
</tr>
<tr>
<td>Operating room/recovery room</td>
<td>3</td>
<td>First-line nurse managers</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Staff nurses</td>
</tr>
<tr>
<td>Emergency department</td>
<td>1</td>
<td>First-line nurse managers</td>
</tr>
</tbody>
</table>

<sup>a</sup>Number of nonrespondents of first-line nurse managers equals the total number of individuals who did not participate in the study. Number of nonrespondents of staff nurses equals the number of units from which there was not one staff nurse participant from the individuals contacted.

<sup>b</sup>About 50% of the units in the study were classified as medical-surgical units.

were collected using the Personal Data Survey (PDS). This promoted accurate reporting of the characteristics of the sample and, in the event of unusual findings, permitted additional analysis which could help explain them.

The second research instrument, the Myers-Briggs Type Indicator (MBTI), was extensively discussed in Chapter II so only a brief summary of its characteristics will be described. The MBTI, a self-report survey instrument, was developed over 20 years by Briggs and Briggs-Myers and first published in 1962 for research purposes by the

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Currently, the instrument exists in two forms, Form F and Form G. Form G, having 126 items as opposed to Form F which has 166 items, was the form of choice in this study. Its reliability and validity are considered equivalent to Form F and took less time to complete, a major concern when requesting busy professionals to participate in a study. Form G contains both phrase questions and word pairs requiring a forced choice response and takes approximately 30 minutes to complete. The items on the instrument reflect seemingly inconsequential, everyday attitudes and behaviors making the content nonthreatening to individuals taking it (Sundberg, 1965). The instrument is suitable for adult populations and child populations possibly down to the fourth grade level. The instrument contains a question booklet with instructions and an answer sheet. Subjects may take it on an individual basis at a time convenient to them. Items can be left blank if the subject is unable to make a choice and there is no time limit. The indicator can be scored manually or by machine.

Reliability

The reliability of the MBTI has been established using the split half reliability technique and the test-retest technique. Gay (1972) stated that reliability coefficients in the 70s and 80s for instruments measuring personality can be very acceptable. Although reported reliability coefficients on the MBTI vary with the samples and
the type of statistical analysis used, it has been well established as a reliable instrument in many research studies. The E-I, S-N, and J-P scales consistently are associated with coefficients in the high 70s to the 90s. The T-F scale is the least reliable but is usually associated with reliability coefficients in the 70s. Myers (1962) believed the T-F functions took longer to mature than the perception functions and the attitudes. Therefore, the lower reliability coefficients in this scale may be due to the immaturity of the respondent rather than the items on the instrument.

Validity

Construct validity measures are the most meaningful and appropriate since the purpose of the MBTI is to ascertain an individual's type based on the theoretical constructs of Jung (McCaulley, 1978). Concurrent and predictive validity studies have been the major methods for determining the validity of the MBTI. McCaulley (1978, 1981) and Myers (1962) reported multiple studies which correlated significantly in the direction hypothesized with factors on other established self-report surveys. Research findings of other authors have substantiated the validity of the MBTI as well (Carlson, 1980; Cohen et al., 1981). While some questions have been raised about the validity of the instrument in actually testing Jung's constructs, the accumulated evidence supports acceptable levels of validity (Carlyn, 1977).
General Research Procedures

A synopsis of the research proposal was submitted to the Human Subjects Institutional Review Board of Western Michigan University for approval. When approval was received, permission to do the research study was sought from the selected hospitals as discussed in the section of this chapter on population and sample selection. Once permission was received, an appointment was set up with the internal contact person for delivery of the materials to the institution.

Data Collection Techniques

At the appointed time, the packets containing the research materials were personally delivered to the designated hospital. Each packet consisted of a cover letter to the subject with an explanation of the study and information about their involvement. Each institution required slightly different wording in the cover letter to match the suggestions of the various internal groups reviewing the research study (see Appendix A). In addition to the cover letter, all packets contained the MBTI Form G Question Booklet and Answer Sheet and the Personal Data Survey (PDS). In two of the five institutions, the top nurse executive agreed to write a letter of support and that was included in those respective packets as well (see Appendix A). Also, one institution required a separate informed consent form which became part of their packet of materials (see Appendix B). The outside envelope had a label for a designated "drop" area to which the packet was delivered after completion of the instruments by the
participants.

After the staff nurse sample was selected, the researcher assigned each individual in each of the three sample groups within the institution a packet of materials. To help protect the anonymity of participants but also allow follow-up by the researcher, each person was given an individual code number which was placed on their MBTI answer sheet and Personal Data Survey prior to distribution of the packets. The name of the individual to whom the packet was delivered was stapled to the outside of the envelope and the participant was instructed to remove it prior to returning the materials.

The packets were distributed by the internal contact person, her designee, or the researcher, depending on the stipulations of the institution. The contact person in the institution was left with specific means for contacting the researcher in case any difficulties arose. The researcher also telephoned the internal contact person each week during the data collection schedule to gauge the progress of the process and to answer concerns. The cover letter to participants contained the researcher's telephone number in case anyone wanted to personally contact her with questions or concerns.

Two weeks after distribution, the researcher personally picked up the returned packets from the designated drop area and sent out a follow-up letter to nonrespondents via the institution's interdepartmental mail (see Appendix A). Also, packets of materials were sent to the staff nurses who were next in the sequence of the five randomly selected subjects on a unit if the first two subjects selected had not yet responded. This resulted in several units having
three staff nurse participants because the first two nurses in the numbering sequence eventually responded as well as a replacement.

In all but one of the five institutions, one follow-up resulted in an acceptable response rate. In the institution in which this did not occur, a second follow-up letter was sent 2 weeks after the first one. Packets returned after the follow-up were either mailed to the researcher or picked up from the institution personally.

Follow-Up In-Service Program

To encourage cooperation and a high rate of response by subjects, each institution was offered the opportunity for an in-service program to provide feedback on their type, its meaning, and its potential application in nursing administration. Two options were offered. The first was a seminar in which continuing education units (CEUs) were obtainable. The other option was a 1 or 2 hour feedback session in which similar information would be given but in less depth. All five of the institutions in the study requested one of the two options given.

In each in-service session, participants received their type preference in a sealed envelope to ensure confidentiality. Discussion of types was general for the groups or institution as a whole. No individual types were shared except within the confines of the confidential envelope unless done so by the participant.

Because of the potential for follow-up in-services, male first-line and middle nurse managers were given the research packets and were included in all the procedures as if they were part of the
study. This inclusion of the male nurse managers also discouraged any stigma of discrimination or feelings of being "singled out" in a group of either sex. If the male nurse managers had not been included in the data collection procedures, they could have felt left out or their female colleagues may have felt they had been asked to do more work than their male counterparts. The results from any males were used solely in the in-service and were not part of the statistical analysis of the data collected.

Data Analysis

The answer sheets from the MBTI, after being collected, were hand scored twice to assure accuracy. The data from the answer sheets and from the Personal Data Survey were then entered into a computer program, the Statistical Package of Social Sciences (SPSS) at Western Michigan University. The information from the Personal Data Survey needed to accurately depict the characteristics of the sample and to conduct additional analysis of unusual findings was aggregated and reported using descriptive statistics. The data obtained from the MBTI were used in descriptive analysis and for hypothesis testing.

Research Question 1 was answered by reporting the frequency distribution of the MBTI types for staff nurses participating in the study. For testing the null hypotheses in Research Questions 2, 3, and 4, the chi-square statistic was used. This statistic is appropriate when the data are nominal and the observations are independent. In each comparison, the proportion of observed frequencies was

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compared to the proportion of expected frequencies to determine
differences in the groups on the particular variable. An alpha level
of .10 was used for directional hypotheses and .05 was used for non-
directional hypotheses.

Field Test

The research procedures and analysis were field tested in a
hospital of comparable size and makeup to the hospitals containing
the population for this research study. The purpose of the field
test was to ascertain the feasibility and practicality of the sam­
pling procedures, data collection techniques, and data analysis tech­
niques proposed. Also, the content of the various letters and the
Personal Data Survey were assessed for clarity, accuracy, and com­
pleteness.

No changes in the data collection process were deemed necessary
given the response rate in the pilot study—directors, 100%; head
nurses, 86%; staff nurses, 87%--and the dearth of questions, con­
cerns, or confusion by the participants.

Summary

In this chapter the research questions for the research study
and their respective hypotheses were reiterated. The independent
variable was identified as the level of management in the structure
of a nursing services department in an acute care institution. The
three levels of this variable that are being studied were explained.
The dependent variables are the typologies (types) and selected type
preferences (groupings) of the three groups in the study.

The population was defined and the selection of the sample for each level of nurse management was described in detail. All female nurse middle managers and all female nurse first-line managers from five hospitals of 400-600 beds in the state of Michigan excluding Wayne County constituted the two samples of nurse managers. The staff nurse sample consisted of two full-time female registered nurses selected at random from each inpatient clinical unit or area in the five hospitals.

Two data collection tools were used. The Personal Data Survey collected appropriate demographic data. The Myers-Briggs Type Indicator established the typologies and type groupings in each of the three groups. The MBTI has a long history of use in research. Its reliability and validity have been established in numerous studies for use in normal adult populations. The instrument can be self-administered, has nonthreatening content, and takes about 30 minutes to complete.

The general procedures specifically outlined each step in the data collection sequence. Each institution in the study was asked to provide an internal contact person to assist with the distribution and collection of the research materials. A follow-up in-service on type was offered as an option to each institution participating in the study.

The data were analyzed using a computer program, the Statistical Package for Social Sciences. Descriptive analysis of the typologies of staff nurses was done to answer the first research question.
Differences in the proportions of observed frequencies to expected frequencies using the chi square at an alpha of .10 for directional hypotheses and .05 for nondirectional hypotheses were determined to answer Research Questions 2, 3, and 4.

Chapter V depicts the research findings and data analyses. Chapter VI summarizes the results through discussion of the conclusions and recommendations.
CHAPTER V

RESEARCH FINDINGS AND DATA ANALYSIS

The purpose of this chapter is to present the research findings and analyses of the data. The data were obtained using the research methodology outlined in Chapter IV and include information from the Myers-Briggs Type Indicator (MBTI) and the Personal Data Survey which were completed by the participants in the study. To answer Research Question 1, descriptive analysis was used. Hypothesis testing using the chi-square statistic was used to answer Research Questions 2, 3, and 4. The sample used for this survey research study will be described first using the data aggregated from the Personal Data Survey. After the characteristics of the sample are discussed, data related to each research question and associated hypotheses will be presented and analyzed.

Characteristics of the Sample

The sample in this research study consisted of female registered nurses from five acute care institutions in the state of Michigan. These institutions were selected randomly from a list of hospitals having 400-600 beds according to the American Hospital Association (1983) excluding those in Wayne County. The sample was comprised of three groups representing the three levels of the independent variable.
The first group was comprised of female staff nurses, working full time (4 or more days per week), and selected randomly from inpatient clinical units, operating and recovery rooms, and emergency departments. Of the total sample of staff nurses, 210, or 87%, participated in the study. Thirty-five percent worked the day shift, 23% the afternoon shift, 16% the night shift, and 26% rotated between two shifts on a regular basis. The distribution of the staff nurses among the seven classifications used for clinical units is depicted in Table 6. As would be expected, the higher percentages are found in the major clinical areas of general hospitals, namely, medical-surgical (35%), maternal-child health (23%), and special care (19%).

The second level of the independent variable was comprised of all female first-line nurse managers (head nurses). Of the total number possible, 97, or 90%, of the individuals in this group participated. All female nurse middle managers (directors) from the five institutions constituted the third group in the study. Of the total responses possible, 36 (96%) from this group were received.

Characteristics of the three groups in the study such as age, marital status, educational background, and years of experience in nursing were obtained by aggregating the results of the Personal Data Survey. Marital status was not reported as an important demographic variable in the research reviewed for this study and is therefore reported in Appendix D. The profiles of each group for the other characteristics were important in the interpretation of the results of the MBTI and for comparisons with samples in other research studies.
Table 6

Distribution of Staff Nurse Respondents by Type of Unit Worked

<table>
<thead>
<tr>
<th>Type of Unit</th>
<th>Staff nurse respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical-surgical</td>
<td>35</td>
</tr>
<tr>
<td>Maternal-child health$^b$</td>
<td>23</td>
</tr>
<tr>
<td>Special care$^c$</td>
<td>19</td>
</tr>
<tr>
<td>Operating room-recovery room</td>
<td>14</td>
</tr>
<tr>
<td>Emergency department</td>
<td>3</td>
</tr>
<tr>
<td>Psych-mental health</td>
<td>2</td>
</tr>
<tr>
<td>Other$^d$</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

$^a n = 210.$  
$^b$Neonatal and pediatric intensive care units were included in this category.  
$^c$Special care units included any type of medical or surgical intensive care units, renal dialysis units, and burn units.  
$^d$Rehabilitation units were the most common in this category.  

Distribution of the Levels of Management by Age

The distribution of age ranges among the three groups depicts the anticipated pattern. The age of the majority of the individuals in each group is greater as one moves from staff nurse level to the middle nurse manager level (see Table 7). Almost half (49%) of the staff nurses were between 20-30 years old; only 17% of first-line
nurse managers were in that range and no middle nurse managers reported that range. However, 78% of the middle nurse managers and 71% of first-line managers reported being 36 years or older while only 34% of the staff nurses did. This pattern suggests that managers in nursing services progress through the different levels of management in a way similar to other groups; that is, they gain experience at one level before being promoted to another.

Table 7
Distribution of Age Ranges for Respondents by Level of Management

<table>
<thead>
<tr>
<th>Age range</th>
<th>Staff nurse(^a)</th>
<th>First-line nurse manager(^b)</th>
<th>Middle nurse manager(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>19</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>26-30</td>
<td>30</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>31-35</td>
<td>16</td>
<td>29</td>
<td>22</td>
</tr>
<tr>
<td>36-40</td>
<td>11</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>41 and older</td>
<td>24</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\) = 210. \(^b\) = 97. \(^c\) = 36.

The composite pattern of age ranges for all three groups are comparable to those reported for employed registered nurses by the American Nurses Association (1983). As Table 8 depicts, the majority of nurses in both groups are 41 years or older although the nurses in
this study have a greater percentage in each of the younger categories than the population of nurses reported by the American Nurses Association. The composite of the groups in this study, therefore, has a similar pattern in age distribution as the general population of registered nurses.

Table 8

Distribution of Age Ranges Estimated for Employed Registered Nurses in 1980 and Registered Nurses in Present Study

<table>
<thead>
<tr>
<th>Age range in years—1980 sample</th>
<th>1980 sample (%)</th>
<th>Age range in years—present sample</th>
<th>Present sample (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>9.6</td>
<td>20-25</td>
<td>12.0</td>
</tr>
<tr>
<td>25-29</td>
<td>20.0</td>
<td>26-30</td>
<td>22.7</td>
</tr>
<tr>
<td>30-34</td>
<td>16.2</td>
<td>31-35</td>
<td>20.4</td>
</tr>
<tr>
<td>35-39</td>
<td>12.5</td>
<td>36-40</td>
<td>15.7</td>
</tr>
<tr>
<td>40 and older</td>
<td>41.7</td>
<td>41 and older</td>
<td>29.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. The data in the columns containing information on registered nurses for 1980 were from Facts About Nursing 82-83 (Table 1-1-6, p. 10) by American Nurses Association, 1983, Kansas City, MO: Author.  

Distribution of Level of Management by Educational Degree

The distribution of the three groups by highest educational degree in nursing supported the assumption made in Chapter I stating that nurses in each successive level of management would have higher
In the group of head nurses, 37% had either a baccalaureate or master's degree in nursing. However, of the total staff nurses, 24% had baccalaureate degrees and only 1% had a master's degree in nursing.

This same pattern continues when degrees other than a nursing major are combined with the figures just cited (see Table 9). Of the middle nurse managers who had less than a bachelor's degree in nursing, 45% had a baccalaureate or master's degree in another major; for first-line nurse managers, the percentage was 21%. About 8% of the staff nurses with an associate degree or diploma in nursing had a baccalaureate degree in a major other than nursing and none in this category had a master's degree in another major.

When the distribution of the highest educational degree in nursing for the composite of the three groups is compared to that reported for employed registered nurses in 1980 by the American Nurses Association (1983), the influx of the associate degree level and the phasing-out of the diploma level over the past 5 years are evident. However, the percent distribution of nurses for the two groups at the baccalaureate level and above are similar (see Table 10). When these data are distributed by level of management, the comparison for staff nurses remains relatively the same but the trend for advanced degrees in the higher levels of management becomes evident (see Table 11). While in 1980, only 1.5% of first-line nurse managers reported having a master's degree in nursing, 11% of those
Table 9
Distribution of Highest Education Degree Held in Nursing and Non-Nursing Majors by Level of Management in Nursing

<table>
<thead>
<tr>
<th>Highest degree</th>
<th>Nursing major</th>
<th></th>
<th>Non-nursing Major</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff nurse&lt;sup&gt;a&lt;/sup&gt; (%)</td>
<td>First-line nurse manager&lt;sup&gt;b&lt;/sup&gt; (%)</td>
<td>Middle nurse manager&lt;sup&gt;c&lt;/sup&gt; (%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate</td>
<td>36</td>
<td>18</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Diploma</td>
<td>39</td>
<td>45</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>24</td>
<td>26</td>
<td>28</td>
<td>92</td>
</tr>
<tr>
<td>Master's</td>
<td>1</td>
<td>11</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

<sup>a</sup><sub>n = 210</sub>.  <sup>b</sup><sub>n = 97</sub>.  <sup>c</sup><sub>n = 36</sub>
In this study did. The middle nurse management level was not clearly delineated in the reference used from the American Nurses Association. However, the combined categories of "administrator/assistant" and "supervisor/assistant" in it yielded a total of 22.9% employed registered nurses estimated as being prepared at the master's and doctoral levels in 1980 (American Nurses Association, 1983). In this study, the middle nurse managers, who would be comparable to the ANA categories, had 39% classified at those two levels of nursing education.

Table 10
Percent Distribution of Highest Nursing Degree Estimated for Employed Registered Nurses in 1980 and Registered Nurses in Present Study

<table>
<thead>
<tr>
<th>Highest nursing degree</th>
<th>Registered nurses: 1980 sample a (%)</th>
<th>Registered nurses: present sample b (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate</td>
<td>20.1</td>
<td>27.1</td>
</tr>
<tr>
<td>Diploma</td>
<td>50.7</td>
<td>40.2</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>23.3</td>
<td>25.1</td>
</tr>
<tr>
<td>Master's</td>
<td>5.1</td>
<td>7.3</td>
</tr>
<tr>
<td>Doctorate</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>99.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. The data in the column containing information on registered nurses for 1980 were from Facts About Nursing 82-83 (Table 1-1-11, p. 15) by American Nurses Association, 1983, Kansas City, MO: Author. Reported numbers on the table from this source did not add up to 100%.

a n = 1,272,851. b n = 343.
Table 11

Distribution of Highest Nursing Degree Estimated for Employed Registered Nurses in 1980 and in Present Study by Level of Management

<table>
<thead>
<tr>
<th>Highest nursing degree</th>
<th>Staff nurse</th>
<th>First-line nurse manager</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1980 sample(^a) (%)</td>
<td>Present sample(^b) (%)</td>
</tr>
<tr>
<td>Associate</td>
<td>23.4</td>
<td>36</td>
</tr>
<tr>
<td>Diploma</td>
<td>51.7</td>
<td>39</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>23.1</td>
<td>24</td>
</tr>
<tr>
<td>Master's</td>
<td>1.3</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>99.5</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: The data in the columns containing information on registered nurses for 1980 were from Facts About Nursing 82-83 (Table 1-1-11, p. 15) by American Nurses Association, 1983, Kansas City, MO: Author. Reported numbers on the table from this source did not add up to 100%.

\(^a\)\(n = 824,844\). \(^b\)\(n = 210\). \(^c\)\(n = 90,203\). \(^d\)\(n = 97\).

In summary, the pattern of degrees attained by nurses at the three different levels of management was as anticipated. At each progressive level, the percentage of the group holding higher degrees in nursing increased. When the composite of the three groups was compared to a composite of all registered nurses employed 5 years ago, changes were found at the associate and diploma levels but the percentage distribution at the baccalaureate level and above remained.
relatively stable. When this comparison was analyzed by level of management, however, a strong trend toward higher level degrees in nursing management at the first-line and middle layers was noted.

**Distribution of Levels of Management by Length of Employment**

The longevity of experience in nursing, both full-time and part-time combined, followed a predictable pattern in each of the three groups (see Table 12). The percentage distribution of length of time employed in nursing increased at each progressive level of administration. Approximately 42% of the staff nurses reported having zero to 5 years of experience in nursing whereas only 4% of the first-line nurse managers and 0% of the middle nurse managers reported those figures. Conversely, only 17% of the staff nurse group reported over 15 years of experience, yet 38% of the first-line nurse managers and 56% of the middle nurse managers were classified in this category.

The patterns in length of employment among the three groups are not surprising. The trends reflect, to some extent, those found in the age distribution of the groups and probably exist for similar reasons. Nurses who achieve higher levels in management often do so as a result of a long history of educational and experiential preparation. The reference from the American Nurses Association (1983) did not have comparative figures so it is difficult to evaluate the extent to which these figures compare to the total population of nurses.

In summary, the three sample groups in this study appear to be representative of the population from which they were drawn and, to
some extent, seem similar to the population of nurses as reported by the American Nurses Association (1983). The distribution of staff nurses, according to shift and unit type, reflect what is generally found in acute care institutions. Percentage distributions of the three groups for age, educational degree achieved, and longevity of employment in nursing all follow predictable patterns; an increase in all three variables is associated with progressively higher levels of management in nursing.

Table 12

<table>
<thead>
<tr>
<th>Length of employment in years</th>
<th>Level of management</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff nurse (%)</td>
<td>First-line nurse manager (%)</td>
</tr>
<tr>
<td>Up to 5 years</td>
<td>42</td>
<td>4</td>
</tr>
<tr>
<td>5-10 years</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>11-15 years</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>16 years and over</td>
<td>17</td>
<td>38</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

aLength of employment included both full-time and part-time employment combined. Data were collected using consecutive but non-overlapping months but are reported here in years for ease of interpretation.

b_n = 210. c_n = 97. d_n = 36.
Hypothesis Testing

Data collected using the Myers-Briggs Type Indicator (MBTI) were used to answer the research questions. Research Question 1 was addressed using descriptive analysis. Research Questions 2, 3, and 4 were answered by testing the hypotheses associated with each question using the chi-square statistic. An alpha level of .05 was selected for nondirectional hypotheses and .10 for directional hypotheses.

Research Question 1 and Findings

Research Question 1, which asked what was the psychological typology of staff nurses on inpatient clinical units in acute care settings, was answered using the 16 MBTI types reported. This distribution of the 210 staff nurses among the 16 MBTI types is depicted in Table 13. The arrangement of each cell conforms to that of the standard type table, which is commonly used to report the types of a sample or population. In this way, comparisons can be made more easily among individuals sharing a like attitude and like functions and differences among type can be displayed more sharply.

The most frequently occurring types in this sample of staff nurses were ISFJ (21.9%), ISTJ (13.3%), and ESTJ (11.4%). The next most frequent types were ESFJ (9.0%), ENFJ (9.0%), ENFP (7.1%), and ISFP (6.2%). From these seven types, which account for 78% of all types reported by staff nurses, identifiable patterns emerge which can be used to develop a profile for the group (see Table 14).
Table 13

Distribution of Staff Nurses by MBTI Type

<table>
<thead>
<tr>
<th>Type</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISTJ</td>
<td>28</td>
<td>13.3</td>
</tr>
<tr>
<td>ISFJ</td>
<td>46</td>
<td>21.9</td>
</tr>
<tr>
<td>INFJ</td>
<td>8</td>
<td>3.8</td>
</tr>
<tr>
<td>INTJ</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>ISTP</td>
<td>6</td>
<td>2.9</td>
</tr>
<tr>
<td>ISFP</td>
<td>13</td>
<td>6.2</td>
</tr>
<tr>
<td>INFP</td>
<td>5</td>
<td>2.4</td>
</tr>
<tr>
<td>INTP</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>ESTP</td>
<td>7</td>
<td>3.3</td>
</tr>
<tr>
<td>ESFP</td>
<td>4</td>
<td>1.9</td>
</tr>
<tr>
<td>ENFP</td>
<td>15</td>
<td>7.1</td>
</tr>
<tr>
<td>ENTP</td>
<td>6</td>
<td>2.9</td>
</tr>
<tr>
<td>ESTJ</td>
<td>24</td>
<td>11.4</td>
</tr>
<tr>
<td>ESFJ</td>
<td>19</td>
<td>9.0</td>
</tr>
<tr>
<td>ENFJ</td>
<td>19</td>
<td>9.0</td>
</tr>
<tr>
<td>ENTJ</td>
<td>6</td>
<td>2.9</td>
</tr>
</tbody>
</table>

aN = 210.

Of the 164 staff nurses in the seven major types reported, 130 (79%) displayed a preference for sensing (S), 112 (68%) a preference for feeling (F), and 136 (83%) a preference for judging (J). While preference for E-I was closer to being evenly divided, the majority (53%) of the staff nurses in these seven types preferred introversion (I). The two types in the seven that showed a preference for intu- tion did so in combination with feeling (NF). The type preference...
Table 14
Percentage Distribution of Selected Type Preferences (Groupings) for Staff Nurses in the Seven Most Frequent Types Reported

<table>
<thead>
<tr>
<th>Type preference (Grouping)</th>
<th>Staff nurses&lt;sup&gt;a&lt;/sup&gt; (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>47</td>
</tr>
<tr>
<td>I</td>
<td>53</td>
</tr>
<tr>
<td>S</td>
<td>79</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
</tr>
<tr>
<td>T</td>
<td>32</td>
</tr>
<tr>
<td>F</td>
<td>68</td>
</tr>
<tr>
<td>J</td>
<td>83</td>
</tr>
<tr>
<td>P</td>
<td>17</td>
</tr>
<tr>
<td>SF</td>
<td>47</td>
</tr>
<tr>
<td>ST</td>
<td>32</td>
</tr>
<tr>
<td>NF</td>
<td>21</td>
</tr>
<tr>
<td>NT</td>
<td>0</td>
</tr>
<tr>
<td>SJ</td>
<td>71</td>
</tr>
<tr>
<td>SP</td>
<td>29</td>
</tr>
</tbody>
</table>

<sup>a</sup><sub>n = 164.</sub>

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of SF was reported by 78 (47%) of the 164 staff nurses, 52 (32%) reported the ST type preference, 34 (21%) showed the type preference of NF, and none of the 164 reported the NT combination. When sensing and judging preferences are combined (SJ), 117 (71%) had the type grouping.

**Research Question 2 and Findings**

Research Question 2 dealt with differences in typologies between the staff nurses in this study and the typologies of two samples of nurses reported by McCaulley (1978), namely, female registered nurses and nursing personnel working in a hospital setting. The type table of the staff nurses in this study was compared with the type table for each of the two samples cited and specific type preferences (groupings) were compared between the staff nurses in this sample and the sample of nursing personnel working in a hospital setting.

**Hypothesis 1**

The first null hypothesis used in answering this research question stated that there would be no differences between proportions of types in the type table of the staff nurse sample in this study and the type table of female registered nurses reported by McCaulley (1978). As depicted in Table 15, the two type tables were found to be significantly different at an alpha level of .05. The null hypothesis, therefore, was rejected.

A post hoc analysis was done to determine which differing proportions for each individual type contributed substantially to the
Table 15
Comparison of Type Tables of Staff Nurses With Female Registered Nurses as Reported by McCaulley

<table>
<thead>
<tr>
<th>MBTI type</th>
<th>Staff nurse (%)</th>
<th>Female registered nurse (%)</th>
<th>Probability level in post hoc test</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTJ</td>
<td>11.4</td>
<td>6.1</td>
<td>.01*</td>
</tr>
<tr>
<td>ESTP</td>
<td>3.3</td>
<td>2.3</td>
<td>.58</td>
</tr>
<tr>
<td>ESFJ</td>
<td>9.0</td>
<td>10.3</td>
<td>.69</td>
</tr>
<tr>
<td>ESFP</td>
<td>1.9</td>
<td>3.2</td>
<td>.44</td>
</tr>
<tr>
<td>ENFJ</td>
<td>9.0</td>
<td>6.5</td>
<td>.27</td>
</tr>
<tr>
<td>ENFP</td>
<td>7.1</td>
<td>13.3</td>
<td>.02*</td>
</tr>
<tr>
<td>ISTJ</td>
<td>13.3</td>
<td>8.8</td>
<td>.07</td>
</tr>
<tr>
<td>ISTP</td>
<td>2.9</td>
<td>2.5</td>
<td>.94</td>
</tr>
<tr>
<td>ISFJ</td>
<td>21.9</td>
<td>14.2</td>
<td>.01*</td>
</tr>
<tr>
<td>ISFP</td>
<td>6.2</td>
<td>6.7</td>
<td>.92</td>
</tr>
<tr>
<td>INTJ</td>
<td>1.4</td>
<td>3.7</td>
<td>.15</td>
</tr>
<tr>
<td>INFP</td>
<td>2.4</td>
<td>9.7</td>
<td>.00*</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. The data in the column on Female Registered Nurses are from Applications of the Myers-Briggs Type Indicator to Medicine and Other Health Professions: Monograph 1 (Appendix E) by M. H. McCaulley, 1978, Gainesville, FL: Center for Applications of Psychological Type.

\[ \chi^2 (15, N = 1017) = 43.34 \quad p < .05. \quad ^b n = 210. \quad ^c n = 807. \]

\[ ^* p < .05. \]
overall difference noted. As Table 15 indicates, the types of ESTJ, ENFP, ISFJ, and INFP were proportionately different at an alpha level of .05. The staff nurses in this study were found to have significantly more ESTJs, 11.4% as compared with 6.1% in McCaulley's (1978) group. They also had significantly more ISFJs, 21.9% to 14.2%, respectively. However, staff nurses in the study had significantly less ENFPs (7.1%) and INFPs (2.4%) than the sample of female registered nurses which reported 13.3% ENFPs and 9.7% INFPs.

**Hypothesis 2**

The second null hypothesis under Question 2 stated that there would be no difference between the type table of staff nurses in this study and the type table of nurses in a hospital setting as reported by McCaulley (1978). When the proportions of types in the two tables were compared, a significant difference was found using an alpha level of .05 (see Table 16). The null hypothesis was, therefore, rejected.

A post hoc analysis was done so individual type comparisons between the two groups could ascertain which specific differences in proportions contributed substantially to the overall difference. Three types—ESTP, ESFP, and ENFJ—were found to differ significantly using the alpha level of .05. None of these types were the same as those found differing substantially between staff nurses and the female registered nurse sample in McCaulley's (1978) monograph. Staff nurses in this study had a significantly greater proportion of ESTPs (3.3%) than nurses in a hospital work setting (0.9%). This was

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### Table 16

Comparison of Type Tables of Staff Nurses With Nurses: Work Setting Hospitals Reported by McCaulley

<table>
<thead>
<tr>
<th>MBTI type</th>
<th>Staff nurse (%)</th>
<th>Nurses: Work setting hospitals (%)</th>
<th>Probability level in post hoc test</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTJ</td>
<td>11.4</td>
<td>6.8</td>
<td>.06</td>
</tr>
<tr>
<td>ESTP</td>
<td>3.3</td>
<td>0.9</td>
<td>.04*</td>
</tr>
<tr>
<td>ESFJ</td>
<td>9.0</td>
<td>13.8</td>
<td>.10</td>
</tr>
<tr>
<td>ESFP</td>
<td>1.9</td>
<td>5.9</td>
<td>.03*</td>
</tr>
<tr>
<td>ENTJ</td>
<td>2.9</td>
<td>3.0</td>
<td>.91</td>
</tr>
<tr>
<td>ENTP</td>
<td>2.9</td>
<td>2.5</td>
<td>.96</td>
</tr>
<tr>
<td>ENFJ</td>
<td>9.0</td>
<td>4.0</td>
<td>.01*</td>
</tr>
<tr>
<td>ENFP</td>
<td>7.1</td>
<td>7.8</td>
<td>.89</td>
</tr>
<tr>
<td>ISTJ</td>
<td>13.3</td>
<td>11.0</td>
<td>.37</td>
</tr>
<tr>
<td>ISTP</td>
<td>2.9</td>
<td>2.8</td>
<td>.82</td>
</tr>
<tr>
<td>ISFJ</td>
<td>21.9</td>
<td>22.2</td>
<td>.98</td>
</tr>
<tr>
<td>ISFP</td>
<td>6.2</td>
<td>6.4</td>
<td>.97</td>
</tr>
<tr>
<td>INTJ</td>
<td>1.4</td>
<td>1.5</td>
<td>.80</td>
</tr>
<tr>
<td>INTP</td>
<td>0.6</td>
<td>1.5</td>
<td>.43</td>
</tr>
<tr>
<td>INFJ</td>
<td>3.8</td>
<td>3.8</td>
<td>.84</td>
</tr>
<tr>
<td>INFP</td>
<td>2.4</td>
<td>6.1</td>
<td>.06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** The data in the column of Nurses: Work Setting Hospitals are from Applications of the Myers-Briggs Type Indicator to Medicine and Other Health Professions: Monograph 1 (Appendix E) by M. H. McCaulley, 1978, Gainesville, FL: Center for Applications of Psychological Type.

\[ x^2 (15, N = 738) = 30.36 \quad p < .05 \]

\[ n = 210. \quad n = 528. \]

\[ *p < .05. \]

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true for the ENFJ type as well with the percentages of the staff nurse sample compared to nurses in the hospital work setting being 9.0% to 4.0%, respectively. However, the staff nurses had a much lower proportion (1.9%) of ESFPs when compared to nurses in the hospital work setting (5.9%).

**Hypothesis 3**

The third null hypothesis developed to answer Research Question 2 stated that staff nurses in this study and nurses in a hospital work setting as reported by McCaulley (1978) would have the same proportions in the following type preferences (groupings): N, T, NT, NJ, and TJ. Actually, testing the proportions of each of the type preferences (groupings) represents five different null hypotheses tested at an alpha level of .10.

In comparing the two groups (see Table 17), staff nurses in this study and the nurses in a hospital work setting differed significantly on the thinking (T) function. The staff nurse group had proportionately more of this type preference (39%) when compared to the other group (30%). The null hypothesis was therefore rejected and the alternate hypothesis which predicted the observed trend was accepted. Nurses in a hospital setting had significantly fewer of the TJ type grouping (22.3%) than the staff nurses in this study (29%). Therefore, the null hypothesis for this type preference was rejected. The alternate hypothesis was accepted since the direction of the difference was as predicted. The two groups, when compared for substantial differences between them in the proportions for the

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Type preferences of N, NT, and NJ, were not statistically different. Therefore, these three null hypotheses were not rejected.

### Table 17
Comparison of Staff Nurses and Nurses: Work Setting Hospitals Reported by McCaulley on Selected Type Preferences

<table>
<thead>
<tr>
<th>Type preference</th>
<th>Staff nurse&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Nurses: Work setting hospitals&lt;sup&gt;b&lt;/sup&gt;</th>
<th>( \chi^2 ) value</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
<td>( % )</td>
<td>( n )</td>
<td>( % )</td>
</tr>
<tr>
<td>N</td>
<td>63</td>
<td>30.0</td>
<td>159</td>
<td>30.0</td>
</tr>
<tr>
<td>T</td>
<td>81</td>
<td>39.0</td>
<td>159</td>
<td>30.0</td>
</tr>
<tr>
<td>NT</td>
<td>16</td>
<td>7.6</td>
<td>45</td>
<td>8.5</td>
</tr>
<tr>
<td>NJ</td>
<td>36</td>
<td>17.0</td>
<td>65</td>
<td>12.3</td>
</tr>
<tr>
<td>TJ</td>
<td>61</td>
<td>29.0</td>
<td>118</td>
<td>22.3</td>
</tr>
</tbody>
</table>

**Note.** The data in the column Nurses: Work Setting Hospitals are from *Applications of the Myers-Briggs Type Indicator to Medicine and Other Health Professions: Monograph 1* (Appendix E) by M. H. McCaulley, 1978, Gainesville, FL: Center for Applications of Psychological Type.

\( a_n = 210. \) \( b_n = 528. \)

\(* p < .10.\)

### Research Question 3 and Findings

Research Question 3 dealt with differences that may occur between nurse managers and staff nurses. Both type tables and type preferences (groupings) are compared in order to address the question.
Comparisons were made against the staff nurse sample using either a composite sample of the first-line nurse managers (head nurses) and middle nurse managers (directors) or using each level of nurse manager individually. An alpha level of .05 was used for nondirectional tests and .10 for a directional test.

**Hypothesis 1**

The first null hypothesis for Research Question 3 proposed there would be no difference between the proportions of types in the type table for nurse managers (composite of first-line and middle nurse manager groups) and the type table for staff nurses. This null hypothesis was rejected since the comparison of the proportions of types of nurse managers with those of staff nurses was significantly different beyond the alpha level of .05 (see Table 18).

A post hoc analysis was done to see which type differences contributed substantially to the overall difference. Seven of the 16 types were found to be different at the alpha level of .05. They were: ENTJ, ENTP, ISFJ, ISFP, INTJ, INTP, and INFP (see Table 18). The directions of the differences form clear patterns between the two groups. Nurse managers had significantly higher proportions of any of the seven types having an NT grouping. Therefore, nurse managers as a composite group had higher percentages of ENTJs than staff nurses (8.3% versus 2.9%); ENTPs (9.0% versus 2.9%); INTJs (9.0% versus 1.4%); and INTPs (7.5% versus 0.6%). Only one of the types in which nurse managers had higher proportions, that of INFP (9.0% versus 2.4% for staff nurses), failed to have the NT grouping.
<table>
<thead>
<tr>
<th>MBTI type</th>
<th>Staff nurse (%)</th>
<th>Nurse managers (%)</th>
<th>Probability level in post hoc test</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTJ</td>
<td>11.4</td>
<td>12.7</td>
<td>.84</td>
</tr>
<tr>
<td>ESTP</td>
<td>3.3</td>
<td>3.0</td>
<td>.88</td>
</tr>
<tr>
<td>ESFJ</td>
<td>9.0</td>
<td>5.2</td>
<td>.27</td>
</tr>
<tr>
<td>ESFP</td>
<td>1.9</td>
<td>2.2</td>
<td>.87</td>
</tr>
<tr>
<td>ENTJ</td>
<td>2.9</td>
<td>8.3</td>
<td>.04*</td>
</tr>
<tr>
<td>ENTP</td>
<td>2.9</td>
<td>9.0</td>
<td>.02*</td>
</tr>
<tr>
<td>ENFJ</td>
<td>9.0</td>
<td>3.8</td>
<td>.10</td>
</tr>
<tr>
<td>ENFP</td>
<td>7.1</td>
<td>2.3</td>
<td>.08</td>
</tr>
<tr>
<td>ISTJ</td>
<td>13.3</td>
<td>12.8</td>
<td>.98</td>
</tr>
<tr>
<td>ISTP</td>
<td>2.9</td>
<td>0.8</td>
<td>.34</td>
</tr>
<tr>
<td>ISFJ</td>
<td>21.9</td>
<td>8.3</td>
<td>.00*</td>
</tr>
<tr>
<td>ISFP</td>
<td>6.2</td>
<td>0.8</td>
<td>.03*</td>
</tr>
<tr>
<td>INTJ</td>
<td>1.4</td>
<td>9.0</td>
<td>.00*</td>
</tr>
<tr>
<td>INTP</td>
<td>0.6</td>
<td>7.5</td>
<td>.00*</td>
</tr>
<tr>
<td>INFJ</td>
<td>3.8</td>
<td>5.3</td>
<td>.71</td>
</tr>
<tr>
<td>INFP</td>
<td>2.4</td>
<td>9.0</td>
<td>.01*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

*a χ² (15, n = 343) = 67.18 p < .05. b n = 210. c n = 133.

*p < .05.
Conversely, staff nurses had significantly greater percentages in the two of the seven types having the SF grouping. ISFJs comprised 21.9% of the staff nurse sample but only 8.3% of the nurse manager composite sample. The same pattern emerged with the ISFP type in which staff nurse and nurse manager percentages were 6.2% and 0.8%, respectively.

**Hypothesis 2**

The second null hypothesis for Research Question 3 stated that nurse managers (first-line and middle nurse managers as a composite sample) and staff nurses would have no differences in the proportions of the following type preferences (groupings): E, N, EP, ST, NF, NT, NP, NJ, TJ, and EN. Although the statement of the null implied a single hypothesis, actually 10 hypotheses were tested at the alpha level of .10.

All of the type groupings tested which had intuition (N) except the NF and EN groupings were significant (see Table 19). Nurse managers were found to differ significantly from staff nurses in the type preferences of N, NT, NP, NJ, and TJ. Of the staff nurse group, only 30% preferred the intuitive function compared to 54.1% of the nurse manager group. The percentage of staff nurses with the NT combination was 7.6% while that of the nurse managers was 33.8%, a finding supporting the data discussed under Hypothesis 1 of this research question. The type preferences of NP and NJ followed the same pattern with nurse managers having 27.8% and 26.3% of these...
groupings compared to 12.9% and 17.1% for the staff nurse group, respectively.

### Table 19

Comparison of Staff Nurses and Nurse Managers on Selected Type Preferences

<table>
<thead>
<tr>
<th>Type preference</th>
<th>Staff nurses(^a) (%)</th>
<th>Nurse managers(^b) (%)</th>
<th>(\chi^2) value</th>
<th>(p) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>47.6</td>
<td>46.6</td>
<td>0.005</td>
<td>.94</td>
</tr>
<tr>
<td>N</td>
<td>30.0</td>
<td>54.1</td>
<td>18.88</td>
<td>.00*</td>
</tr>
<tr>
<td>EP</td>
<td>15.2</td>
<td>16.5</td>
<td>0.029</td>
<td>.84</td>
</tr>
<tr>
<td>ST</td>
<td>31.0</td>
<td>29.3</td>
<td>0.04</td>
<td>.84</td>
</tr>
<tr>
<td>NF</td>
<td>22.4</td>
<td>20.3</td>
<td>0.10</td>
<td>.75</td>
</tr>
<tr>
<td>NT</td>
<td>7.6</td>
<td>33.8</td>
<td>36.50</td>
<td>.00*</td>
</tr>
<tr>
<td>NP</td>
<td>12.9</td>
<td>27.8</td>
<td>11.04</td>
<td>.00*</td>
</tr>
<tr>
<td>NJ</td>
<td>17.1</td>
<td>26.3</td>
<td>3.63</td>
<td>.05*</td>
</tr>
<tr>
<td>TJ</td>
<td>29.0</td>
<td>42.9</td>
<td>6.28</td>
<td>.01*</td>
</tr>
<tr>
<td>EN</td>
<td>21.9</td>
<td>23.3</td>
<td>0.03</td>
<td>.86</td>
</tr>
</tbody>
</table>

\(a_n = 210.\) \(b_n = 133.\)

\(*p < .10.\)

When the thinking function was combined with sensing (ST), no substantial difference in proportions between the two groups was found. This may have reflected the findings already discussed which showed the sensing function strongly associated with staff nurses. When the thinking function was combined with judging (TJ), a
significant difference between the two groups emerged. Nurse managers had a greater proportion of the TJ combination (42.9%) when compared to the proportion in staff nurses (29%). Another pattern in the data was that no type preferences containing the attitude extroversion (E) were different between the two groups.

Based on these findings, 5 of the 10 null hypotheses were rejected. The alternate hypotheses stating that nurse managers have proportionately more type preferences of N, NT, NP, NJ, and TJ than staff nurses were accepted. The five null hypotheses stating that there would be no differences in the proportions of nurse managers and staff nurses having the type preferences of E, EP, ST, NF, and EN were not rejected.

Hypothesis 3

Research Question 3 was answered in part using the null hypothesis stating that first-line nurse managers (head nurses) and staff nurses would have the same proportions of the following type preferences (groupings): E, ST, and TJ. This statement actually includes three separate null hypotheses that were tested at the alpha level of .10.

As illustrated in Table 20, first-line nurse managers were found to have a significantly greater proportion for the type preference of TJ than staff nurses, 43.3% compared to 29.0%, respectively. Neither group differed proportionately in the type preferences of E or ST. These findings are consistent with those found in the discussion for Hypothesis 2, Research Question 3.
Table 20
Comparison of Staff Nurses and First-Line Nurse Managers (Head Nurses) on Selected Type Preferences

<table>
<thead>
<tr>
<th>Type preference</th>
<th>Staff nurses(^a) (%)</th>
<th>First-line nurse managers(^b) (%)</th>
<th>(\chi^2) value</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>47.6</td>
<td>48.5</td>
<td>0.000</td>
<td>.99</td>
</tr>
<tr>
<td>ST</td>
<td>31.0</td>
<td>29.9</td>
<td>0.002</td>
<td>.96</td>
</tr>
<tr>
<td>TJ</td>
<td>29.0</td>
<td>43.3</td>
<td>5.400</td>
<td>.02*</td>
</tr>
</tbody>
</table>

\(^a\)\(n = 210. \quad ^b\)\(n = .97.\)

\(*P < .10.\)

The null hypothesis stating that there would be no difference in the proportions between first-line nurse managers and staff nurses classified in the type preference of TJ was rejected. The alternate hypothesis that there would be proportionately more TJ groupings in the first-line nurse manager group than the staff nurse group was accepted. The null hypotheses related to the type preferences of E and ST were not rejected.

**Hypothesis 4**

The fourth null hypothesis for Research Question 3 proposed that middle nurse managers (directors) would have no different proportions than staff nurses for the following type preferences (groupings): E, N, EP, NF, NT, NP, NJ, TJ, and EN. Again, this statement reflected multiple null hypotheses, one for each type grouping listed. Each
null was tested at an alpha level of .10.

Middle nurse managers (directors) were found to differ significantly from staff nurses in their respective proportions for the type preferences of N, NT, NP, and NJ (see Table 21). While this reflects the patterns established under Hypothesis 2 for this research question, one notable change between Tables 19 and 21 is that the TJ type preference is not different proportionately between middle nurse managers and staff nurses ($p = .18$) while it was different when the composite sample of nurse managers was compared to staff nurses. The null hypotheses stating there would be no difference in the proportions between middle nurse managers and staff nurses for the type preferences of N, NT, NP, and NJ were rejected. The alternate hypotheses which stated that middle nurse managers would have greater proportions of these type groupings were accepted. Staff nurses had only 30% intuitives (Ns) compared to the 69.4% intuitives in the middle nurse manager group. Significantly more middle nurse managers (44.4%) had an associated NT type grouping than staff nurses, 7.6% of whom had this type preference. A larger percentage of NPs (38.9%) were found in the group of middle nurse managers than the group of staff nurses (12.9%); this same pattern held for the NJ type preference with 30.6% versus 17.1%, respectively.

The null hypotheses stating that there were no differences in proportions between the middle nurse manager group and the staff nurse group for the type groupings of E, EP, NF, TJ, and EN were not rejected. Again, a trend can be noted that type groupings having the
function of extroversion (E) show no substantial difference in proportions between the two groups.

Table 21

Comparison of Staff Nurses and Middle Nurse Managers (Directors) on Selected Type Preferences

<table>
<thead>
<tr>
<th>Type preference</th>
<th>Staff nurses(^a) (%)</th>
<th>Middle nurse managers(^b) (%)</th>
<th>(\chi^2) value</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>47.6</td>
<td>41.7</td>
<td>0.23</td>
<td>.63</td>
</tr>
<tr>
<td>N</td>
<td>30.0</td>
<td>69.4</td>
<td>19.13</td>
<td>.00*</td>
</tr>
<tr>
<td>NF</td>
<td>15.2</td>
<td>19.4</td>
<td>0.15</td>
<td>.70</td>
</tr>
<tr>
<td>NF</td>
<td>22.4</td>
<td>25.0</td>
<td>0.02</td>
<td>.90</td>
</tr>
<tr>
<td>NT</td>
<td>7.6</td>
<td>44.4</td>
<td>33.65</td>
<td>.00*</td>
</tr>
<tr>
<td>NT</td>
<td>12.9</td>
<td>38.9</td>
<td>13.18</td>
<td>.00*</td>
</tr>
<tr>
<td>NP</td>
<td>17.1</td>
<td>30.6</td>
<td>2.76</td>
<td>.09*</td>
</tr>
<tr>
<td>NJ</td>
<td>29.0</td>
<td>41.7</td>
<td>1.74</td>
<td>.18</td>
</tr>
<tr>
<td>EN</td>
<td>21.9</td>
<td>25.0</td>
<td>0.04</td>
<td>.85</td>
</tr>
</tbody>
</table>

\(a_n = 210\). \(b_n = 36\).

*\(P < .10\).

Research Question 4 and Findings

Research Question 4 dealt with whether the psychological typologies of first-line nurse managers (head nurses) and middle nurse managers (directors) differed. Because of the small \(n\) (36) of the middle nurse manager group, meaningful comparisons of the types
themselves were not possible (see Appendix E for the type tables of middle nurse managers and first-line nurse managers). However, the question was addressed through the hypothesis testing of selected type preferences (groupings). The alpha level of .10 was used.

**Hypothesis 1**

The first null hypothesis for Research Question 4 proposed that there would be no difference in the proportions of middle nurse managers and first-line nurse managers for the following type preferences (groupings): N, P, NF, NT, and NP. In reality, this statement represents five null hypotheses, one for each type preference listed.

As illustrated in Table 22, middle nurse managers were found to have significantly greater proportions of intuitives and perceptsives (69.4% and 47.2%, respectively) than first-line nurse managers (48.5% and 29.9%, respectively). The null hypotheses stating that there would be no difference in the proportions of these two type preferences between the two groups were rejected. The alternate hypotheses stating that middle nurse managers would have greater proportions of the type preferences of N and P were accepted.

The null hypotheses proposing that middle nurse managers and first-line nurse managers would have no differences in their proportions for the type groupings of NF, NT, and NP were not rejected.
Table 22
Comparison of First-Line Nurse Managers and Middle Nurse Managers on Selected Type Preferences

<table>
<thead>
<tr>
<th>Type preference</th>
<th>First-line nurse manager (^a) (%)</th>
<th>Middle nurse manager (^b) (%)</th>
<th>(\chi^2) value</th>
<th>(p) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>48.5</td>
<td>69.4</td>
<td>3.85</td>
<td>.05*</td>
</tr>
<tr>
<td>P</td>
<td>29.9</td>
<td>47.2</td>
<td>2.76</td>
<td>.09*</td>
</tr>
<tr>
<td>NF</td>
<td>18.6</td>
<td>25.0</td>
<td>0.33</td>
<td>.56</td>
</tr>
<tr>
<td>NT</td>
<td>29.9</td>
<td>44.4</td>
<td>1.87</td>
<td>.17</td>
</tr>
<tr>
<td>NP</td>
<td>23.7</td>
<td>38.9</td>
<td>2.3</td>
<td>.13</td>
</tr>
<tr>
<td>SF</td>
<td>21.6</td>
<td>2.8</td>
<td>5.48</td>
<td>.02*</td>
</tr>
</tbody>
</table>

\(^a_n = 97. \quad ^b_n = 36.\)

*\(p < .10.\)

**Hypothesis 2**

The second null hypothesis for Research Question 4 stated that there would be no difference in the proportion of the type preference of SF for middle nurse managers and first-line nurse managers. This hypothesis was rejected and the alternate hypothesis proposing that middle nurse managers would have proportionately less SF type preferences than first-line nurse managers was accepted. As depicted in Table 22, first-line nurse managers had 21.6% SF type groupings while middle nurse managers had only 2.8% of that type grouping.
Summary

This chapter reported the demographic data collected about the participants using the Personal Data Survey and the data collected to answer the four research questions in the study using the Myers-Briggs Type Indicator. Research Question 1 was addressed using descriptive analysis and Questions 2, 3, and 4 were answered using the chi-square statistic to test nondirectional hypotheses at an alpha level of .05 and directional hypotheses at an alpha level of .10.

The three groups representing the three levels of nursing management, the independent variable in the study, were compared to each other and to nurses nationally on the demographic variables of age and level of nursing education achieved. The three groups—staff nurses, first-line nurse managers, and middle nurse managers—were also compared to each other by length of employment in nursing. Increases in all three demographic variables were found at each successive level of nursing management. The distributions of staff nurses by shift and type of unit were also described and were consistent with what would be expected in an acute care hospital.

Research Question 1 was addressed through reporting the distribution of the MBTI types of the staff nurse sample. Seven of the 16 types accounted for 78% of types in the sample with sensing, feeling, and judging types having the greatest representation. The implications of these findings will be discussed in detail in Chapter VI.
Research Question 2 was answered by comparing the staff nurse sample in this study to two samples reported by McCaulley (1978), namely, female registered nurses and nurses in a hospital work setting. Significant differences were reported between the proportions of the typologies of the groups compared. Staff nurses in this study were also found to have more thinking (T) and thinking-judging (TJ) type preferences than nurses in a hospital setting.

In Research Question 3, the staff nurse group was compared to nurse managers as a composite group and then to first-line nurse managers and middle nurse managers separately. These comparisons demonstrated significant differences in the proportions of the types reported in the type tables of staff nurses and nurse managers. First-line nurse managers were also found to have proportionately more of the TJ type preference (grouping) than staff nurses. When compared to staff nurses, middle nurse managers had greater proportions of the following type preferences: N, NT, NF, and NJ.

The last research question addressed differences between type preferences of first-line nurse managers and middle nurse managers. Middle nurse managers were found to have proportionately more Ns and Ps than first-line nurse managers and significantly less SFs.

The research findings and the analysis of the data support that there are meaningful differences between nurse samples at the three levels of management in this study. Chapter VI will discuss conclusions that may be drawn from these findings and suggestions for further research following an overview of the entire study.
CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to present an overview of the entire study and the conclusions that may be drawn as a result of the research findings and data analyses. Limitations of the study and recommendations for future research are included as well.

A Summary of the Study

This survey research study was conducted to add to the knowledge of nurse managers in acute care institutions and the staff nurses whom they manage. In this time of rapid change and ambiguity, both in the health care system and the nursing profession, strong leadership from nurse managers is critical. While the qualities needed by nurse administrators are well documented in the literature, little information seems available on the profiles of current nurse managers, traits they possess, and how they become competent.

The assessment of the managerial capability and potential style of individuals includes identifying and analyzing their personality characteristics. Jung, a Swiss physician-psychologist, developed a theory by which this may be done called the Psychological Type Theory. This theory is based on Jung's belief that behavior which seems random is actually orderly, consistent, and a result of inherent differences in mental functioning among individuals. Jung postulated that there are four basic psychological processes. Two of
these, sensing and intuition, represent dichotomous methods of perception or becoming aware of oneself and the environment. The other two functions, thinking and feeling, are dichotomous methods of judgment or making decisions about what is perceived. These functions occur in attitudes of extroversion or introversion. Myers (1962) added a fourth dimension to identify the dominant and auxiliary functions. Therefore, 16 different types become possible.

Knowledge of the typologies of staff nurses and nurse managers can be important because type impacts team-building efforts, problem-solving styles, and the manner in which change should be managed with different groups. Type can help managers determine appropriate methods to motivate staff and reward them in a meaningful manner. The information provided by research about the types of nurse managers and staff nurses can assist the profession and individual nurses in decisions related to the selection, education, and placement of potentially effective managers.

Based on the literature review of type theory and nursing administration, answers were sought to the following research questions:

1. What is the psychological typology of staff nurses on inpatient clinical areas in acute care institutions?

2. Are these typologies different from typologies for female registered nurses and nurses in a hospital work setting as reported by McCaulley (1978)?

3. Is there a difference between the psychological typologies of staff nurses and nurse managers in acute care settings?
4. Is there a difference between the psychological typologies of first-line nurse managers and middle nurse managers in acute care settings?

The research questions were addressed using the Myers-Briggs Type Indicator (MBTI), an instrument widely used and recognized for its validity and reliability in establishing the types of people based on Jung's theory. A second research instrument, the Personal Data Survey, was used to collect demographic information important in the interpretation of the research findings.

Eight acute care institutions (hospitals) were selected randomly from hospitals listed by the American Hospital Association (1983) as having 400-600 beds and located in the state of Michigan but outside of Wayne County. Of the eight hospitals approached, permission to conduct the study was obtained in five. The sample for the study consisted of all female middle nurse managers (directors), all female first-line nurse managers (head nurses), and two randomly selected full-time female staff nurses from each clinical area in these institutions. The three groups comprised the levels of nurse management, the independent variable in the study. The final sample consisted of 343 nurses; 36 were middle nurse managers, 97 were first-line nurse managers, and 210 were staff nurses.

Data on the dependent variable, the MBTI types of the individuals, were obtained through the distribution of packets of the research instruments through the assistance of an internal contact person in each institution. The packets were delivered and picked up from the hospitals personally by the researcher. Each set of
materials was coded to protect the anonymity of participants but allow for the follow-up of nonrespondents.

The data were analyzed using a computer program, the Statistical Package of Social Sciences (SPSS). Research Question 1 was addressed using descriptive analysis. Questions 2, 3, and 4 were answered through hypothesis testing using the chi-square statistic and alpha level of .05 for nondirectional hypotheses and .10 for directional hypotheses.

A summary of the research findings with associated conclusions is addressed in the next section. Limitations of the study and recommendations for future research follow that discussion.

Research Question 1: Findings and Conclusions

Research Question 1 dealt with the current distribution of staff nurses by type. The findings from the 210 staff nurse participants showed a clustering of 78% of the sample into seven types. They were: ISFJ (21.9%), ISTJ (13.3%), ESTJ (11.4%), ESFJ (9.0%), ENFJ (9.0%), ENFP (7.1%), and ESFP (6.2%). Identification of patterns within these seven types produced a profile of the staff nurse which can be important to the field of nursing administration.

Of the 164 staff nurses in the seven major types reported, 79% displayed a preference for sensing, 68% a preference for feeling, and 83% a preference for judging. These characteristics depict a group that is very practical, attentive to facts and detail with emphasis on the immediate tasks of patient care and technical skills. In addition, the group would enjoy opportunities to serve and meet the
human needs of others in an organized and decisive manner (McCaulley, 1978; Myers, 1962). It would be expected that the majority of the staff nurse group, being the direct care givers of the three groups in this study, would exhibit these traits.

The staff nurses in the seven major types also exhibited SJ combinations 71% of the time, the SF preference 47% of the time, and ST 32% of the time. This presents a picture of a group that prefers a well ordered, systematic, and predictable work environment with clear lines of authority and standard operating procedures (McCaulley, 1978; Myers, 1962). More specifically, the staff nurses with the SF preference are likely to value social relationships at work and need to express and receive warmth in relationships. Dis-harmony in the work setting can be especially distressing to them. Staff nurses with an ST preference may function more independently than their SF colleagues since they are often more interested in the mechanical technology of their work and the "business" part of their position. When judging (J) is added to the type preferences of SF and ST, a group of staff nurses emerges which emphasizes organization, reliability, dedication, and orientation to duty (Keirsey & Bates, 1978).

In the literature review concerning the expectations of the modern role of the staff nurse, it was emphasized that acute care institutions have evolved to complex health care delivery systems. The rate of change occurring within hospitals has accelerated due to economic forces, rapid technological changes, and the emerging role of a variety of professionals. The expectation that the emerging
nurse professional would be an independent and autonomous practitioner and accountable to the consumer was discussed as well. Primary nursing as the major nursing care delivery system and decentralization of the nursing department were highlighted as current trends in the nursing departments of hospitals.

The anticipated characteristics of staff nurses as depicted in the literature do not match those found in the staff nurses in the seven major types in this study. While the ST individual enjoys working independently, s/he wishes to do so in a well-ordered, structured setting. The many changes in the health care industry that nurses are experiencing and are purported in the literature to be opportunities to advance the nursing profession, can actually be threatening to the major types reported by this staff nurse group. Therefore, the expectations the profession and nurse managers currently have for staff nurses may be inappropriate and contribute to the stress and burn-out in the work environment of nurses which is so widely publicized in nursing. Nurse managers must consider different approaches in the education and management of staff nurses to assist these types to assume their "modern role" in ways that are understandable, meaningful, and comfortable to them.

**Intuitives in Staff Nurses**

While the 164 staff nurses had a large number who preferred sensing, only 21% preferred intuition and none had a type preference combination of NT. Considering that staff nurses serve as a potential pool of future managers and intuitives (N)–NTs, as well as
NFs—are associated with many of the traits expected of nurse managers as they progress "up" the management ladder, the dearth of this type preference in staff nurses becomes important. Is it possible that MBTI types with the intuitive (N) function are available in the general population but for some reason are not recruited or retained in hospital-based nursing? To address this in more depth, the staff nurse group and the total sample of nurses in this study were analyzed for the proportions of types containing the intuitive function by comparing them with a normed population of female high school students (McCaulley, 1978).

As depicted in Table 23, the nursing groups had substantially less ENFPs and INFPs than the general population used in this comparison. Based on the normed population, the nurse samples would have been expected to have 18% ENFPs and 10% INFPs. The staff nurse sample had 7% ENFPs and 2% INFPs and the total nurse sample had 5% of each of these two types. These percentages probably reflect the low proportion of perceptsives in the nurse samples as well as the low proportion of intuitives. Of greater importance is that in all of the types in which the actual and expected proportions are similar, the expected proportions are small. For example, only 2% of the nurse samples would be expected to have types ENTJ or INTP.

The implication for nursing administration is that the intuitive types that the literature supports as having traits essential for effective administration are relatively rare in the general population. The two largest proportions of these types in the population, ENFP and INFP, are either attracted to nursing in smaller proportions
or are not retained in nursing. Therefore, they are underrepresented in the nursing population when compared to a general female population.

**Table 23**

Actual and Expected Proportions of Selected Types in Staff Nurse and Total Nurse Samples Using a Normed Population

<table>
<thead>
<tr>
<th>Types</th>
<th>Staff nurse&lt;sup&gt;a&lt;/sup&gt; (%)</th>
<th>Total nurse&lt;sup&gt;b&lt;/sup&gt; (%)</th>
<th>Expected percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTJ</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>ENTP</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>ENFJ</td>
<td>9</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>ENFP</td>
<td>7</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>INTJ</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>INTP</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>INFJ</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>INFP</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Note. The normed population used for this comparison is a sample of female high school students from *Applications of the Myers-Briggs Type Indicator to Medicine and Other Health Professions: Monograph 1* (Appendix B) by M. H. McCaulley, 1978, Gainesville, FL: Center for Applications of Psychological Type.

<sup>a</sup><sub>n</sub> = 210.  <sup>b</sup><sub>N</sub> = 343.

Recruitment of competent women managers is currently a priority in many professions. The competition for types having the traits desired can be intense. If the nursing profession is to be
successful in obtaining such types, it must assess its present methods of attracting and keeping these types. In addition, although one's type is stable, with properly planned curricula, nurse educators in graduate programs in nursing administration can facilitate either the development of the needed traits in students of a different type or teach those same students how to seek out and utilize individuals with the desired types.

**Summary of Conclusions: Question 1**

From the distribution of the types in the staff nurse sample, one can conclude that the profile is one of a majority of sensing, feeling, and judging types, consistent with the tasks expected of the direct care giver. This sample portrays a group which prefers structure, well delineated lines of authority, and policies and procedures. However, this picture is not consistent with the modern role of the professional nurse as discussed in the literature. It contrasts sharply with the idea of an independent, autonomous practitioner who anticipates and responds easily to a changing, ambiguous environment. Therefore, nurse managers and the profession as a whole must assess the congruence of their goals and expectations with the characteristics of the staff nurses who are expected to meet them.

The staff nurse sample has only a small proportion of intuitives from which to fill nurse management positions. Of greater importance is that the total nurse sample had fewer ENFPs and INFPs than a general female population. In addition, other types with the intuitive (N) function are relatively small in both the total nurse sample
and general female population. This has implications for the recruit­ment and retention of these types into nursing and the education of nurse managers in the development and utilization of the traits associated with the desired types.

Research Question 2: Findings and Conclusions

The purpose of Research Question 2 was to identify changes that may be occurring in the population of staff nurses, changes that may or may not be anticipated due to the rapidly evolving health care system and nursing profession. The most comprehensive report of the MBTI types of nurses found in the literature did not contain a sample like the staff nurse group in this study. However, it did have reported types for female registered nurses and nurses in a hospital work setting (McCaulley, 1978). These were chosen for comparison because they were the closest in description to the sample in this study. However, conclusions drawn from the research findings for this question must be made very tentatively because the groups initially differed in ways that could have influenced the distribution of the types reported.

The null hypotheses stating that there would be no differences between the proportions of types in the type tables of female registered nurses and staff nurses in this study and the type tables of nurses in a hospital work setting and staff nurses were rejected. A post hoc analysis was done in each case to see which proportions of individual types contributed substantially to the overall difference. When comparing the type table of female registered nurses to staff
nurses in this study, proportionately more ESTJs and ISFJs were found in the latter sample. However, the female registered nurse group had more ENFPs and INFPs. In comparing nurses that work in a hospital setting to the staff nurses in this study, three other types were found to contribute substantially to the overall difference. The ESTP and ENFJ types were represented in greater proportions in the staff nurse sample and less ESFP types were found in this sample than the sample of nurses in a hospital work setting.

Conclusions from these findings must be made with caution and merely suggest trends that may be appropriate for further study. In each comparison a type having an ST combination was found in greater proportions in the staff nurse sample. Also, the types showing substantially less proportions in the staff nurse group than the other two groups were all perceptive (P). The only type with the intuitive function in it that had greater proportions in the staff nurse sample was that of ENFJ.

Another pattern suggested by the data is that the differences between the female registered nurse sample and the staff nurse sample may be evident in a larger number of individuals than the differences between nurses in a hospital setting and the staff nurse group. Three of the four types differing between the first two sample groups just cited—ESTJ, ENFP, and ISFJ—were among the seven major types reported by the staff nurse sample. However, only one of the three types differing between nurses in a hospital work setting and the staff nurse group in this study, that of ENFJ, was in the seven major types.
Interpretation of this pattern must be very tentative based on the difficulties in comparing unlike groups and the fact that the proportions of all 16 types in each group's type table were factors in the differences found. However, there is the possibility that female registered staff nurses of today are becoming more sharply differentiated from the past population of female registered nurses while remaining similar to those nurses who have, in the past, chosen to work in the hospital. Further study of this phenomenon, focusing on whether this is true for the current as well as the past general population of registered nurses, is indicated before any conclusions can be reached.

Differences in Type Preferences: Research Question 2

Five null hypotheses were proposed for Research Question 2 which stated that the proportions of the type preferences (groupings) of N, T, NT, NJ, and TJ would be the same between the sample of staff nurses in this study and nurses in a hospital work setting as reported by McCaulley (1978). Two of the null hypotheses were rejected. More thinking (T) and thinking-judging (TJ) type preferences were found in the staff nurse sample as had been anticipated.

The literature reported several trends which would encourage the influx of the types with thinking judgment into nursing in greater numbers. Among these are the current explosion in technology, the move of nursing toward a more independent role, the stress placed on technical competence, and the heavy emphasis on the use of the nursing process which is based on a concept of linear thinking. The
greater proportions of TJ type preferences found in the staff nurse sample also reflected the greater influx of thinking types, the majority of which are still likely to be decisive in their judgments.

Three of the five null hypotheses were retained and all three were associated with type preferences having the intuitive (N) function. The literature has indicated that the education of nurses has shifted from hospital-based diploma schools to educational settings. More staff nurses were felt to be completing a baccalaureate degree or higher. Myers (1962) had found the intuitive (N) function strongly related to academic level and achievement.

To assure that this relationship was true for this study, the S-N index was analyzed by level of nursing education for the total sample of nurses in this study (see Table 24). Of the individuals having a master's degree in nursing, 76% were intuitives. Conversely, sensing types were found in 65% of those having diploma degrees as their highest degree, in 60% having associate degrees, and in 66% of the nurses reporting a baccalaureate degree as the highest educational level in nursing. Additionally, for those nurses in the study who reported degrees in majors other than nursing, 64% at the baccalaureate and 50% at the master's level were intuitives. Therefore, while intuitives were found in higher percentages at higher levels of education as suggested by Myers (1962), the actual patterns were not completely consistent with those which were expected.

In the description of the demographic variables of the nurses in this study covered in Chapter V, it was pointed out that in the staff nurse sample, shifts in the level of education had occurred over the
past 5 years. However, these changes were mainly at the diploma and associate degree levels. Percentages of the staff nurse sample having baccalaureate and master's degrees in nursing were very similar to those of 5 years ago. Therefore, the changes in level of education reported by staff nurses in this study were limited to the two programs which are unlikely to attract substantial numbers of intuitives.

Table 24

<table>
<thead>
<tr>
<th>Highest degree in nursing</th>
<th>Sensing types (%)</th>
<th>Intuitive types (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate (n = 93)</td>
<td>60</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Diploma (n = 138)</td>
<td>65</td>
<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Baccalaureate (n = 86)</td>
<td>66</td>
<td>34</td>
<td>100</td>
</tr>
<tr>
<td>Master's (n = 25)</td>
<td>24</td>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>Doctorate (n = 1)</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The American Nurses Association, at its meeting of the House of Delegates in July 1985 will be affirming again its commitment to making the entry level for professional registered nurses the baccalaureate level of education (Cole, 1985). The forces encouraging higher educational preparation in staff nurses remain and future research in the MBTI type of staff nurses should help track the
impact these forces may have on patterns of type preferences, particularly that of the intuitive function.

Summary of Conclusions: Question 2

Conclusions for Research Question 2 must be made cautiously since the comparisons were between groups which were initially dissimilar. However, the type tables of staff nurses in this study differed from those of female registered nurses and nurses in a hospital work setting as reported by McCaulley (1978). The differences seemed substantially related to a higher number of types with the ST type grouping and a lesser number of types with the perceptive (P) type preference in the staff nurse sample. The data imply the differences between the female registered nurse sample and the staff nurse sample in this study may be more noticeable than the differences between the latter group and nurses in a hospital work setting.

Staff nurses in this study were found to have substantially more thinking types than nurses in a hospital work setting. However, the anticipated influx of more intuitive (N) type preferences into the staff nurse group was not supported. This was probably due in part to the lack of any meaningful change over the past 5 years in the percentage of staff nurses at the baccalaureate or master's levels of nursing education.

Research Question 3: Findings and Conclusions

Research Question 3 sought to answer whether the typologies of staff nurses differed from those of nurse managers. To address this
issue, the type tables of the staff nurse sample and a composite sample of the two nurse manager groups (first-line nurse managers and middle nurse managers) were analyzed. In addition, comparisons of specific type preferences (groupings) were made between these two samples and between each nurse manager group and the staff nurse group.

The first null hypothesis associated with this question was rejected because a substantial difference was found when comparing the proportions of types from the type tables of staff nurses and nurse managers as a composite group. A post hoc analysis indicated that 7 of the 16 types contributed greatly to the overall difference found.

Of the seven major types, nurse managers were found to have larger proportions of ENTJs, ENTPs, INTJs, INTPs, and INFPs than the staff nurses. In all of these types, the intuitive (N) function is found. In three of the four, the NT grouping is present. This finding is consistent with the types one would expect to find in managerial roles. The literature reviewed strongly suggested that more NTs and NFs would gravitate to management because of the needs at that level for visionary and long range planning and for the abilities of working with greater complexity, fostering creativity and innovation, and communicating effectively. Also, as already discussed, the intuitive function is associated frequently with academic level and achievement. As reported in Chapter V, the nurse manager group had higher percentages of baccalaureate and master's degrees than the staff nurse group.
In the post hoc analysis, staff nurses were found to have more ISFJ and ISFP types than the nurse manager group. This propensity for the SF grouping to be highly associated with direct care givers and less related to nursing administrators is congruent with the research reported by McCaulley (1978).

**Differences in Type Preferences: Nurse Managers and Staff Nurses**

The next 10 null hypotheses associated with this research question were directed at differences in proportions of the following type preferences (groupings) that might exist between the staff nurse sample and the composite nurse manager sample: E, N, EN, ST, NF, NT, NP, NJ, TJ, and EN. Five of these null hypotheses were rejected. The type groupings of N, NT, NP, NJ, and TJ were all found to have greater representation in the nurse manager group than the staff nurse group.

Four of these type preferences were associated with the intuitive (N) function as would be expected based on the previous discussion of this phenomenon. However, the analysis does not show whether the intuitive (N) function alone accounted for these differences or if the proportions of the thinking (T) preference and perception (P) preference contributed substantially to the variations as well. Therefore, the differences in percentages between the staff nurse group and the composite nurse manager group were computed for these two type preferences. Of the nurse manager sample, 63% preferred the thinking (T) function as opposed to 38% of the staff nurses. For the perception (P) preference, 26% of the nurse managers were classified...
in the grouping as opposed to 13% of the staff nurses. These data suggest the combinations of intuition and thinking (NT) and intuition and perception (NP) and not the intuitive function alone contributed to the substantial differences between the two groups in the two configurations. However, further research would be needed for verification of this supposition.

Myers (1962) found that the TJ combination was associated frequently with the "tough" minded executive role. Therefore, its presence in larger proportions in the nurse manager group compared to the staff nurse group was as expected.

The other five null hypotheses comparing these two groups were retained because the anticipated differences for the type preferences of E, EP, ST, NF, and EN were not supported by the data. Three of these five hypotheses dealt with type preferences containing the attitude of extroversion (E). Based on the literature search, managers were expected to exhibit this attitude more than staff nurses. For example, in the reported research in Chapter III on correlations between the MBTI and other personal survey inventories, extroversion was found to be associated with business contact, political values, and leadership (see Table 1), all characteristics expected of nurse managers. McCaulley (1978) reported that a sample of 60 health administration students and practitioners had 60% extroverts and significantly more EN-J types than a normed population of high school students.

Since three null hypotheses in this research question and any subsequent ones associated with type groupings containing
extroversion were retained, additional analyses were done to see if there were any substantial differences for the E-I index among all three levels of management, among different age ranges, or among varying lengths of employment. As depicted in Table 25, there were essentially no differences in proportions between extroverts and introverts across all levels of these three variables. For the levels of nurse management in this study, extroverts and introverts were about evenly divided among the three levels.

The implications of the lack of substantial numbers of extroverts in the higher levels of nursing management need further study. Nurse managers are expected to be less parochial than in the past and form liaisons and cooperative relationships with multiple departments in the hospital. They must take the initiative to assertively represent the interests of the nursing department to other hospital administrators. They are expected to scan the environment for trends that will affect the nursing profession and for new opportunities for nursing that are emerging in the changing health care delivery system. Also, political activism inside and outside the organization is becoming more essential for the voice of nursing to be heard. These expected activities are usually "more natural" for extroverts. It isn't that introverts cannot do them, they are just less likely to either think of or be comfortable doing them.

Extroverts are estimated to outnumber introverts in the general population by 2:1 or 3:1 (Lawrence, 1982). McCaulley (1978) reported that the nursing student composite sample in her research had 58% extroverts whereas the composite of practitioners in nursing and
Table 25

Distribution of E-I Type Preference Among Nurses by Level of Management, Age, and Length of Employment

<table>
<thead>
<tr>
<th>Type preference</th>
<th>Level of managementa</th>
<th>Level of managementb</th>
<th>Level of managementc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff nurse (n = 210)</td>
<td>First-line nurse manager (n = 97)</td>
<td>Middle nurse manager (n = 36)</td>
</tr>
<tr>
<td>E</td>
<td>48 (%)</td>
<td>48 (%)</td>
<td>42 (%)</td>
</tr>
<tr>
<td>I</td>
<td>52 (%)</td>
<td>52 (%)</td>
<td>58 (%)</td>
</tr>
<tr>
<td>Total</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age range in yearsb</th>
<th>20-25 (n = 4) (%)</th>
<th>26-30 (n = 78) (%)</th>
<th>31-35 (n = 70) (%)</th>
<th>36-40 (n = 54) (%)</th>
<th>41 &amp; older (n = 100) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>56 (%)</td>
<td>51 (%)</td>
<td>40 (%)</td>
<td>43 (%)</td>
<td>48 (%)</td>
</tr>
<tr>
<td>I</td>
<td>44 (%)</td>
<td>49 (%)</td>
<td>60 (%)</td>
<td>57 (%)</td>
<td>52 (%)</td>
</tr>
<tr>
<td>Total</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of Experience in Monthsc</th>
<th>0-11 (n = 8) (%)</th>
<th>12-36 (n = 35) (%)</th>
<th>37-60 (n = 50) (%)</th>
<th>61-120 (n = 86) (%)</th>
<th>121-180 (n = 72) (%)</th>
<th>181 &amp; over (n = 92) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>38 (%)</td>
<td>57 (%)</td>
<td>44 (%)</td>
<td>55 (%)</td>
<td>42 (%)</td>
<td>44 (%)</td>
</tr>
<tr>
<td>I</td>
<td>62 (%)</td>
<td>43 (%)</td>
<td>56 (%)</td>
<td>45 (%)</td>
<td>58 (%)</td>
<td>56 (%)</td>
</tr>
<tr>
<td>Total</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
<td>100 (%)</td>
</tr>
</tbody>
</table>

\[ a \chi^2 = (2, N = 343) = 0.52 \ p = .77. \]
\[ b \chi^2 = (4, N = 243) = 3.77 \ p = .44. \]
\[ c \chi^2 = (5, N = 343) = 5.21 \ p = .39. \]
allied fields (nurse assistants) had 48% extroverts. Research is warranted into the recruitment and retention of extroverted types in hospital-based nursing. Also, studies are indicated which look at the E-I index and its relationship to the manifestation of the expected behaviors of nurse managers.

Staff nurses and nurse managers were found to be proportionately no different in the ST type grouping. Given the high percentage of sensing types in staff nurses and the current influx of more STs at their level when compared to the nurses in McCaulley's (1978) study, it is not surprising that the emergence of this grouping in the nurse managers was not sufficient to warrant a statistical difference. However, as already mentioned, when the thinking function is isolated from the groupings, the percentage of thinking types in the nurse manager group is comparatively greater than that in the staff nurse group, 63% versus 39%, respectively.

The anticipated difference in the proportions of NF type preferences between nurse managers and staff nurses was not supported in this study. Based on the literature review it was expected that NF types would gravitate to the higher managerial levels. Possibly because of the feeling function, however, NFs may be equally satisfied to stay in the direct care giver role, especially with the increasing autonomy that has been given to staff nurses in some settings. Research into the relationships of this type grouping to particular clinical areas, to the satisfaction of the NFs with their responsibilities, and to the perceived level of autonomy of their
positions is suggested to further delineate their role at different levels of nurse management in hospitals.

**Type Preferences: Staff Nurses Versus Each Nurse Manager Level**

Three null hypotheses were proposed to compare the proportions of staff nurses and first-line nurse managers on the following type preferences: E, ST, and TJ. The null regarding the latter grouping, TJ, was rejected. As expected, this grouping, which has been associated in the literature with executives, was found in greater proportions in the managers than the staff nurses. The other two null hypotheses were not rejected. The trends observed between the composite nurse manager sample and staff nurse sample such as having essentially similar proportions in the E and ST type groupings were also reflected in the analysis between the first-line nurse managers and staff nurses.

The fourth set of null hypotheses associated with Research Question 3 stated that there would be no differences between the proportions of staff nurses and the proportions of middle nurse managers (directors) having the following type groupings: E, N, EP, NF, NT, NP, NJ, TJ, and EN. As anticipated, middle nurse managers were found to have more type preferences of N, NT, NP, and NJ. Intuitives, having broad conceptual abilities, would be expected to be found in greater proportions at higher levels of management and exhibit less technical skills (Katz, 1955). Also, agents of innovation and initiators of change (associated in the literature with the N and P preferences) are expected to be in the upper part of the hierarchy.
(Bhola, 1972). Because of the need to create complex systems, NTs tend to gravitate to these management levels as well. The NJ type preference reflects the tendency for intuitives in management to be often associated with judging (J) because of the demands of the position to make decisions.

A question arises as to whether the substantial differences that were found between the composite nurse manager group and the staff nurse group in the proportions of intuitives were not due solely to the proportions of intuitives in the middle nurse manager group. Therefore, the proportions of intuitives in the first-line nurse manager group and the staff nurse group were compared and found to be substantially different. The first-line nurse managers were found to have 48% intuitives in their group compared to 30% intuitives in the staff nurse group. This suggests that a greater proportion of intuitives are found at either of the two higher levels of nurse management when compared to staff nurses.

Keirsey and Bates (1978) believed that differences between groups in the S-N function resulted in more misunderstanding and destructive conflict than differences in any other MBTI scale. Since sensing types and intuitives diverge immediately on separate paths in their perception of the world, it is surmised that they remain on these "different roads" even if they share the same E-I attitude, T-F function, or both extrovert judging (J) or perception (P). Therefore, the findings in this research suggest the potential for substantial conflict and misunderstanding between nurse managers and the staff to whom they are responsible. Nurse administrators must take
the responsibility of fostering an understanding of these differences and facilitating the appropriate utilization of all types in order to meet the goals of the institution and the individual professional nurse.

The TJ type grouping was not significant statistically at this level. The trend to have more TJ representation in middle nurse managers than staff nurses was evident in the percentages for the two groups (41.7% to 29%, respectively), but was not sufficient to meet the decision point needed to reject the null hypothesis. The three null hypotheses associated with type preferences containing extroversion (E, EP, and EN) were retained. The implications of this phenomenon have already been discussed in depth. As found with the composite sample of nurse managers, the NF type grouping was in similar proportions in the staff nurse group when compared to middle nurse manager group.

Summary of Conclusions: Question 3

The type tables of the staff nurse group and nurse managers as a composite group were substantially different. The differences can be largely attributed to more intuitives and NTs and less SFs in the nurse manager group. When the two groups were compared on specific type preferences, this same pattern was repeated. Also, the TJ type grouping, associated with the executive role, and the NP grouping were found in greater proportions in nurse managers than staff nurses.
When staff nurses were compared to each level of nurse management, namely, first-line nurse managers and middle nurse managers, these patterns were again repeated although the TJ grouping was not statistically different at the middle nurse management level.

The expected emergence of higher proportions of extroverts in the nurse manager group when compared to the staff nurse group did not occur and further research into the implications of this finding is suggested. The NF grouping was not found in higher proportions in nurse managers when compared to staff nurses nor were there more STs in the former group as had been expected. These types may enjoy certain aspects of the direct care giver role (people-orientation with the NF and science and technology orientation with the ST) and so be unmotivated to move into management or, if migration of these types to management is occurring, it may be too early to detect the phenomenon.

Research Question 4: Findings and Conclusions

Differences between type preferences of first-line nurse managers (head nurses) and middle nurse managers (directors) were addressed in Research Question 4. The type tables for each group were not compared because of the small sample of middle nurse managers. However, the two groups were compared for differences in the proportions of the following type groupings: N, P, NF, NT, NP, and SF.

Of the six null hypotheses developed for this research question, three were rejected. As expected, middle nurse managers were found to have greater proportions of Ns and Ps but proportionately fewer
SFs. While all types are necessary at each level of management for balanced and effective administrative functioning, progressively more intuition, thinking, and perceptive type preferences and less sensing and feeling groupings are expected at each successive level of management (see Figures 3 and 4 in Chapter III).

However, the anticipated patterns were not found in the type preferences of NF, NT, or NP although in each case the percentages of each grouping were higher in the middle nurse manager group than the first-line nurse manager group. Therefore, the null hypotheses related to these three type preferences were not rejected. It is possible that the size of the middle nurse manager sample was insufficient to adequately reflect the true trends of these type preferences at different levels of management. An alternative explanation is that the preferences may not follow the pattern that was anticipated based on the literature search.

**Summary of Conclusions for All Research Questions in the Study**

These findings support parts of the theory developed in Chapter III based on the characteristics and abilities required of the modern nurse manager and selected theories of management and change. The data support the use of the MBTI and type theory as a valuable framework for studying variables important to effective management in nursing. Differences in characteristics of staff nurses and nurse managers suggested by these findings can be important in preventing or resolving misunderstandings and conflict between the two and facilitating the effective utilization of all types.
Not all anticipated trends in type groupings occurred. Most notably type preferences exhibiting the extroverted attitude were not found in greater proportions in nurse managers. This trend was also true of NFs at both levels of nurse managers and STs at the first-line nurse manager level. This information is important when assessing the recruitment and retention of certain types into the nursing profession, into hospital-based nursing, and into management in nursing services in acute care institutions. It also can give meaningful direction in meeting the educational needs of students of nursing administration.

Limitations of the Study

Any research study has certain limitations which must be understood to correctly interpret the research findings, analysis of the data, and the conclusions drawn from that analysis.

In this study, the selection of hospitals which were needed to obtain the samples of staff nurses, first-line nurse managers, and middle nurse managers was done using a certain bed size, location, and random selection process. It was felt this would result in as much homogeneity among the institutions as possible. However, the institutions were found to vary widely on selected variables, most notably education. Specific comparisons on the distribution of the participants in each institution according to educational level achieved, unit type, age range, and length of employment can be found in Appendix F. These data suggest that application of the findings in this research to individual institutions must be done cautiously.
and in light of the characteristics of the particular institution. This was a major reason why the demographic characteristics of the participants in this study were outlined in detail in Chapter V.

In addition, the generalization of the findings of research conducted in a single institution using the MBTI to survey samples of nurses must be done with extreme caution. Examples of such studies would be those reported by Beck (1976) and Sigmund (1968). Also, research studies must report precisely the characteristics of the samples to enable individual institutions to use the information effectively.

The selection process for the institutions in the study and for the nurse samples representing the three levels of the independent variable, coupled with the response rate from each of the three samples, support the assumption that the samples are representative of nurses in Michigan in hospitals of this size. The comparison of the nurse sample in this study to the national population of registered nurses using the demographic variables of age and highest nursing degree achieved suggest similarities between these two groups as well. However, the generalizability of this study is restricted to nurses in Michigan from hospitals having 400-600 beds because it is not known if these nurses are unique in some way from nurses in other geographic locations and acute care institutions of different sizes.

The generalization of the research findings in this survey research to the middle nurse management level should be done cautiously given the small sample size (36) of the group. Ideally, at
ast 100 individuals would have been in each sample for the reasons discussed in Chapter IV. However, due to time and economic constraints, this was not possible in this study.

Recommendations for Future Research

This survey research study identified typologies of nurses at three levels of management in acute care institutions, namely, staff nurses, first-line nurse managers, and middle nurse managers. The findings supported a theory that certain typologies would cluster at different management levels. Further research is needed to see if individuals in these typologies are more satisfied with their jobs and if their performance is more satisfactory than types whose characteristics seem less suited to the demands of the position. One specific index which this type of research may address is the E-I scale given the relative dearth of extroverts in the nurse manager groups in the present study.

Future research can serve to validate whether the findings of this study are generalizable to nurses in other geographic locations and acute care institutions of differing sizes. A better method of clustering the institutions for future studies may be by level of education of the nurse populations rather than bed size, since that demographic trait varied so widely among institutions in this research study and has been shown to be related to the type of the individual (McCaulley, 1981; Myers, 1962).

Beck (1976) attempted to relate type to leadership style. However, the sample groups were restricted to a single institution and
were small in number. The relationship of type to the leadership styles of nurse managers could contribute meaningful information to the field of nursing administration. The theory developed in this research study on the characteristics expected of nurse managers and associated type preferences could serve as part of the base of such a study.

Given the low proportions of extroverts, ENFPs, and INFJs in nursing compared to normed populations, research on the recruitment and retention of these types into the nursing profession and hospital-based nursing is warranted. Tracking dropouts from nursing education and employment may give the profession and hospitals insight into characteristics they may have that are "lethal" to certain types. Since all types are needed for maximum balance and effectiveness in the work setting, the nursing profession must assume responsibility for identifying factors which discourage certain types from entering or staying in nursing and nursing management.

The attraction of certain types to the nursing profession that appear to have characteristics important to effective management but have small proportions in the general population may be critical for the development of nurse managers who can meet the challenges facing modern hospitals. Research in this area may help identify important variables in the recruitment and retention of individuals of these identified types.

In this research study, care was taken to eliminate the bias in type that nurses from a particular clinical area or specialty may exhibit. McCaulley (1978) suggested that certain types are attracted
to different clinical areas. Further research is needed to ascertain what types may gravitate to different specialities and whether these types are more satisfied with their job and perform it better than other types. If future research supports such relationships, the information can be very useful for nurse managers in the proper recruitment and placement of nurses and the creation of a work environment that motivates and rewards that particular type in the most effective and meaningful manner.

Finally, future research is warranted to study type preferences which were not adequately addressed here or were not found to be significant in this particular sample but, based on the literature, are important for effective nursing management. The research can expand on this knowledge base by looking for meaningful relationships using the actual 16 types rather than relying on type groupings as was done in this study. The information associated with the actual types may be more complete and meaningful when making decisions for selection and placement of nurse managers and the creation of a stimulating work environment and reward system for individual nurses (McCaulley, 1978; Myers, 1962).

In conclusion, this survey research study contributed to the knowledge of type theory and its relationships to nurse managers and the staff nurses to whom they are responsible. However, further verification of the theory developed in this research is necessary to validate the findings, refine the conclusions, and expand on areas that require further clarification. The research supported the use of type theory as measured by the Myers-Briggs Type Indicator as a
viable method for studying variables meaningful to nursing administration.
Dear (Name of Nurse Executive):

The need for research in nursing leadership has been supported widely in nursing literature and by such well known nurse authors as Barbara J. Stevens and Leah Curtin. The National Commission on Nursing, in its final report issued last year, emphasized that research on identifying factors of effective nursing administration is essential. In my capacities as nurse educator, manager, and consultant, I have observed, repeatedly, the impact that the quality of nursing leadership has on professional nursing practice in hospitals. Based on these observations and the intense pressures on the current health care system and the nursing profession, I have chosen to complete my requirements for a doctorate in Educational Leadership at Western Michigan University in Kalamazoo, Michigan, by focusing the research for my dissertation on nursing management.

The purpose of the research is to discover whether staff nurses and nurse managers at various levels of administration within an acute care institution significantly differ in the way they perceive and judge information and situations important in their practice and work environment. Such differences, if they exist, can have profound negative or positive outcomes depending on how the differences are managed. The results of the research study should add to the current knowledge about nurses and the manner in which they assess, problem solve, and make decisions.

Your hospital has been randomly selected for this research study from a group of hospitals in the state of Michigan. The study would involve the completion of two self-report surveys by all first-line nurse managers, all middle nurse managers, and two full-time staff nurses selected at random from each unit. The surveys take a total of about 45-50 minutes to complete.

As a participant in the study, you would have the option of having a follow-up seminar in which the meaning of the results from your institution would be shared with the nurse management groups. The content of the seminar would include implications for effective leadership behaviors and the enhancement of problem solving, decision making, and team building efforts between staff nurses and nursing management. I have included a vita so you can have an opportunity to evaluate my credentials for conducting the research and presenting the follow-up seminar.
I will contact your office soon to set up an hour appointment so we can discuss the research study in more depth and answer any questions or concerns you might have. At the conclusion of the appointment, I would appreciate receiving your permission and support to conduct this research in your institution. I look forward to meeting you in person and thank you for your cooperation.

Sincerely,

Catherine (Reezie) DeVet, R.N., M.S.

Enclosure
March, 1985

Dear Colleague:

You have been selected to participate in a research project by a random selection process. The purpose of the research is to obtain information about possible differences in personality types between registered nurses in staff and administrative positions. Your participation in this study is voluntary and you may withdraw at any time without any consequences. The code number you will find on the instruments will help protect the anonymity of your responses to all but the researcher. I will use your identity solely for any needed follow-up to obtain complete materials or to provide feedback. Any information shared within your institution or in the research report on the results of the surveys will be in aggregate form only.

Your cooperation in completing the two survey forms in this packet is vital to the success of this study. The degree to which the information can be used in other groups is dependent on obtaining all the responses from persons in selected samples. The knowledge obtained from this study may be used to plan and create a more collaborative and team effort among nurses and improve the environment for the professional practice of nursing in hospitals.

The information you provide is part of a dissertation study being conducted by me for completion requirements for a doctorate in Educational Leadership at Western Michigan University. The study will be submitted to a center which is aggregating data on nurses so better decisions may be made in the future on a variety of issues pertinent to nursing. For your contribution, please complete the short Personal Data Survey and the Myers-Briggs Type Indicator that are in this envelope. The surveys will take a total of about 30-40 minutes to complete.

The Myers-Briggs Type Indicator (MBTI) is a self-report instrument which is well respected and widely used. There are no right or wrong nor good or bad answers. The instrument measures normal differences in types of people who have different interests and abilities and use different approaches in attempting to achieve goals. The Personal Data Survey is a simple tool to obtain demographic information necessary for data analysis and reporting. Therefore, to my knowledge, there are no inherent risks or benefits to you in the completion of these two instruments.

Directions for completing each instrument are on the instruments themselves. However, disregard any instructions on the MBTI which request personal information about you. Any demographic information needed for this study is included on the Personal Data Survey. Also, the instruments may be filled out in either pen or pencil and
completed at home or work at a time convenient to you.

Once you have completed the two surveys, please replace them in the envelope. Be sure to include the MBTI booklet and answer sheet, the Personal Data Survey, and your signed consent form. After removing your name from the envelope, seal the envelope and send the envelope via interoffice mail to a drop box I have in the Nursing Administration office or drop it in the box personally, whichever is most convenient for you by ________________.

I again urge you to participate in this research study. Your results from the instruments will be aggregated with that of the other participants from this institution and other hospitals in the state of Michigan that are in the study. A copy of the dissertation with these results will be given to your institution in the fall and will be available to you at that time. Also, an in-service for nurse managers will be given this fall at your institution and your individual results from the MBTI will be available in a sealed envelope for you if you choose to participate. Thank you for your cooperation. If you have any questions, please feel free to call me at (616) 323-3869.

Sincerely,

Catherine (Reezie) DeVet, R.N., M.S.
March, 1985

Dear Colleague:

About two weeks ago you were notified that you had been randomly selected to participate in a research study that can contribute important information to relationships between staff nurses and nurse managers. Your packet of materials has not yet been returned. Your input is critical in assuring that the information from the study can be generalized to other groups. I know it is easy to forget to complete these surveys when you already have a busy professional and personal schedule. Please take the time needed to complete these surveys within the next three days and return them in a sealed envelope to the drop box in the Nursing Administration office. If you have any questions about this process, notify me at (616) 323-3869 so they can be clarified.

If for some reason you have decided not to participate, please return your packet after removing your name from the envelope. Thank you for your cooperation in this important matter.

Sincerely,

Catherine (Reezie) DeVet, R.N., M.S.
Appendix B

Consent Forms
Consent Form

I consent to the conduct of the research study of differences in typology between staff nurses and nurse managers and nurse managers at different administrative levels. While each employee will have the option to refuse to participate with no stigma or sanction, within appropriate limits I will encourage the employees selected for the study to cooperate.

Stipulations:

____________________________________________________________________
Signature

____________________________________________________________________
Title

____________________________________________________________________
Date
Individual Consent Form

Subject's Name: __________________________________

Employing Agency: ________________________________

Address of Employing Agency: ________________________________

Title of Research Study: Differences in Typology Among Nurses at Different Levels of Management in Acute Care Institutions as Measured by the MBTI

Principal Investigator: Catherine (Reezie) DeVet, R.N., M.S.

I have read the cover letter enclosed with these materials and understand its contents. Therefore, I give my consent freely and willingly to participate in this research study. I understand the results of the Personal Data Survey and the Myers-Briggs Type Indicator will be reported in aggregate and my individual results will be kept confidential. I further understand that my individual results will be available to me in a sealed envelope at a future in-service at this institution and I may receive them if I choose to attend.

Signature of Subject

__________________________

Date

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Appendix C

Personal Data Survey
PERSONAL DATA SURVEY

Code Number _____________

PLEASE COMPLETE THE FOLLOWING SURVEY BY CHECKING THE ONE ANSWER WHICH DESCRIBES YOU:

1. What is your sex?
   ______ Male
   ______ Female

2. In which age range do you belong?
   ______ 19 years or below
   ______ 20-25 years
   ______ 26-30 years
   ______ 31-35 years
   ______ 36-40 years
   ______ 41 years or over

3. What is your marital status?
   ______ Single
   ______ Married
   ______ Widowed, divorced, or separated

4. What is your highest nursing degree?
   ______ Associate degree
   ______ Diploma
   ______ Baccalaureate degree
   ______ Master's degree
   ______ Doctoral degree

5. What is your highest post-high school degree other than nursing?
   ______ Associate degree
   ______ Baccalaureate degree
   ______ Master's degree
   ______ Doctoral degree
   ______ I do not have a post-high school degree other than nursing.
6. If you checked a degree category in Question #5, please write in the major on the line provided. If you do not have a post-high school degree other than nursing, go to Question #7.

__________________________________________________ Major of post-high school degree other than nursing.

7. How many total months have you been employed (part-time and full-time) as a nurse? Include nursing in any area and positions as staff nurse and/or nurse manager.

___ 0-11 months
___ 12-36 months (1-3 years)
___ 37-60 months (up to 5 years)
___ 61 months-120 months (up to 10 years)
___ 121 months-180 months (up to 15 years)
___ Over 181 months (over 15 years)

8. Which of the following BEST describes the type of unit on which you are currently working/managing? (If you are responsible for managing more than one unit, skip this question and thank you for your cooperation.)

___ Medical and/or surgical unit (includes general care units and units for specific types of patients as orthopedics, neurology, urology, etc.)

___ Psychiatric unit

___ Special care unit (i.e., intensive care, coronary care, etc.)

___ Maternal/child unit (i.e., L & D, post-partum, nursery, pediatric)

___ Operating room/recovery room

___ Emergency room

___ Other. If you have checked "other," please write in the name of the unit here ____________________________________________.

This completes the Personal Data Survey. Thank you for your cooperation.
Appendix D

Distribution of Marital Status by Level of Management in Nursing
### Table 26

Distribution of Marital Status by Level of Management in Nursing

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Level of management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff nurse(^a) (%)</td>
</tr>
<tr>
<td>Single</td>
<td>30</td>
</tr>
<tr>
<td>Married</td>
<td>56</td>
</tr>
<tr>
<td>Divorced, separated, or widowed</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^{a}_{n} = 210. \quad {b}_{n} = 97. \quad {c}_{n} = 36.\)
Appendix E

Distribution of Nurse Managers by MBTI Type
Table 27
Distribution of Middle Nurse Managers by MBTI Type$^a$

<table>
<thead>
<tr>
<th></th>
<th>ISTJ</th>
<th>ISFJ</th>
<th>INFJ</th>
<th>INTJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>8.3</td>
<td>2.8</td>
<td>5.6</td>
<td>13.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ISTP</th>
<th>ISFP</th>
<th>INFP</th>
<th>INTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>2.8</td>
<td>0.0</td>
<td>13.9</td>
<td>11.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ESTP</th>
<th>ESFP</th>
<th>ENFP</th>
<th>ENTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>5.6</td>
<td>0.0</td>
<td>2.8</td>
<td>11.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ESTJ</th>
<th>ESFJ</th>
<th>ENFJ</th>
<th>ENTJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>11.1</td>
<td>0.0</td>
<td>2.8</td>
<td>8.3</td>
</tr>
</tbody>
</table>

$^aN = 36.$
Table 28
Distribution of First-Line Nurse Managers by MBTI Type

<table>
<thead>
<tr>
<th>Type</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISTJ</td>
<td>14</td>
<td>14.4</td>
</tr>
<tr>
<td>ISFJ</td>
<td>10</td>
<td>10.3</td>
</tr>
<tr>
<td>INFJ</td>
<td>5</td>
<td>5.2</td>
</tr>
<tr>
<td>INTJ</td>
<td>7</td>
<td>7.2</td>
</tr>
<tr>
<td>ISTP</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>ISFP</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>INFP</td>
<td>7</td>
<td>7.2</td>
</tr>
<tr>
<td>INTP</td>
<td>6</td>
<td>6.2</td>
</tr>
<tr>
<td>ESTP</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>ESFP</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td>ENFP</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>ENTP</td>
<td>8</td>
<td>8.2</td>
</tr>
<tr>
<td>ESTJ</td>
<td>13</td>
<td>13.4</td>
</tr>
<tr>
<td>ESFJ</td>
<td>7</td>
<td>7.2</td>
</tr>
<tr>
<td>ENFJ</td>
<td>4</td>
<td>4.1</td>
</tr>
<tr>
<td>ENTJ</td>
<td>8</td>
<td>8.2</td>
</tr>
</tbody>
</table>

\[N = 97.\]
Appendix F

Comparisons on the Distributions of Participants in Each Institution According to Educational Level Achieved, Unit Type, Age Range, and Length of Employment
Table 29

Distribution of Participants by Highest Educational Degree in Nursing and Institution

<table>
<thead>
<tr>
<th>Highest nursing degree</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (n = 52)</td>
</tr>
<tr>
<td>Associate</td>
<td>50 (%)</td>
</tr>
<tr>
<td>Diploma</td>
<td>27 (%)</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>21 (%)</td>
</tr>
<tr>
<td>Master's</td>
<td>2 (%)</td>
</tr>
<tr>
<td>Doctorate</td>
<td>0 (%)</td>
</tr>
<tr>
<td>Total</td>
<td>100 (%)</td>
</tr>
<tr>
<td>Highest degree other than nursing</td>
<td>Institution</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td>A (n = 50)</td>
</tr>
<tr>
<td>Associate</td>
<td>4</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>12</td>
</tr>
<tr>
<td>Master's</td>
<td>0</td>
</tr>
<tr>
<td>Not applicable&lt;sup&gt;b&lt;/sup&gt;</td>
<td>84</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

<sup>a</sup>Two participants did not respond.

<sup>b</sup>Participants who did not have a higher educational degree other than nursing.

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Table 31

Distribution of Participants by Type of Unit and Institution

<table>
<thead>
<tr>
<th>Unit type</th>
<th>A (n = 52) (%)</th>
<th>B (n = 85) (%)</th>
<th>C (n = 56) (%)</th>
<th>D (n = 74) (%)</th>
<th>E (n = 76) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical-surgical</td>
<td>56</td>
<td>34</td>
<td>29</td>
<td>41</td>
<td>26</td>
</tr>
<tr>
<td>Psych/mental health</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Special care&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Maternal/child health&lt;sup&gt;c&lt;/sup&gt;</td>
<td>19</td>
<td>12</td>
<td>28</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Operating room/recovery room</td>
<td>0</td>
<td>20</td>
<td>18</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Emergency department</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Other&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Unclassified&lt;sup&gt;e&lt;/sup&gt;</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. Percentages of "0" may be due to the fact that the particular clinical area neither reported to nursing administration nor had a close liaison with the nursing department in the institution.

<sup>a</sup>N = 343.

<sup>b</sup>Special care units included any type of medical or surgical intensive care units, renal dialysis units, and burn units.

<sup>c</sup>Neonatal and pediatric intensive care units were included in this category.

<sup>d</sup>Rehabilitation units were the most common in this category.

<sup>e</sup>Certain middle nurse managers were responsible for more than one type of unit and so were "unclassified."
Table 32

Distribution of Participants by Age Range and Institution

<table>
<thead>
<tr>
<th>Age range in years</th>
<th>Institution A (n = 52) (%)</th>
<th>Institution B (n = 85) (%)</th>
<th>Institution C (n = 56) (%)</th>
<th>Institution D (n = 74) (%)</th>
<th>Institution E (n = 76) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>4</td>
<td>10</td>
<td>23</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>26-30</td>
<td>21</td>
<td>27</td>
<td>25</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>31-35</td>
<td>21</td>
<td>26</td>
<td>16</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>36-40</td>
<td>10</td>
<td>15</td>
<td>18</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>41 and older</td>
<td>44</td>
<td>22</td>
<td>18</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

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Table 33
Distribution of Participants by Length of Employment and Institution

<table>
<thead>
<tr>
<th>Length of employment in months</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (n = 52)</td>
</tr>
<tr>
<td>0-11</td>
<td>0%</td>
</tr>
<tr>
<td>12-36</td>
<td>10%</td>
</tr>
<tr>
<td>37-60</td>
<td>19%</td>
</tr>
<tr>
<td>61-120</td>
<td>13%</td>
</tr>
<tr>
<td>121-180</td>
<td>25%</td>
</tr>
<tr>
<td>181 and over</td>
<td>33%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
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