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Vocational Interest Profiles of Critical Care Registered Nurses

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VOCATIONAL INTEREST PROFILES
OF CRITICAL CARE REGISTERED NURSES

By

Julene Beth Hannink

A THESIS

Submitted to
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ABSTRACT
VOCATIONAL INTEREST PROFILES OF CRITICAL CARE REGISTERED
NURSES

by

Julene Beth Hannink

The purpose of this investigation was to obtain descriptive data regarding the vocational interest profiles of a population of currently employed critical care registered nurses. John L. Holland's Theory of Careers, which was used as the theoretical framework, describes six major types or characteristics of vocational personalities: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E) and Conventional (C). A vocational interest assessment tool, the Vocational Preference Inventory (VPI) was used to determine a given individual's vocational interests, with results recorded as a three letter profile.

A convenience sample was obtained from the critical care registered nurse population at a large midwestern teaching institution in the Pediatric Intensive Care, Neonatal Intensive Care, Medical Critical Care and Surgical Critical Care Units. The sample of 122 nurses displayed an Investigative-Artistic-Social (IAS) vocational interest profile, unlike the anticipated Social-Investigative-Artistic (SIA) profile that Holland predicted for general duty nurses. Implications for clinical practice, education, administration and research are included.

Dedication

This work is dedicated to the memory of my father.

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CHAPTER 1

INTRODUCTION

The nursing profession has seen and continues to experience an ongoing imbalance between supply and demand. Only 7 years ago, the American Hospital Association (AHA) (AHA, 1988) reported that the nursing shortage was affecting over 95% of urban and 74% of rural hospitals, with dim projections for the future. According to a recent survey (Burda, 1994), nearly 4 of every 10 hospitals (38%) are trimming work forces and restructuring in an effort to cope more effectively with competition and health care reform. These reductions in the hospital work force include nurses 27% of the time, an increase from 19% just one year before, contributing to a new low in hospital nursing vacancies (Burda, 1994).

Along with changes in the work force and structure of health care institutions, the patient population requiring hospitalization is also changing. Health experts have predicted a future vision of hospitals totally becoming intensive or critical care units (Evans & Carlson, 1992; Meyer, 1993; Rudy & Grenvik, 1992). This trend has already begun as hospitals have been decreasing general beds and converting them into intermediate or critical care beds (Evans & Carlson, 1992; Meyer, 1993; Rudy & Grenvik, 1992). Traditionally, specialized units have been set aside for the care of critically ill clients. These units may be segregated on the basis of age, physiologic condition, or severity of condition, but ultimately are designed for the delivery of medical and nursing care to individuals who have life-threatening conditions or who are at high risk for developing such conditions.

The move toward a more intensive acute care hospital has significant impact for nursing. Although overall hospital occupancy rates have declined in recent years, the need

for critical care registered nurses continues. This is due to the complex nature of patients' illnesses, sharp increases in biomedical technology, and the increasing age of hospitalized clients (Donley & Flaherty, 1989; Evans & Carlson, 1992; Meyer, 1993). Central to the care of critically ill patients is the availability of nurses who are able to work in such an environment.

Predicting the future of supply and demand specific for critical care registered nurses is, at best, difficult. In 1990, the U.S. Department of Health and Human Services projected an overall decline in the number of registered nurse (RN) graduates throughout the next 25 years. In their report, they projected that by the year 2020, the supply of RNs will represent only about 72% of anticipated demand, with the largest shortfall occurring between the years 2005 and 2020 (Department, 1990). Experts cite the impact of that shortage will be especially noticeable in critical care, partially due to a higher RN to patient ratio (Evans & Carlson, 1992). Additional factors influencing the availability of critical care nurses include the complexity of patient care and difficulties in the utilization of float or agency personnel secondary to sophisticated technology (Meyer, 1993). Experts have predicted the need for critical care nurses will nearly double from 1988 to the year 2000 (Meyer, 1993; Rudy & Grenvik, 1992).

Significance to Nursing

The projected imbalance between supply and demand will significantly impact the arena of critical care nursing. This impact will be felt from a patient care perspective as well as a financial perspective. In 1988, the Secretary's Commission on Nursing estimated the cost of replacing a nurse, including recruitment and orientation, to be approximately \$20,000. This dollar cost will only increase. National attention has been focused on the impact of the nursing supply and demand imbalance. The need for research to identify factors and strategies for retaining nurses also was recognized by Congress with research project funding (Moritz, Hinshaw, & Heinrich, 1989).

A challenging question for the nursing profession is how to respond proactively to this predicted imbalance. One strategy is to examine the issue using a vocational or occupational counseling framework. Vocational counselors have historically used a variety of personality or interest inventories to guide career decision-making, and to encourage individuals to enter various professions. Although content may be quite diverse between vocational interest inventories and personality inventories, both are identical in principle in that they reveal information about how a person perceives himself and his environment, or milieu (Holland, 1985b). Vocational interest inventories serve many purposes. Primarily, they provide individuals and their counselors, managers, supervisors, and educators with information about themselves and the working world, and serve as an aid in educational and occupational decision-making. Vocational interest inventories also are used to investigate characteristics of specific occupational groups, and to demonstrate how an individual's interests are similar or dissimilar to specific occupational groups, for the purpose of best fit or match.

Using a vocational framework to examine the nursing imbalance raises many questions regarding nurses in general, and critical care nurses specifically. Who are nurses? What are their vocational interests? Who, specifically, are critical care nurses? What are critical care nurses' vocational interests? Are there differences in vocational interests between critical care nurses and other nursing populations? Are there differences between nurses' vocational interests in various geographic regions? Can differences, if discovered, be attributed to educational or demographic variables? Are the vocational interests possessed by current critical care nurses the best match for working in a critical care environment? Vocational interest and choice are multi-faceted phenomena that raise these and many additional questions for examination. It can be speculated that knowledge of the vocational interests of current registered nurses may assist nurse educators, managers and vocational counselors in identifying individuals suited to a career in nursing. In addition, knowledge of the vocational interests of current registered nurses working in

critical care may be useful in identifying novice practitioners who might be mentored toward critical care practice settings.

Problem Statement

A description of the vocational interest profiles of a population of critical care registered nurses was not located in the literature. The first step was to identify the vocational interests possessed by a sample of currently employed critical care registered nurses. These descriptive data form the beginning of a composite picture of the vocational interests of critical care registered nurses. This may serve as a base for further comparison, research and analysis.

Purpose

The purpose of this investigation was to describe the vocational interest profiles of currently employed critical care registered nurses in order to initiate the establishment of the base of knowledge regarding the vocational interests of this specialty group of nurses.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Conceptual Framework

This study was based upon the assumption that there are certain inherent personality characteristics that help explain vocational preferences or interests of individuals. The conceptual framework was based upon John L. Holland's theory of vocational choice. Holland (1985a) purported that vocational choice is an expressive act, reflecting an individual's personality, life history, motivation, knowledge and ability. He sets forth six types or models of persons and environments, with each individual being the "product of a characteristic interaction among a variety of cultural and personal forces" (p. 2). Out of individual experiences in life, a person learns to prefer some activities as opposed to others. These activities become strong interests, then competencies, and finally create "a particular personal disposition that leads him or her to think, perceive, and act in special ways" (Holland, 1985a, p. 2). Holland purported six major types or models of individual characteristics: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E) and Conventional (C). Schematically, the six characteristics are arranged hexagonally, with each personality trait in between its two most complimentary traits. Although most frequently reported in the RIASEC order, any of the traits could initiate the sequence, as long as the specific order of the traits remains constant. The major characteristics of each type will be briefly summarized. A synopsis of Holland's General Occupational Themes is included (Appendix A).

The Realistic (R) Type includes a preference for activities that deal with the "explicit, ordered, or systematic manipulation of objects, tools, machines and animals" (Holland, 1985a, p. 19). The Realistic tendencies include the acquisition of manual,

mechanical, agricultural, electrical and technical competencies. The Realistic individual may lack sophistication in social and educational competencies (Holland, 1985a).

The Investigative (I) Type is characterized by preferences which "entail the observational, symbolic systematic and creative investigation of physical, biological and cultural phenomena" (Holland, 1985a, p. 20). The Investigative individual is apt to be analytical, rational, curious and introspective, preferring math and science. According to Holland (1985a), the Investigative individual lacks persuasive competencies.

A preference for "ambiguous, free, unsystematized activities" (Holland, 1985a, p. 20) characterizes the Artistic (A) Type. The Artistic person's behavior includes manipulation of a variety of materials in order to create art forms or products as a method of self-expression. Holland (1985a) purports that the Artistic pattern leads to a disinterest in clerical or business system competencies.

The Social (S) person is apt to be patient, friendly, helpful, kind, understanding and warm (Holland, 1985a, p. 21). These individuals have preferences for activities that inform, train, develop or enlighten others. Pure Social types lack strength in manual and technical competencies.

The Enterprising (E) individual has a "preference for activities that entail the manipulation of others to attain organizational goals or economic gain, and an aversion to observational, symbolic and systematic activities" (Holland, 1985a, p. 21). Holland purports that these individuals tend to have strength in the leadership, interpersonal and persuasive arenas, but are weaker in scientific competencies (Holland, 1985a).

Holland's sixth type is Conventional (C). These individuals acquire clerical, computational and business competencies that "entail the explicit, ordered and systematic manipulation of data" (Holland, 1985a, p. 22). Conventional types typically are uncomfortable with ambiguous, free, unsystematized activities (Holland, 1985a).

Few individuals represent a pure personality type or letter code. Most individuals possess a composite vocational interest profile comprised of several types. The vocational

interest profile is reported as a two or three letter code, ranked in descending order of prevalence.

Holland includes five additional supplemental personality scales: Self-Control, Masculinity-Femininity, Status, Infrequency, and Acquiescence. These scales are not as frequently reported in the literature, and typically are not included in the two or three letter code vocational interest profile. These scales provide additional facets of personality assessment. The first supplemental scale is the Self-Control (SC) scale. Holland (1985a) defines self-control as the "habitual inhibition of impulses to act out in behavior, thinking or fantasy" (p. 8). High scores indicate overcontrol, low scores a tendency towards impulsiveness and acting out.

High scores on the Masculinity-Femininity (Mf) scale indicate frequent choice of traditionally masculine occupational roles; low scores indicate occupations traditionally preferred by women (Holland, 1985a). The Status (St) scale measures "self-esteem and concern for prestige and power" (Holland, 1985a, p. 9). High scoring individuals typically reflect a high level of self-confidence and need for upward mobility.

Holland relates that scores and "correlates of the Infrequency (Inf) scale form a continuum: at one end, high scores imply social, vocational and intellectual deviancy, and at the other end, low scores imply normalcy and effective functioning" (Holland, 1985a, p. 9). The Infrequency scale reflects the broad range from incompetence and social deviancy to personal effectiveness.

The final scale is the Acquiescence (Ac) scale. High-scoring individuals typically can be described with adjectives such as enthusiastic, cheerful and dominant, having many interests. According to Holland (1985a), the primary value of this scale is to "detect dissimulation and extreme response biases which may go undetected in forced-choice and true-false formats" (p. 9).

One of the crucial background principles surrounding Holland's (1985a) theory is that the choice of vocation is an expression of personality. Over time it has been

demonstrated that individuals' "vocational interests flow from their life history and personality" (Holland, 1985a, p. 7). To that end, vocational interest inventories or profiles are considered to be personality inventories as well. It is important to recognize that although interest inventories are a form of personality assessment, all personality assessment tools are not necessarily vocational interest inventories. There are many concepts that can be inter-related, but interest inventories are specifically directed toward analyzing the likes, dislikes and preferences for work tasks or activities. This is critical information when examining the phenomena of vocational personality and vocational choice.

Another important principle is recognition of the fact that vocational stereotypes exist, and have reliable, important psychological and sociological meanings associated with them. Holland (1985a) states that everyday life experiences have generated a "sometimes inaccurate but apparently useful knowledge of what people in various occupations are like" (p. 9). These occupational perceptions have been validated with various research endeavors (Holland, 1985a). An individual's perception of given vocations influence vocational preference and choice.

Finally, an important concept to consider is that members of a vocation typically have similar personalities, and are yet dissimilar enough to allow for individual creativity. Holland (1985a) purports that "if a person enters a given vocation because of a particular personality and history, it follows that each vocation attracts and retains people with similar personalities" (p. 10). This concept, too, has been validated by various researchers (Holland, 1985a). It follows, then, that a group of registered nurses working in critical care environments would have similar vocational interest profiles.

Holland (1985a) supports the concept that different subspecialties in the field of nursing may have a varying three letter code, but all have Social (S), Investigative (I) and Artistic (A) components, typically with the Social component first. In the Dictionary of Holland Occupational Codes, nursing is listed three times. A general duty nurse is

reported as having a vocational interest profile of Social-Investigative-Artistic (SIA) (Gottfredson, Holland & Ogawa, 1982). A Social-Artistic-Investigative (SAI) profile has been reported for Licensed Practical Nurses; and an Investigative-Social-Artistic (ISA) profile for Nurse Practitioners (Gottfredson, Holland & Ogawa, 1982).

Each environment, characterized by physical settings posing unique problems and opportunities, is also classified according to the six models or types. Like individuals, an environment may not solely reflect characteristics of only one type, but may be a composite of more than one type (Holland, 1985a). Individuals seek out environments that allow them to exercise skills and abilities, express attitudes and values, and take on roles that are agreeable with them. Congruence between an individual's personality and the environment in which they work has an impact upon their vocational satisfaction, stability and achievement. Holland relates that each environment is dominated by the corresponding personality type (Holland, 1985a).

Literature Review

A review of the literature suggests there is limited research surrounding the phenomena of vocational choice and vocational interest within nursing in general, and in the specialty of critical care nursing specifically. Multiple studies have addressed personality factors, stress, burnout or personality hardiness in various nursing populations, but few have examined the issues of vocational choice or vocational interest in the samples studied. This literature review will briefly summarize some of the studies that have addressed the relationship of personality to vocational choice within nursing, personalities of specialty groups in nursing, and personality differences between specialty groups in nursing. More attention will be focused on reviewing studies that have addressed personality factors of populations of critical care nurses. These studies, which have utilized various personality assessment tools, bear a relationship to the vocational interest profiles of critical care registered nurses, but have not addressed that area specifically. Two studies were isolated that examined vocational interest using Holland's tool with a

population of registered nurses, and two that used Holland's tool with populations of nursing students. These studies will be reviewed in detail, although they have demonstrated conflicting results and have addressed nurses as a composite group. No studies were identified which specifically reported or addressed the vocational interest profiles of a sample of critical care registered nurses.

Vocational Choice in Nursing

Several studies and articles have broached the subject of vocational choice as well as specialty choice in nursing. Bradham, Dalme and Thompson (1990) developed a profile of personality traits that were desirable for nurses. Their goal was that this profile could then be used in preprofessional guidance, and be used to tailor teaching strategies that would enhance development of those traits. In the study, a sample of practicing registered nurses was surveyed to determine a level of personality traits desirable for nurses, based on Personality Research Form definitions. The Personality Research Form was then administered to populations of nursing students and comparison data obtained. Results revealed that the level of traits desired by practicing nurses was congruent with the student population scores (Bradham, Dalme & Thompson, 1990).

Haddad (1989) conducted a study to determine why nurses stay in nursing. Since many studies examined why nurses leave the field of nursing, this study's purpose was to determine if demographic variables and/or personality factors were related to job satisfaction and intent to stay in nursing. One hundred four (104) nurses completed the California Psychological Inventory (CPI), the Minnesota Satisfaction Questionnaire and a data sheet. Results showed no statistically significant relationships between demographic variables and job satisfaction or intent to stay (Haddad, 1989). The CPI sub-scales of Sociability, Dominance, Self-Acceptance, Capacity for Status, Femininity/Masculinity and Socialization bore a significant relationship with the intent to stay. Based upon this information, the researcher suggested that nurses intending to stay are less assertive and sociable, readily assume blame for things that are wrong, conform easier and dislike

competition, are more sensitive to criticism and more sympathetic (Haddad, 1989). This information again contributes to the knowledge base surrounding the personalities of nurses. This information should be replicated and subjected to further testing, but may have useful implications when discussing vocational choice related to nursing.

Galbraith (1991) conducted a study that was designed to enhance understanding of the career choices of men in nontraditional careers, such as nursing and early education, as compared to a traditionally male career, engineering. The study explored the men's personality components, their sex-role identity, and the components they find important in a career. This study used a broad personality inventory, the Cattell 16 Personality Factor measure, not a vocational interest inventory. The men in nursing ($n=57$) and early education ($n=76$) demonstrated a significantly ($p<.01$) enhanced value of the relationship-oriented component of their careers more than the men in engineering ($n=103$) (Galbraith, 1991). Although the study results are limited due to moderate sample size, it contributes to the knowledge base surrounding vocational choice in nursing as it specifically examined the influence of biological sex on vocational choice.

Alvarez (1984) conducted a study that examined selected characteristics of male registered nurses, using a demographic data sheet and the Edwards Personal Preference Schedule, a personality inventory. The study was based upon Donald Super's Occupation Theory that purports that vocational choice is a function of self-concept. Thirty-two respondents completed the survey tools. Results revealed that the respondents' percentile scores from the Edwards Personal Preference Schedule were compatible with the general adult male sample, with few exceptions. On the Heterosexuality and Dominance scales, the respondents' scores were higher than the general adult male sample. The sample scored lower than the general adult male sample on the Deference, Order and Endurance scales (Alvarez, 1984). These differences were difficult to explain. Overall, no distinct personality profile emerged from the sample. The study was limited in scope and depth, primarily due to the use of a small convenience sample, but does contribute to the

knowledge base regarding the specific influence gender has on vocational choice in nursing.

Hafner and Proctor (1991) conducted a study with nursing students that examined choice of nursing specialty. In the study, 51 second year nursing students completed a questionnaire rating their interest in 14 nursing specialties, along with measures of personality and attitudes to psychiatric treatment. These tools were completed before and after a nine week psychiatric mental health nursing rotation. After the rotation, comparative results demonstrated an increase in the popularity of community and psychiatric nursing, whereas there was a decrease of popularity in some of the procedural specialties (Hafner & Proctor, 1991). Correlations also demonstrated that the more conservative nurses initially selected the more traditional nursing specialties. Although the study had limitations, it contributes to the knowledge base regarding the concept of nursing specialty choice, and may have implications for recruitment into specialty areas.

A study designed to examine the choice of maternal-child nursing as a specialty was conducted by Branscome (1989). This descriptive, phenomenological study was conducted with 30 maternal-child nurses, ages 25 to 56, who possessed 3 to 30 years of experience in maternal-child nursing. Data from interviews were coded into major and minor themes. The subjects related they went into nursing in order to help people. Nursing school clinical experiences and employment availability were key components that stimulated the individual's career decisions. Other specific factors which motivated the subjects to become maternal-child nurses centered around five themes: liking of the birth process; preferring a happy, well environment; wanting to help parents have a positive birthing experience; believing their personality fit the area; and disliking the stress in intensive care and medical-surgical units (Branscome, 1989). Due to the phenomenological nature of the study, it is difficult to compare results with studies that used specific personality or interest assessment tools. Even without this ability, and

although the study was conducted with a small, focused sample, it sheds light into the phenomenon of specialty area decision-making within nursing.

Personalities of Specialty Groups Within Nursing

Examination of the personalities of specialty groups in nursing is an area that has had a fair amount of attention in the literature. These studies will be mentioned with brief descriptions, as none of the studies examined vocational interest profiles, but rather assessed personality using a variety of tools. In many instances the personality of nurses was one of the variables in the study and not the focus of the study.

Lewis, Bonner, Campbell, Cooper and Willard (1994) examined personality, stress, coping, and sense of coherence among a unique subspecialty in nursing, that of nephrology nurses in dialysis settings. Personality hardiness, work-related stress and health amongst a population of hospital nurses was examined by van Servellen, Topf and Leake (1994). Bean and Holcombe (1993) examined personality types of oncology nurses, predominantly employed within hospitals, using Jung's four dimensions. Tadych's (1990) doctoral dissertation was an exploratory study that examined the personality characteristics of a population of 135 beginning nursing students. Type A versus Type B behavior and personality in nurses were examined in a population of female registered nurses (Thomas & Jozwiak, 1990). Hart (1986) examined the relationship between selected personality variables and job satisfaction in a population of 138 operating room nurses. The personalities of a population of Emergency Department nurses have been studied (Atkins & Piazza, 1987), as well as the subspecialty of flight nursing (Gabram, Hodges, Allen, Allen, Schwarta, & Jacobs, 1994). Although each of these studies contributes to the knowledge base surrounding the personalities of various subsets of registered nurses, none of the studies specifically examined vocational interests of the subset studied.

Differences in Personality Amongst Subspecialty Groups Within Nursing

Multiple studies have examined and attempted to address personality differences between subspecialty groups within nursing. Penn (1991) completed a study that

examined associations between learning style, personality type and clinical specialty of 229 Army nurses. A portion of the sample completed the Myers-Briggs Type Indicator, a broad-based personality assessment tool. Critical care was one of the clinical specialties isolated. Penn found no significant association between personality type and specialty, and study findings did not support the use of varied instructional strategies for each specialty group (Penn, 1991).

A comparison of perceived levels of participation in decision making between critical care nurses and medical-surgical nurses was the focus of a study conducted by Wulff (1991). Personality preferences were established through use of the Myers-Briggs Type Indicator for the sample of critical care nurses ($n=111$) and the sample of medical-surgical nurses ($n=138$). The critical care nurses demonstrated a significantly higher frequency of thinking preferences, and the medical-surgical nurses demonstrated a significantly higher frequency of feeling preferences (Wulff, 1991). The exact relationship and meaning of these personality variables requires further investigation.

Nolan (1987) examined differences between general and psychiatric nurses; and a comparison of nurses working in hospice settings versus traditional settings has also been undertaken (Amenta, 1984). Pederson (1989) explored the relationship between personality priorities and hospital nurses' job satisfaction. Subjects in the groups of critical care nurses, medical-surgical nurses and maternal-child health nurses were compared, with no significant differences in personality priorities among the three areas being identified.

Cross and Kelly (1984) compared personality type and anxiety between a group of medical-surgical registered nurses and critical care registered nurses in Australia. They assessed personality of 41 critical care nurses and 55 medical-surgical nurses with the Myers-Briggs Type Indicator. Anxiety was assessed with the Taylor Manifest Anxiety Scale (Cross & Kelly, 1984). With regard to personality, nurses in the sample tended to cluster together, and demonstrated a significant desire to be more introverted than extroverted, and to be more sensate than intuitive (Cross & Kelly, 1984). Overall, there

was a significant difference in personality between the two groups, $F(4,89) = 2.45$, $p < .05$. The primary reason for this difference was reflected in the fact that the critical care nurses were more inclined to be “thinkers”, and the medical-surgical nurses “feelers” on the Thinking-Feeling scale, $F(1,92) = 8.84$, $p < .004$. The authors acknowledged that some of this effect may be attributable to training and experience. Overall, the small sample size limits the generalizability of the study, and the study results have limited generalizability to populations outside the country where the study was performed. This study, as with many other studies, used one of the various personality assessment tools, but did not describe the vocational interest profiles of nurses.

Wright and Smith (1993) examined personality differences between a sample of Australian registered nurses, United States registered nurses, a normative group of United States adult females, and Australian student nurses. The study used the Edwards Personal Preference Schedule, and was conducted in three phases. Phase one identified significant differences in personality profiles between male and female Australian registered nurses (significance ranged from .000 to .038 on 6 of 15 scales), which the authors related to the effects of gender on socialization. A significant association between choice of nursing specialization and personality (significance ranged from 0.000 to 0.052 on eleven of fifteen scales) was also noted (Wright & Smith, 1993). Phase two identified significant differences on seven of the fifteen personality traits assessed between the Australian nurse group and a United States (US) nurse group ($t = .000$). Phase two also demonstrated variances in personality traits between the two nurse groups and a US adult female normative group (Wright & Smith, 1993). Phase three demonstrated similarities on only 2 of the 15 personality scales between Australian registered nurses and a group of Australian student nurses.

Overall, the authors demonstrated several variances and associations in personality among the three groups studied. Four characteristics, namely deference, intraception, autonomy and change were suggested as traits generalizable to the total nurse population

regardless of biological sex or choice of specialization. When controlling for national culture as well, all of the characteristics except change remained influential. The authors focused much of their analysis on the effects of primary and secondary socialization of nursing students entering the work force and the resultant changes.

Each of the studies mentioned contributed to the body of knowledge related to personality characteristics of registered nurses in various settings. The studies used a broad range of personality assessment tools and produced a variety of findings. None of the studies, however, addressed vocational interest assessed through the use of a vocational interest inventory.

Personality Characteristics of Critical Care Nurses

Several studies have examined personality characteristics of critical care nurses specifically, again using a variety of personality assessment tools, but none using a vocational interest inventory. Dech (1992) investigated the relationship between personality factors, self-esteem and intent to remain in a population of critical care nurses. Tools included Cattell's 16 Personality Factor Inventory, the Texas Social Behavior Inventory for self-esteem, and Kosmoski and Calkin's measure of intent to remain. A sample of 42 critical care nurses participated in the study, and findings failed to demonstrate a relationship between personality factor and intent to remain (Dech, 1992). Interestingly enough, an inverse relationship was noted between intent to remain and both nurse age and years in critical care. These findings could have important implications regarding the need to address retention strategies toward this population, but did not focus on the vocational personality interests of this population.

Personalities of critical care nurses, in addition to demographics and role stress, were examined with regard to their relationship to burnout by Cash (1988). Instruments completed by the 99 critical care nurses included the Maslach Burnout Inventory, the California Personality Inventory, Role Stress Questionnaire and a demographic data form. Overall, personality scores were not significantly different from the normative group of the

California Personality Inventory, and conclusions reached indicated that demographic and personality variables were poor predictors of burnout in the sample (Cash, 1988). This study again addressed personality in a population of critical care nurses, but utilized a broad-based personality assessment tool, one that does not focus on the vocational interests of this population.

Levine, Wilson and Guido (1988) completed a study examining personality factors, self-esteem and sex-role identity in critical care nurses utilizing Cattell's 16 Personality Factor Inventory, the Texas Social Behavior Inventory and the Personal Attributes Questionnaire. The sample analyzed 200 self-report questionnaires from a randomly selected sample of American Association of Critical-Care Nurses (AACN) members. Data analysis revealed normal range personality factor mean scores for all but four factors: dominance, ego strength, independence and undisciplined-controlled characteristics (Levine, Wilson & Guido, 1988). Although significant relationships were identified regarding nurses' personality characteristics, limited information was gained relative to the rationale behind nurses' vocational interests or their vocational choice of critical care nursing. Additionally, this study may be reflective of a select group of critical care nurses, those who hold membership in their specialty professional association.

Vocational Interest Profiles of Nurses

The specific area of vocational interest profiles of nurses has received limited attention. Reviewed in detail will be the two isolated studies that used Holland's tool with a population of registered nurses, and the two that used Holland's tool with populations of nursing students. Hanson and Chater's (1983) study examined vocational preference in a sample of 122 first quarter master's degree female nursing students. The study further investigated the relationships between interest in management roles and personal, demographic or career background characteristics. Hanson and Chater (1983) utilized Holland's Vocational Preference Inventory (VPI) to assess personality attributes; the business management scale of the Strong-Campbell Interest Inventory (SCII) to measure

management interest, and a questionnaire focusing upon demographic and career background information.

Aggregately, the sample displayed a personality profile of artistic-intellectual-social (AIS) dimensions. This was contrary to the anticipated social-intellectual-artistic (SIA) profile, which Holland (1985a) had demonstrated. Suggested rationale behind this difference include non-representative sampling, and the changing role of nurses and women in nursing over the past years.

The sample was divided into management interest and non-management interest groups based upon the SCII scores. Data analysis utilizing Chi-Square, Kendall's Tau and univariate analysis of variance (ANOVA) procedures revealed no statistically significant differences between the management interest and non-management interest groups on any demographic or career background characteristics.

To test the central hypothesis of their study, a multivariate ANOVA was performed using management interest as the independent variable and the VPI scale scores as dependent variables (Hanson & Chater, 1983). Data analysis revealed a significant multivariate F for the main effect of managerial interests across the VPI scales, $F(11,110) = 5.05, p < .0001$. This supported the hypothesis that nurses' vocational interest profiles would differ according to their interest in management activities and roles. Seven VPI scales were significantly ($p < 0.05$) different between the two groups during univariate analysis.

Although results of Hanson and Chater's (1983) study suggested that Holland's theoretical views surrounding vocational behavior have some validity for women who entered nursing, the study had limitations. Use of a convenience sample limits generalizability. Second, the study design limited the results to one point in the subjects' careers, instead of a longitudinal, dynamic view.

Quigley, Biordi, Gilles and Minnick (1990) replicated Hanson and Chater's (1983) study. The study examined a self-selected convenience sample of 32 sophomore, 27

senior, and 10 master's degree nursing students, using the VPI to measure vocational personality, a demographic questionnaire and the Strong-Campbell Interest Inventory (SCII) to measure managerial interests.

Quigley et al's (1990) hypothesis was that the aggregate sample of nurses would exhibit a social-intellectual-artistic (SIA) personality profile, as Holland (1985) predicted. Instead, the sample demonstrated an artistic-social-intellectual (ASI) profile. The analysis of VPI scores demonstrated a statistically significant relationship between educational levels of nurses and VPI scores, that on the acquiescence scale, $F=5.1729$, $p=0.0082$. A statistically significant association was also demonstrated between scores on the Enterprising personality attribute and interest in management, $F=5.7753$, $p=0.0266$. No significant differences were found between management and non-management interest groups in demographic or career characteristics. This study's (Quigley et al, 1990) small ($N=69$) sample size limits its generalizability and limited the researcher's ability to test all hypotheses. Use of a convenience sample also limits the study's generalizability.

Horn and Holzemer (1991) examined demographic characteristics, vocational interest profiles and sex-role orientation of Israeli women studying nursing compared to those studying education or engineering. The study conveniently sampled bachelor's degree female nursing students ($n=52$); bachelor's degree School of Education female students ($n=60$); and female engineering students ($n=64$). The study used three tools: Index of Sex-Role Orientation, Biographical Inventory tool and Holland's Self-Directed Search. The Self-Directed Search (SDS) is an additional vocational counseling inventory constructed by Holland that is more oriented towards the needs of clinicians and career counselors than the VPI. The SDS is slightly more comprehensive from a vocational assessment standpoint, since it evaluates activities, competencies and self-ratings in addition to occupational likes and dislikes (Holland, 1985a). The results, however, may not be directly compared to the VPI.

Results of the study revealed that the Social (S) personality type was selected first by 32 of the 52 nursing students. All together, 46 of 52 (88%) of the nursing student population had the Social (S) personality type. More than 50% of the sample exhibited the Artistic (A) ($n=31$) and Investigative (I) ($n=29$) personality types. The most common three digit profiles for the nursing subgroup were Social-Enterprising-Artistic (SEA), Social-Artistic-Realistic (SAR), Social-Investigative-Realistic (SIR) and Social-Realistic-Artistic (SRA) (Horn & Holzemer, 1991). These profiles are congruent with Holland's prediction that most nurses have the Social (S) component first, but incongruent with Holland's prediction that most nurses have the Social (S), Artistic (A) and Investigative (I) components (Holland, 1985a). It is interesting to note the appearance of the Realistic (R) and Enterprising (E) characteristics, infrequently noted in other studies of nurses vocational interest profiles. The Social (S) personality type also was prevalent in the education students tested (54 of 60, 90%). The most common vocational profiles in the education group were SEA, SAE and ESA. No significant differences were identified between the nursing student and education student sub-groups.

Horn and Holzemer (1991) also studied engineering students, who demonstrated a high affinity (57 of 64, 89%) toward the Investigative (I) personality type. The Realistic (R) personality type was identified in 52 of 64 (81%) of the engineering sub-group study sample. More than half of the engineering students also demonstrated the Social (S) ($n=35$) and Artistic (A) ($n=34$) personality types, but usually in the third position. Common vocational interest profiles were RIS, IRA, RAI, IRS, RIA and AIR. The investigators identified statistically significant differences between the engineering and nursing student samples ($p<0.00$; $p<0.002$ and $p<0.03$ respectively) for the first, second and third positions (Horn & Holzemer, 1991).

There were several limitations to this study. First, there is limited generalizability due to the use of a convenience sample. Second, the authors indicated the study may have culturally specific influences, since it was conducted with female students of a specific

nationality. Third, the researchers also acknowledge potential influences due to translation of tools into a non-English language (Horn & Holzemer, 1991).

Scott (1989) completed a doctoral dissertation that examined differences in motivational factors, vocational personalities, and barriers and enablers to participation in a population of traditional and reentry women seeking a nursing major. The sample consisted of 46 reentry women and 73 traditional college age women nursing majors. The Education Participation Scale and Vocational Preference Inventory (VPI) were utilized. Barriers to Enrollment and Enabling Factors questionnaires were compiled through a qualitative data gathering interview process. Findings included the fact that reentry women were found to be less motivated by social contact and more motivated by social stimulation than the traditional age women (Scott, 1989). The reentry women scored higher on the Acquiescence scale, and traditional college age women scored higher on the Self-Control scale. Both groups scored highest on the Social (S) scale (Scott, 1989) of the VPI, which correlates with the expected nurse profile (SIA) as reported in the Dictionary of Holland Occupational Codes (Gottfredson, Holland & Ogawa, 1982). Limitations to the study include the use of a convenience sample which limits generalizability, and a moderate ($N=119$) sample size.

In summary, the literature has revealed information relative to the basis of vocational and specialty choice within nursing. Multiple studies have addressed personality characteristics of nurses as a composite group and within specialty groups, and several studies were examined which compared groups of nursing populations. These studies, however, have used a variety of personality assessment tools. Use of a variety of tools enhances the breadth and depth of knowledge, but limits the ability to directly compare results. In addition, the various personality assessment tools complete their stated purpose as a personality assessment, but few provide information regarding vocational choice or vocational interest. As stated previously, interest inventories, such as Holland's Vocational Preference Inventory (VPI), are generally regarded as personality

inventories, but not all personality inventories provide vocational interest information. Limited work has been done surrounding the precise area of vocational choice and vocational interest in the registered nurse population, and no studies were located that examined the vocational interests of practicing critical care registered nurses. The VPI provides a concise, reliable, convenient measure of vocational interest. Descriptive data are necessary to explore the vocational interests of critical care registered nurses more fully.

Research Question

What is the composite vocational interest profile of currently employed critical care registered nurses as assessed by Holland's Vocational Preference Inventory (VPI)?

Definition of Terms

Critical care registered nurse: A registered nurse licensed in the State of Michigan who has successfully completed orientation in the critical care area(s) to which s/he is permanently assigned, as determined by the employing institution. For the purposes of this study, only staff nurses who provide direct client care were included. Nurses with administrative responsibilities were not included.

Critical care unit: a specialized unit designed to provide nursing care of a more intensive nature, staffed with specially trained nursing personnel, containing specialized monitoring and support equipment for patients who because of shock, trauma or life-threatening conditions require comprehensive observation and care (AHA, 1989). For this study, the following areas were included: Pediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU), Medical Critical Care (MCC) and Surgical Critical Care (SCC).

Vocational Interest Profile: the complex of characteristics that distinguishes an individual, including vocational, social, behavioral and emotional tendencies, as measured by Holland's Vocational Preference Inventory (VPI) and reported as a three letter profile representing the three most prevalent types in descending order.

CHAPTER 3

METHODOLOGY

Study Design

A descriptive design was used for this study. Approval was obtained from the Grand Valley State University Human Subjects Review Board (Appendix B) and agency Research Committees prior to study initiation. A convenience sample was obtained from the critical care registered nurse population at a large midwestern teaching hospital. Although use of a randomly selected sample would enhance the study's generalizability, a convenience sample was used for feasibility.

Threats and limitations of the study included use of self-report data, a low response rate, and limited generalizability. The study was based on the assumption that questions will be answered honestly. A low response rate could have decreased sample size and altered the results of the study. In order to enhance response rate, study packets were designed for ease of participation and a small token of appreciation (candy bar) was placed in each study packet. External validity refers to the degree to which the results of a study can be generalized to settings or samples other than the study sample (Polit & Hungler, 1987). Strictly speaking, the results of this study can not be generalized to other populations.

This study design has several advantages. Descriptive research has as its main objective the accurate portrayal of characteristics of the subjects, and the frequency with which certain phenomena occur (Polit & Hungler, 1987). The use of a descriptive design enables future researchers to build upon study results and further investigate the relationships surrounding vocational interest profiles in the registered nurse and specifically, the critical care registered nurse populations.

Study Site and Subjects

A 529-bed acute care teaching institution in the Midwest was the study site. Institutional approval of the research project was obtained through both the Nursing Research and Hospital Research Committees prior to study initiation. Rationale for selection of the study facility were the availability of the site to the researcher and adequacy of the number of potential study subjects, with 270 potential subjects. All registered nurses classified as staff nurses who provided direct care and were permanently assigned to the Pediatric Intensive Care (PICU), Neonatal Intensive Care (NICU), Medical Critical Care (MCC) or Surgical Critical Care (SCC) areas were considered eligible to participate in the study. Each of these units fulfill American Hospital Association (AHA) criteria for an Intensive Care Unit. AHA defines an intensive care unit as "a specialized unit designed to provide nursing care to patients of a more intensive nature than the usual medical or surgical care on the basis of physician's orders and approved nursing care plans. The unit is staffed with specially trained nursing personnel and contains monitoring and specialized support equipment for patients who, because of shock, trauma or life-threatening conditions, require intensified, comprehensive observation and care" (AHA, 1989, p. iv).

Instruments

Study packets included two study instruments: a brief Respondent Characteristics Profile (Appendix C); and Holland's (1985a) Vocational Preference Inventory.

Respondent Characteristics Profile

The questionnaire was developed specifically for this study by the investigator. Included was information regarding the subject's gender, age, nursing educational degree, American Association of Critical-Care Nurses (AACN) membership, years of nursing experience, total years of critical care nursing experience, years of critical care nursing experience at Butterworth Hospital, and unit(s) on which s/he is permanently assigned. This information was used to describe the sample.

Vocational Preference Inventory

The Vocational Preference Inventory (VPI) is a vocational personality inventory composed of 160 occupational titles to which the respondent indicates "like," "dislike" or has the option of leaving the title blank. This tool was chosen for four reasons. First, it is a broadly used interest inventory. Second, it clearly provides a three letter code to identify a given individual's vocational interest profile. The third factor is its ease of use and limited time required to complete the tool. Finally, the subject does not need to be proctored while completing the inventory.

Scoring is accomplished through use of a scoring guideline, detailed in Appendix D. This process yields interval level data. The tool assesses vocational interests based on Holland's six vocational scales: Realistic (R), Intellectual (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Each vocational scale is scored individually. The individuals' highest scoring scales are then listed as a three letter code in order of descending prevalence. This provides the vocational interest profile. The tool also provides information about an individual's personality from five supplementary scales: self-control (SC), masculinity (Mf), status (St), infrequency (Inf) and acquiescence (Ac). A total of 11 scores are reported for each subject. For this study, respondents entered responses on a Grand Valley State University computer scoring sheet.

The VPI has undergone eight revisions from inception in 1953 to the latest 1985 version. The 1985 version, used for this study, contains only four revised or new occupational titles as compared to the seventh version (Holland, 1985b). No updated reliability or validity data is available for the 1985 (8th) version of the VPI. Holland (personal communication, November 1995) (Appendix E) states that the four occupational title changes in the 1985 version "would not affect the reliability estimates in an appreciable way", as compared to the seventh version data. Reliability for Holland's tool is well documented. The internal consistency (KR 20) of the VPI scales has been documented at levels ranging from .81 to .91 for a sample of college and employed

women; and from .85 to .91 for a sample of men. Exceptions are the Masculinity, Status and Infrequency scales. Holland (1985b) related differences exist in those scales because they are "composed of relatively heterogeneous occupations" (p. 3). These three scales (Masculinity, Status and Infrequency) are not included in the vocational interest profile reported for a given subject.

Six-week test-retest reliability's of the eleven VPI scales range from .74 to .98 for senior college students, with the exception of .62 on the Status scale. Infrequency and Acquiescence data were not reported (Holland, 1985b). Harvey (1971) documented two week test-retest reliability's in a sample of 31 adult women from .65 to .83. Two month test-retest reliability in that sample ($n=28$) ranged from .66 to .84. Exceptions were the Acquiescence (.62), Self-Control (.58), and Realistic (.57) scales. Test-retest reliabilities ranging from .74 to .92 were documented over a six week time span in a population of college seniors (Holland, 1985). The only exception in this testing was the Status scale with a score of .62, although the Infrequency and Acquiescence scales were not documented.

Support surrounding the construct validity of the VPI is moderate. The VPI has been intercorrelated with several other personality inventories, documenting moderate relatedness between scales (Holland, 1985b). The interest scales have moderate (35 to 60%) validity for predicting occupational field, equal to or exceeding other comparable tools (Holland, 1985b). Reviews of the tool relate that the VPI provides useful information regarding occupational interests and that it accomplishes its' stated purpose as a brief vocational interest inventory (Shepherd, 1989; Vacc, 1989). Reviewers indicate however, that the updated edition of the VPI Manual contains a limited amount of new reliability or validity data, that most of the data are 10 to 25 years old and that additional data need to be collected regarding its psychometric and technical properties (Shepherd, 1989; Vacc, 1989). The author of the tool was contacted regarding the reliability and

validity data, and related that at present, "no one is interested in obtaining retest data, but prefer to use the VPI as a research tool" (personal communication, November 1995).

Procedure

Subjects for this investigation included all registered nurses permanently assigned to the Pediatric Intensive Care, Neonatal Intensive Care, Medical Critical Care and Surgical Critical Care areas. Following institutional approval, written communication regarding the upcoming study occurred to each unit's management and clinical resource teams. The purpose of this communication was to inform them of the study and process (Appendix F). Opportunity for personal meeting(s) with the investigator was offered to the management and clinical resource teams at their convenience and discretion, although none were requested. Feedback from the management and clinical resource teams was requested regarding optimal placement of memos for each specific unit. Advance communication to the nursing staff on each study unit occurred via flyers posted on each unit for two weeks prior to packet distribution (Appendix G).

Potential study participants received a packet of study materials in their personal mailbox on their designated nursing unit. Packet distribution was completed by the investigator. Study packets included an information letter (Appendix H), Respondent Characteristics Profile (Appendix C), Instruction sheet (Appendix I), VPI Tool, computerized scoring sheet and Certificate of Participation (Appendix J). A pre-addressed inter-office mail label to return study materials, #2 lead pencil, and a small token of appreciation (candy bar) for participation in the study completed the packet.

Participants were asked to return study materials using the pre-addressed inter-office mail label within seven days of receiving the packet regardless of whether or not they chose to participate in the study. Seven days after initial packet distribution, a reminder flyer was posted on each participating nursing unit (Appendix K).

Data entry of respondent characteristics was completed by the primary investigator only. VPI responses were entered by the primary investigator and then the tool was

computer scored. Subjects who did not complete both tools were eliminated from the study. Three weeks after initial packet distribution, a thank you letter (Appendix L) was posted in each nursing unit. Study results were shared with the participating units as grouped data via each unit's specific communication system.

The Respondent Characteristics Profile did not include name, address, or phone number. Participant's names did not appear on any piece of study material, and participants were asked not to indicate their name on any piece of study material. The study posed no physical risks to study participants. Psychological risks may be implied, however anonymity and confidentiality were maintained to the extent permitted by law.

CHAPTER 4

RESULTS

Data Analysis

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS-PC). A total of 270 study packets were distributed in the Pediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU), Medical Critical Care (MCC) and Surgical Critical Care (SCC) units of the study institution. The 156 returned study packets were analyzed for completeness. Four participants were eliminated prior to data analysis, two subjects because only one tool was returned, and two subjects because the Vocational Preference Inventory (VPI) was only partially complete. Completed packets were coded by the primary investigator in the order in which they were received.

The VPI was scored according to Holland's guidelines (Appendix D), resulting in a score on each of the 11 scales for each subject. Each subject's VPI responses were first analyzed for random versus genuine response style (Holland, 1985b). Holland identifies two rules which identify random versus genuine profiles, and relates that random profiles occur because of an individual's uncooperativeness, or other factors not specified (1985b). Genuine profiles are considered to be real rather than faked. Rule one is that random profiles tend to score relatively high, between 7 and 11 on the Infrequency scale. As one of the supplementary scales, the Infrequency scale is a reflection of social desirability, with higher scores implying social, vocational and intellectual deviancy. One of the functions of the Infrequency Scale is to help detect response set bias, and therefore random or faked profiles. In addition, random profiles usually have seven or more scales with raw scores between 4 and 10. These indicators efficiently detect random profiles 72% to 90% of the

time (Holland, 1985b). Two subjects were found who violated both rules, and were eliminated from data analysis, leaving 150 subjects.

Next, each subject's scores were analyzed for extreme or flat response styles. Holland defines extreme profiles as those having five or more scales with raw scores greater than 11 and flat profiles as ones with five or more scales with raw scores less than three. These response types are usually accompanied by Acquiescence Scale scores above 20 or below 5 (Holland, 1985b). The Acquiescence Scale is slightly correlated to attributes such as sociability, dominance, dependence, self-confidence and range of interest, and "its primary value is to detect dissimulation and extreme response bias which may go undetected in forced choice" formats (Holland, 1985b, p. 9). Holland relates that "occasionally profiles beyond these limits will make psychological sense and can be interpreted scale by scale" (Holland, 1985b, p.5), but for the purposes of this study, profiles meeting both criteria and necessitating scale by scale interpretation were deleted. Twenty-eight subjects, 1 extreme and 27 flat, met both criteria and were deleted from data analysis leaving 122 subjects. Response rate of usable, genuine subjects according to unit is detailed in Table 1.

Table 1

Study Packet Distribution and Response Rate Summary

Unit	Number of Packets Distributed	Actual Subjects	Usable Response Rate	Percent of Total Sample
PICU	35	19	54.3%	15.6%
NICU	101	41	40.6%	33.6%
MCC	54	26	48.1%	21.3%
SCC	80	36	45.0%	29.5%
Total	270	122	45.2%	100.0%

Respondent Characteristics

Data were collected in nine areas: gender, age, degree, years of nursing experience, years of critical care nursing experience, years of critical care experience at the

collection site, American Association of Critical-Care Nurses (AACN) membership, CCRN certification status and unit in which the respondent was permanently assigned. The typical respondent was female, 20 to 45 years of age, who had obtained her Bachelor's degree in Nursing, was not an AACN member and was not certified in critical care nursing (CCRN).

Questions on the Respondent Characteristics Profile regarding years of experience were open-ended. For the purposes of data analysis, responses were entered in whole numbers only, and respondents were not given credit for partial years of experience. Any response of less than 12 months was entered as zero. The typical respondent had 12.62 (SD 8.02) years of nursing experience, 9.94 (SD 6.65) years of critical care nursing experience, and 8.88 (SD 6.67) years of critical care nursing experience at the collection site. Respondent characteristics for the overall sample as well as each individual unit subgroup are summarized in Table 2.

Vocational Preference Inventory (VPI)

Mean scores on each of the 11 scales of the Vocational Preference Inventory (VPI) were generated for the aggregate group as well as the four subgroups, summarized in Table 3. Internal consistency (KR 20) for the sample was .97. The first six scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) on the VPI are the vocational scales used to create the three letter vocational interest profile, while the five supplementary scales (Self-Control, Masculinity-Femininity, Status, Acquiescence, and Infrequency) provide additional facets of personality assessment. The aggregate group as well as each unit subgroup was assigned a three letter vocational interest profile ranking the six vocational scales of the VPI (Realistic [R], Investigative [I], Artistic [A], Social [S], Enterprising [E] and Conventional [C]) in descending order. According to Holland (1985a), vocational interest profiles for nurses all have the Social (S), Investigative (I) and Artistic (A) traits, typically with the Social component first. Three vocational interest profiles, Social-Investigative-Artistic (SIA), Social-Artistic-Investigative (SAI) and

Table 2

Respondent Characteristics Summary

	PICU (<u>n</u> =19)	NICU (<u>n</u> =41)	MCC (<u>n</u> =26)	SCC (<u>n</u> =36)	Aggregate (<u>N</u> =122)
	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)	<u>n</u> (%)	<u>N</u> (%)
Gender					
Female	17 (89.5)	41 (100.0)	25 (96.2)	32 (88.9)	115 (94.3)
Male	2 (10.5)	0	1 (3.8)	4 (11.1)	7 (5.7)
Age					
20-35	7 (36.8)	21 (51.2)	13 (50.0)	21 (58.3)	62 (50.8)
36-45	10 (52.6)	16 (39.0)	11 (42.3)	13 (36.1)	50 (41.0)
46-55	2 (10.5)	1 (2.4)	2 (7.7)	1 (2.8)	6 (4.9)
>55	0	3 (7.3)	0	1 (2.8)	4 (3.3)
Degree					
Diploma	4 (21.1)	12 (29.3)	6 (23.1)	10 (27.8)	32 (26.2)
AD	5 (26.3)	11 (26.8)	5 (19.2)	5 (13.9)	26 (21.3)
BS-Other	0	1 (2.4)	1 (3.8)	4 (11.1)	6 (4.9)
BSN	10 (52.6)	17 (41.5)	14 (53.8)	17 (47.2)	58 (47.5)
AACN membership	3 (15.8)	0	7 (26.9)	13 (36.1)	23 (18.9)
CCRN	2 (10.5)	0	2 (7.7)	7 (19.4)	11 (9.0)
Years in nursing					
Range	2-27	2-39	1-24	0-35	0-39
Mean	13.84	14.49	10.31	11.53	12.62
(SD)	(7.33)	(8.29)	(6.97)	(8.43)	(8.02)
Mode	20	11	Multiple	2	2
Years in critical care nursing					
Range	1-22	0-21	0-21	0-24	0-24
Mean	10.53	11.44	8.35	9.08	9.94
(SD)	(6.54)	(5.95)	(7.02)	(7.04)	(6.65)
Mode	2	Multiple	Multiple	2	2
Years in critical care nursing at study site					
Range	1-22	0-21	0-21	0-22	0-22
Mean	9.32	10.96	6.85	7.81	8.88
(SD)	(6.32)	(6.16)	(6.95)	(6.77)	(6.67)
Mode	8	18	0	2	2

Table 3

Vocational Preference Inventory (VPI) Scale Scores

	PICU n = 19	NICU n = 41	MCC n = 26	SCC n = 36	TOTAL N = 122
Scale	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Realistic* (R)	1.68 (1.29)	1.95 (1.77)	2.73 (2.46)	1.94 (2.74)	2.07 (2.20)
Investigative* (I)	2.84 (2.27)	4.71 (3.76)	4.92 (4.08)	4.33 (3.42)	4.35 (3.57)
Artistic* (A)	3.21 (3.31)	3.46 (4.01)	4.69 (4.36)	4.75 (3.28)	4.078 (3.80)
Social* (S)	3.58 (2.76)	4.00 (3.30)	4.89 (3.43)	2.81 (3.27)	3.77 (3.29)
Enterprising* (E)	1.79 (2.10)	2.68 (3.06)	2.96 (3.40)	2.81 (3.03)	2.64 (2.99)
Conventional* (C)	1.00 (1.53)	1.59 (2.70)	2.00 (2.42)	1.64 (2.50)	1.60 (2.42)
Group VPI Profile	SAI	ISA	ISA	AIS	IAS
Self-Control*	10.84 (2.34)	11.07 (3.06)	10.19 (3.36)	10.17 (3.48)	10.58 (3.15)
Masculinity - Femininity*	7.26 (1.52)	6.76 (1.97)	7.15 (2.19)	7.22 (2.26)	7.06 (2.03)
Status*	8.26 (1.94)	7.56 (1.86)	8.62 (2.67)	8.56 (2.50)	8.19 (2.28)
Acquiescence**	9.26 (2.16)	8.59 (3.75)	11.69 (3.46)	9.94 (4.32)	9.75 (3.81)
Infrequency***	7.11 (2.56)	7.29 (2.53)	6.35 (2.00)	6.08 (2.44)	6.71 (2.44)

Note: * Maximum score = 14, ** Maximum score = 20, *** Maximum score = 30.

Investigative-Social- Artistic (ISA) are reported for nurses in the Dictionary of Holland Occupational Codes (Gottfredson, Holland & Ogawa, 1982). All groups displayed the three “nurse” traits, but in varying order.

After group analysis was completed, the 122 study subjects were each assigned an individual three letter vocational interest profile, ranking each individuals’ scores on the

six vocational scales (RIASEC) in descending order. Aggregately, the sample displayed 59 different vocational interest profiles, and each of the six personality traits (RIASEC) carried the first position in one or more individuals. Based upon individual three letter vocational interest profiles, but irrespective of position, the Realistic (R) trait was displayed a total of 50 times, the Investigative (I) trait 89 times, Artistic (A) 80 times, Social (S) 77 times, Enterprising (E) 40 times and Conventional (C) 20 times.

Frequencies are summarized in Table 4 for each subgroup as well as the entire sample.

Table 4

Frequency of Individual Personality Traits

Group (n)	Realistic (R)	Investigative (I)	Artistic (A)	Social (S)	Enterprising (E)	Conventional (C)
PICU (19)	8	15	12	13	7	1
NICU (41)	20	28	25	27	16	5
MCC (26)	10	20	14	20	6	6
SCC (36)	12	26	29	17	11	8
Total (122)	50	89	80	77	40	20

Based upon the ranking of individual vocational interest profiles, the most common first position traits were Investigative (I) ($n=41$, 33.6%), Artistic (A) ($n=33$, 27.0%) and Social (S) ($n=24$, 19.7%), followed by Enterprising (E) ($n=10$, 8.2%), Realistic (R) ($n=9$, 7.4%) and finally Conventional (C) ($n=5$, 4.1%). No individual vocational interest profile was without one of the "nurse" characteristics (S, I and A) that Holland identified. Seventeen (13.9%) of the profiles contained only one of the I, A or S characteristics, while 30 subjects (24.6%) demonstrated all three "nurse" characteristics (I, A and S) but in differing orders. The individual vocational interest profiles were analyzed for commonality. The most common of the individual profiles was Artistic-Investigative-Social (AIS), with 7 of the 122 subjects (5.7%) demonstrating that profile. Other slightly common individual vocational interest profiles, each with five subjects (4.0% each)

included IRA, IAR, IAS and ASE. Seven profiles (IRS, ISA, ISE, ICR, SIA and SAI) were common to four subjects (3.2%) each.

As stated previously, 59 different individual vocational interest profiles were displayed across the sample (N = 122) providing a ratio of 1 vocational interest profile for every 2.06 subjects. Each unit subgroup was analyzed for homogeneity between numbers of vocational interest profiles and subjects. Results demonstrated that the aggregate group demonstrated more homogeneity (1:2.06) than individual units, where ratios ranged from 1:1.18 to 1:1.35 (See Table 5).

Table 5

Homogeneity of Vocational Interest Profiles

Unit	Number of individual profiles	Number of subjects	Ratio of profiles to subjects
PICU	16	19	1:1.18
NICU	30	41	1:1.35
MCC	21	28	1:1.33
SCC	27	36	1:1.33
Aggregate	59	122	1:2.06

Finally, data were examined to look for relationships between degree, age, years in nursing, years in critical care nursing, and years in critical care nursing at the study site and the three dominant characteristics: Investigative, Artistic and Social. No significant relationships were identified.

Pediatric Intensive Care Unit (PICU) Subgroup.

The number of subjects from the PICU was 19. Respondent characteristics are summarized in Table 2. Aggregately, the vocational interest profile for the PICU nurses was Social-Artistic-Investigative (SAI). Mean scores on the 11 VPI scales are summarized in Table 3. Based upon individual vocational interest profiles, the PICU group demonstrated 16 different three letter profiles. No profiles were identified in which the Conventional characteristic was most dominant. The number of times individual

characteristics were demonstrated regardless of position, is summarized in Table 4. The Investigative (I) and Social (S) traits were most commonly found in the first position, each five times (26.3% each). The Artistic (A) trait was found four times (21.1%) in the first position. No individual vocational interest profiles were isolated that did not contain one of the "nurse" characteristics (I, A or S), although three subjects (15.8%) only demonstrated one of those characteristics. Three individual vocational interest profiles (ISR, SAI and EAI) were demonstrated twice each (10.5% each) in the sample, otherwise each profile was unique. Five subjects (26.3%) demonstrated the three "nurse" characteristics (I, A and S) but in varying order.

Neonatal Intensive Care Unit (NICU) Subgroup.

A total of 41 subjects indicated NICU as their primary unit. Respondent characteristics are summarized in Table 2 and VPI scores in Table 3. Aggregately, the NICU nurses displayed an Investigative-Social-Artistic (ISA) vocational interest profile. After individual vocational interest profiles were determined, the 41 subjects demonstrated 30 different three letter profiles, with each trait holding the first position for one or more subjects. Frequencies of individual vocational personality traits, regardless of position are summarized in Table 4. The most common individual first position traits were Investigative (I) ($\underline{n}=14$, 34.1%), with Artistic (A) second ($\underline{n}=12$, 29.3%), and Social (S) third ($\underline{n}=10$, 24.6%). At least one of Holland's "nurse" traits (I, A and S) were noted in every profile, but seven individual vocational interest profiles (17.1%) had only one of those traits. Based upon individual vocational interest profiles, the most common profile in this subgroup was Investigative-Realistic-Artistic (IRA), but was found only three times (7.3%). Profiles IAR, ISA, ISE, AIS, ASR, ASE, SIR, SIE and SEA were each noted twice in this subgroup (4.9% each), with the remaining individual vocational interest profiles being unique. Six (14.6%) subjects' individual vocational interest profiles contained the three nurse traits, but in varying order.

Medical Critical Care (MCC) Subgroup.

Of the total sample, 26 participants were from the MCC unit. Respondent characteristics are summarized in Table 2, and group VPI scores in Table 3. The MCC nurses displayed an aggregate vocational interest profile of Investigative-Social-Artistic (ISA). Following aggregate analysis, individual vocational interest profiles were assigned and ranked for commonality. A total of 21 different individual vocational interest profiles were identified, and as with most other groups, each personality interest trait initiated one or more individual profiles. Specific information regarding the frequency of the six traits occurring in any position is summarized in Table 4. Based upon individual vocational interest profile ranking, the Investigative (I) trait was found most frequently in the first position with 10 subjects (38.5%), followed by the Artistic (A) ($n=5$, 19.2%) trait. Both the Realistic (R) and Social (S) traits also occurred in the first position frequently ($n=4$, 15.4%). None of the 26 subjects failed to have one of the three expected (I, A and S) traits in their individual vocational interest profiles, but five individuals (19.2%) demonstrated only one of those traits. Five individual vocational interest profiles (IRS, IAS, AIS, ASE and SIA) were repeated twice, otherwise each profile was unique. Eight subjects (30.8%) reflected all three of the expected characteristics, although in differing order.

Surgical Critical Care (SCC) Subgroup.

The final 36 study participants were from the SCC unit. Aggregately, these nurses displayed an Artistic-Investigative-Social (AIS) vocational interest profile. Respondent characteristics and VPI scores are summarized in Tables 2 and 3 respectively. Analysis of individual vocational interest profiles revealed 27 different three letter profiles, with each characteristic initiating at least one profile. Table 4 summarizes the frequency distribution of the six traits regardless of position. Both the Investigative (I) and Artistic (A) traits were seen frequently in the first position ($n=12$, 33.3% each) of the individual vocational interest profiles, as was the Social (S) characteristic ($n=5$, 13.9%). All subjects

demonstrated at least one of the expected nurse traits (I, A and S), but seven (19.4%) individuals' vocational interest profiles contained only one of those traits. Nine profiles (RIA, IR, IAR, ICR, AIS, AIE, AS, SIA and SAI) appeared twice each. The remaining individual vocational interest profiles appeared only once, totaling 27 different profiles for the 36 subjects. Eleven of the 36 (30.6%) subjects' profiles contained all three expected characteristics, but in varying order.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Discussion

The purpose of this study was to describe the vocational interest profile of critical care nurses. Respondent characteristics were measured by a respondent characteristics questionnaire, and vocational interest profiles were measured by Holland's Vocational Preference Inventory (VPI). This chapter will discuss key findings of the study, identify study limitations, and provide implications of the study to clinical practice, nursing education and nursing administration settings. In addition, recommendations for further research endeavors will be addressed.

Summary of Key Findings

Key findings included:

1. The aggregate group displayed a vocational interest profile of Investigative-Artistic-Social (IAS).
2. Each subgroups' vocational interest profile contained the Social, Investigative and Artistic personality characteristics that Holland described for nurses but in differing orders.
3. Thirty subjects (24.6%) had individual vocational interest profiles which included all three "nurse" characteristics that Holland described but in differing orders.
4. Twenty-four subjects (19.7%) had individual vocational interest profiles in which the Social (S) characteristic was dominant, in the first position.
5. A total of 59 various individual vocational interest profiles were identified in the 122 subjects.

6. In this sample, no significant relationships were demonstrated between degree, age range, years in nursing, years in critical care nursing, or years in critical care nursing at the study institution and the three “nurse” characteristics of Social (S), Investigative (I) and Artistic (A).

Respondent Characteristics Profile

Overall response rate to the study was good, with 156 out of 270 packets returned (57.8%), and 122 of 156 (78.2%) actual subjects. The four individual units responded fairly evenly, with response rates of 40 to 54 percent. Out of the total sample of actual subjects, the Pediatric Intensive Care Unit (PICU) was the least represented unit, with only 15% of the sample, while the Neonatal Intensive Care Unit (NICU) had the largest influence with 33% of the sample. Medical Critical Care (MCC) and Surgical Critical Care (SCC) captured 21% and 29% respectively (See Table 1). Not surprisingly, 94% of the sample were female with few male respondents. The majority of nurses were between 20 and 45 years of age, with only 10 subjects greater than 46 years of age. This may reflect the continued influx of young graduate nurses into critical care settings as well the potential movement of older nurses out of critical care settings and into other hospital or community roles, or out of the workforce all together. With respect to age of nursing staff, the individual units were quite similar, with the exception that the PICU and NICU units both had approximately 10% of respondents in the greater than 46 years of age categories, while MCC and SCC had only five to seven percent of respondents in those same categories. This may be due to any number of factors, but would require further investigation to avoid pure speculation.

In all units, nearly half of the respondents had obtained their BSN, with fewer individuals holding their Diploma or Associates' Degree in Nursing. This is congruent with the recent focus and shift towards baccalaureate education in nursing. The mean years of experience in nursing was over 12 years for the aggregate group, with nearly 10 of those years in critical care nursing, and on the average, most of those years at the

collection site. PICU and NICU nurses had slightly more experience and longevity than MCC and SCC nurses. This may be related to the slightly younger nurses in the MCC and SCC areas, stress level differences between units, unit-based management practices or other factors. This finding may have implications for retention strategies in the adult critical care areas.

A somewhat disturbing finding was the low level of involvement of the sample in the critical care nursing professional association, the American Association of Critical-Care Nurses (AACN) and in levels of certification in specialty practice (CCRN certification). These findings may reflect a lack of interest, lack of knowledge regarding benefits of membership, financial or time constraints, family considerations, or a general dissatisfaction with the nursing profession. In the NICU, findings may be reflective of selective membership in the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) and subsequent certification rather than in the critical care association. Each of these factors should be investigated more fully.

Vocational Preference Inventory

In the Dictionary of Occupational Codes, Holland, Gottfredson and Ogawa (1982), list three vocational interest profiles for nursing. A profile of Social-Investigative-Artistic (SIA) is reported for a General Duty Nurse, Social-Artistic-Investigative (SAI) for a Licensed Practical Nurse and Investigative-Social-Artistic (ISA) for a Nurse Practitioner. Holland (1985a) supports the concept that different subspecialties in the field of nursing may have a varying three letter code, but continues that all have the Social (S), Investigative (I) and Artistic (A) components, typically with the Social (S) component first. The first key finding of this study was that based upon aggregate scores on the Vocational Preference Inventory (VPI), the sample displayed an Investigative-Artistic-Social (IAS) vocational interest profile. Although this contains the three essential "nurse" components that Holland describes, the exact profile is not one that Holland purports for nurses. All subgroups in the study demonstrated the three "nurse" components in the unit

vocational interest profiles, the second key finding of the study. The PICU nurses demonstrated an Social-Artistic-Investigative (SAI) profile, and the NICU nurses an Investigative-Social-Artistic (ISA) aggregate vocational interest profile. In the MCC area, an Investigative-Social-Artistic (ISA) profile was demonstrated, and finally in the SCC area, an Artistic-Investigative-Social (AIS) vocational interest profile was demonstrated by the subjects.

Hanson and Chater's (1983) study of 122 master's degree nursing students revealed an Artistic-Investigative-Social (AIS) profile, similar to the SCC subgroup's aggregate vocational interest profile. Quigley et al's (1990) study identified three primary vocational interest profiles, which differed according to educational status. Sophomore level students in the study demonstrated an Artistic-Social-Investigative (ASI) vocational interest profile, which was not prevalent in any of the groups in the current study. Senior level students in Quigley et al's study demonstrated a Social-Artistic-Investigative (SAI) vocational interest profile, which was also found in the PICU population of the current study; while management track master's degree students demonstrated an Artistic-Enterprising-Social (AES) profile, one not displayed in the current study.

Horn and Holzemer (1991) identified four dominant profiles in their study of Israeli women studying nursing ($n=52$), education ($n=60$) and engineering ($n=64$), based on individual vocational interest profiles rather than grouped, aggregate scores. The four dominant nursing vocational interest profiles were Social-Enterprising-Artistic (SEA), Social-Artistic-Realistic (SAR), Social-Investigative-Realistic (SIR) and Social-Realistic-Artistic (SRA). Comparative analysis of individual vocational interest profile results in the current study revealed that three of these profiles were demonstrated in the current study. The SEA vocational interest profile was demonstrated twice, SAR once, and SIR twice. Although similar profiles were identified, they were not strongly represented.

Potential explanations for these differences include the changing role of nursing and the environment in which nursing is practiced that have occurred over the years. The

dominance of the Investigative (I) trait in the first position in three of the five group's vocational interest profiles could possibly be linked to the influence of baccalaureate education, and the emphasis in the critical care arena on data analysis and clinical decision making. The study sample demonstrated strong baccalaureate influence (47.5% of subjects) which could influence results. Another factor to consider is that the current study was done in the critical care specialty area of nursing. No previous reports of vocational interest profiles with this specific population were located, and therefore there is no base for comparison.

The third key finding of this study was that 30 of 122 subjects (24.6%) had individual vocational interest profiles that included all three "nurse" characteristics which Holland purports (Investigative, Artistic and Social) but in differing orders. Regardless of position, the three dominant characteristics in the study sample were identical to Holland's "nurse" characteristics: Investigative (I) (89 out of 122, 73.0%), Artistic (A) (80 out of 122, 65.6%) and Social (S) (77 out of 122, 63.1%). These findings are essentially congruent with Horn and Holzemer's (1991) findings in which the Social characteristic appeared 46 times out of a sample of 52 subjects (88%), Artistic 31 out of 52, (59.6%) and Investigative, 29 out of 52 (55.8%). These findings lend support to the triad of characteristics (Investigative, Artistic and Social) that belong to nurses, although they demonstrate the need for further research to identify potential meaning and significance of the differing orders noted in the vocational interest profiles.

Interestingly enough, the Realistic (R) trait was demonstrated quite frequently in the current study (50 out of 122, 41.0%), slightly trailing Investigative (I), Artistic (A) and Social (S). This was also noted in Horn and Holzemer's (1991) study, where the Realistic trait was also the fourth most frequent trait. In the current study, the position of the Realistic trait is not surprising, since the Realistic tendency deals with the manipulation of objects or technology, and centers on manual, mechanical, electrical and technical competencies (Holland, 1985a). Holland relates that individuals seek out environments

that allow them to exercise their skills and abilities. Critical care nurses are constantly challenged to balance the "high-tech" environment with "high-touch" caring practices. Due to the highly technical nature of the critical care environment, the emergence of this trait in the sample seems inevitable.

The fourth key finding of the study was that only 24 subjects (19.7%) carried the Social (S) characteristic in the first position of their individual vocational interest profiles. Aggregately, only the PICU subgroup demonstrated the Social (S) characteristic in the first or dominant position, therefore Holland's (1985a) expectation that most nurses have the Social component first was not well demonstrated in this study. In Quigley et al's (1990) study, only one of the three dominant codes (ASI, SAI and AES) started with the Social characteristic. Holland's expectation was supported in Scott's (1989) study in which nursing students scored highest on the Social scale, and in Horn and Holzemer's (1991) study in which 32 of 52 subjects (61.5%) had the Social component first. These discrepancies could be due to the nature of critical care nursing or changes that have occurred within the nursing profession over a period of years. Further investigation is needed to more completely assess nurses' vocational interest profiles. Consideration should be given to completion of research which would evaluate the norms purported for the nursing profession.

The fifth key finding was that once individual vocational interest profiles had been assigned, a total of 59 different vocational interest profiles were demonstrated by the 122 subjects. This pattern is similar to the findings of Horn and Holzemer (1991) who identified 31 different vocational interest profiles for the sample of 52 Israeli nursing students. Quigley et al (1990) and Hanson and Chater's (1983) studies did not report numbers of individual vocational interest profiles for the sample. These findings could represent two separate schools of thought. First, it could be said that the diversity noted speaks well to the diverse nature of nursing and the multiple avenues and opportunities to express an individual's personality within the field of nursing. Conversely, according to

Holland, “each vocation attracts and retains people with similar personalities” (Holland, 1985a, p. 10). In addition, a key construct of Holland’s theory is that individuals seek out environments that allow them to exercise skills and abilities, express attitudes and values, and take on roles that are agreeable with them, consequently, each environment is dominated by the corresponding personality type. Based upon an environment-vocational personality congruence assumption, it could be assumed that critical care nurses would have demonstrated homogeneity, especially on the individual unit level. This was not demonstrated, but instead the aggregate group showed more homogeneity than any individual unit subgroup. Clearly more research is needed to more fully examine the issue of homogeneity among unit populations, and the nursing population at large.

The sixth key finding of the study was that no significant relationships were identified between degree, age, years in nursing, years in critical care nursing and years in critical care nursing at the study site and the three dominant characteristics: Investigative, Artistic and Social. Relationships identified could have implications for nursing education and nursing administration by suggesting that individuals of a certain age, or possessing a particular educational background would be more well suited for practice in the critical care setting.

Limitations

The use of a convenience sample at one site limits the generalizability of the study. An assumption was made that respondents would answer questions honestly. An additional limitation was the use of age groups for the reporting of respondent’s age rather than using actual age in years.

Implications and Recommendations

Numerous implications and recommendations were derived as a result of this investigation. The four major areas of clinical practice, nursing education, nursing administration and nursing research will be discussed.

Clinical Practice

The results of this study and others similar should be made available to nurses in the clinical setting. This study demonstrated that a wide variety of vocational interest profiles and therefore personalities exist within the critical care nursing population at the study institution. This diversity should be recognized, embraced, celebrated and then built upon in the provision of quality patient care. In addition, recognition of the strong Investigative, Artistic and Social tendencies in the majority of the sample may increase cohesiveness amongst team members. Individuals might also recognize that the varied expressions of caring noted on a daily basis in the clinical arena may represent an artistic expression of that peer's personality. An additional implication for clinicians is the importance of continually welcoming, encouraging and mentoring nursing students when completing clinical rotations in the critical care areas.

Nursing Education

Assisting students to find their individual niche in the field of nursing remains a challenge for nurse educators. Although aggregately the sample displayed a vocational interest profile of Investigative-Artistic-Social (IAS), based upon individuals vocational interest profiles, no one profile emerged as a "critical care nurse profile". All students should be exposed to critical care environments, through laboratory simulations or clinical experiences. Nurse educators should use all means possible, including vocational interest inventories such as this, to assist students in deciding on a field of specialty within nursing.

Nursing Administration

Knowledge of vocational interest profiles as well as supplemental personality scale tendencies may prove helpful in administration - staff relationships. There is a continual need to examine the issues surrounding the nursing imbalance, especially in the critical care setting. Special consideration may be given to enhancement of retention strategies in the adult critical care areas. The diversity of personality characteristics in critical care nurses should be recognized and embraced. Careful balance must be attained while

working toward recognition of diversity, but still ensuring an environment that promotes expression of the most common Investigative, Artistic and Social traits.

Nursing Research

There remain many unanswered questions regarding vocational interest profiles of critical care registered nurses. Clearly the study should be replicated using a larger, randomized sample. Replication should also occur in various geographic areas, and institutions of varying size and settings, to determine if findings are consistent, and to see if regional differences exist. Comparative studies should be conducted using the VPI and other vocational assessment tools to examine similarity of results. Comparison studies should also be done between specialty groups within nursing, and with various roles to discover differences or similarities between groups. Additional questions to be examined are if nurses make a conscious choice of specialty or if they are placed in various specialties due to need or shortage. The phenomena of specialty choice within nursing offers fertile ground for research. There is also a need to complete an environmental assessment of critical care nursing areas, as well as other areas of nursing. This process could help identify differences between specialties based on the environment in which nursing is practiced. Further research is needed to validate the current purported norms for vocational interest profiles of various nursing populations and specialties.

Summary

This chapter has included discussion of respondent characteristics and vocational interest profiles for critical care registered nurses. Implications for clinical practice, nursing education and nursing administration were discussed. Several recommendations for future nursing research endeavors were offered.

APPENDICES

Holland's General Occupational Themes

Theme	Tasks	Problems	Co-Workers	Rewards
Realistic	Technical, skilled Working with hands, tools, machines Building, fixing, or maintaining Ex. airplane mechanic, electrician, photo engraver	Prefer concrete to abstract problems	Prefer dealing with things to people Rugged, robust, practical, physically strong	Life appears relatively simple and straightforward Worker can see results of labors
Conventional	Business detail Organizing, planning Highly ordered activities Ex. bank examiner, court stenographer, tax expert	Most efficient at well-defined tasks	Like life to be orderly & go according to plan Conforming, conscientious, efficient, practical, calm, persistent	Seeing offices & organizations run smoothly and understanding how the person contributed
Enterprising	Business contact Persuading others Ex. sports promoter, salesperson, business executive	Prefer ambitious social tasks	Enjoy competitive activities, have facility with words Adventuresome, ambitious, domineering, energetic, self-confident, sociable	Sense of achievement that comes from making things happen, being where the action is
Social	Social Service Helping people Ex. teacher, speech therapist, counselor	Solve problems through discussions, or rearranging relationships	Like to discuss philosophical questions, concerned with welfare of others Cheerful, popular, cooperative, friendly, generous, idealistic	Good feeling that comes from helping other people solve their problems or improve themselves.
Artistic	Creative Self-expression Ex. author, playwright, drama coach, musical arranger	Problems that can be dealt with through self-expression and artistic media	Like to work in free environments Imaginative, impulsive, intuitive independent, introspective idealistic, expressive, intense	Opportunities for creating new things and from being around other creative people.
Investigative	Scientific Curious about things, people Ex. anthropologist, aeronautical design engineer, botanist, physician	Prefer to think through problems rather than act them out	Enjoy solving scientific puzzles Confident of scholarly & intellectual abilities, analytical, curious, reserved, independent	Freedom & opportunity to satisfy an innate curiosity Freedom to try out new ways



APPENDIX B
GVSU APPROVAL

1 CAMPUS DRIVE • ALLENDALE MICHIGAN 49401-9403 • 616/895-6611

January 24, 1996

Julene Beth Hannink
755 Otillia S.E.
Grand Rapids, MI 49507

Dear Julene:

Your proposed project entitled "*Vocational Interest Profiles of Critical Care Registered Nurses*" has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,


Paul Huizenga, Chair
Human Research Review Committee

APPENDIX C
RESPONDENT CHARACTERISTICS PROFILE

Please complete the following information.
THANK YOU.

1. Gender: F _____ M _____
2. Age:
 - 20 - 35 _____
 - 36 - 45 _____
 - 46 - 55 _____
 - > 55 _____
3. Highest Degree completed:
 - DIPLOMA _____
 - ADN _____
 - BS (OTHER) _____
 - BSN _____
 - MS (OTHER) _____
 - MSN _____
4. Years of nursing experience: _____
5. Years of critical care experience: _____
6. Years of critical care experience at Butterworth: _____
7. Current member of the American Association of Critical-Care Nurses (AACN?) YES _____ NO _____
8. CCRN? YES _____ NO _____
9. Please indicate the unit(s) where you are permanently assigned:
 - MEDICAL CRITICAL CARE _____
 - SURGICAL CRITICAL CARE _____
 - PEDIATRIC INTENSIVE CARE _____
 - NEONATAL INTENSIVE CARE _____

FOR RESEARCHER USE ONLY	
Subject _____	1 2 3
Record _____	4
	5
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	7
	8-9
	10-11
	12-13
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	17
	18
	19

******* DO NOT SIGN THIS FORM *******

THANK YOU FOR YOUR PARTICIPATION!!!

APPENDIX D
SCORING GUIDE SUMMARY

SCALE	SCORING DETAIL	TITLES
Realistic	Number of YES or "LIKE" responses on items 11, 21, 31, 41, 51, 61, 71, 81, 91, 101, 111, 121, 131, 141	Airplane mechanic, Fish and wildlife specialist, Auto mechanic, carpenter, Hunting or fishing guide, Surveyor, Construction inspector, Radio operator, Electronic technician, Tree surgeon, Bus driver, Locomotive Engineer, Machinist, Electrician.
Investigative	Number of YES or "LIKE" responses on items 12, 22, 32, 42, 52, 62, 72, 82, 92, 102, 112, 122, 132, 142	Meteorologist, Biologist, Astronomer, Medical laboratory technician, Anthropologist, Zoologist, Chemist, Independent research scientist, Writer of scientific articles, Editor of a scientific journal, Geologist, Botanist, Scientific research worker, Physicist.
Artistic	Number of YES or "LIKE" responses on items 13, 23, 33, 43, 53, 63, 73, 83, 93, 103, 113, 123, 133, 143	Poet, Symphony conductor, Musician, Author, Commercial artist, Freelance writer, Musical arranger, Journalist, Portrait artist, Concert singer, Composer, Sculptor/sculptress, Playwright, Cartoonist.
Social	Number of YES or "LIKE" responses on items 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, 114, 124, 134, 144	Sociologist, High school teacher, Juvenile delinquency expert, Speech therapist, Marriage counselor, School principal, Playground director, Clinical psychologist, Social science teacher, Director of welfare agency, Youth camp director, Personal counselor, Psychiatric case worker, Vocational counselor.
Enterprising	Number of YES or "LIKE" responses on items 15, 25, 35, 45, 55, 65, 75, 85, 95, 105, 115, 125, 135, 145	Speculator, Buyer, Advertising executive, Manufacturer's representative, Television producer, Hotel manager, Business executive, Restaurant manager, Master of ceremonies, Salesperson, Real estate salesperson, Publicity director, Department store manager, Sales manager.
Conventional	Number of YES or "LIKE" responses on items 16, 26, 36, 46, 56, 66, 76, 86, 96, 106, 116, 126, 136, 146	Bookkeeper, Business teacher, Budget reviewer, Certified public accountant, Credit investigator, Court stenographer, Bank teller, Tax expert, Inventory controller, IBM equipment operator, Financial analyst, Cost estimator, Payroll clerk, Bank examiner.

Self-Control	Number of NO or "DISLIKE" responses on items 17, 27, 37, 47, 57, 67, 77, 87, 97, 107, 117, 127, 137, 147	Physical education teacher, Deep sea diver, Wrecker (building), Prizefighter, Firefighter, Wild animal trainer, Stunt man/stunt woman (movies), Jockey, Motorcycle driver, Blaster (dynamiter), FBI agent, Mountain climber, Explorer, Test pilot, Racing car driver, Barber.
Masculinity-Femininity	Number of YES or "LIKE" responses on items 39, 69, 79, 89, 109, 129, plus number of NO or "DISLIKE" responses on items 19, 29, 49, 59, 99, 119, 139, 149	Dramatic coach, Elementary school teacher, Experimental laboratory engineer, Entertainer, Physical therapist, Professional athlete, Airplane pilot, Referee (sporting events), English teacher, Astronaut, Stage director, Quality control expert, Clothing designer, Social worker.
Status	Number of YES or "LIKE" responses on items 20, 30, 50, 80, 100, 110, and 130 plus number of NO or "DISLIKE" responses on items 40, 60, 70, 90, 120, 140, 150.	Lawyer, Physician, Bartender, Novelist, Cashier, Flight attendant, Banker, Mail carrier, U.N. Official, College professor, Ticket agent, Judge, Truck driver, Sales clerk.
Infrequency	Number of YES or "LIKE" responses on items 3, 5, 6, 151, 154, 156, 157, 158, 159, and 160, plus number of NO or "DISLIKE" responses on items 1, 2, 4, 7, 8, 9, 10, 152, 153, 156	Criminologist, Private investigator, Restaurant worker, Detective, Photoengraver, Truck gardener, Physical education teacher, Humorist, Photographer, Diplomat, Funeral director, Mind reader, Architect, Shipping and receiving clerk, Criminal psychologist, Insurance clerk, Barber, Bill collector, Ward attendant, Masseur/Masseuse.
Acquiescence	Number of YES or "LIKE" responses on items 1 through 30	Criminologist, Private investigator, Restaurant worker, Detective, Photoengraver, Truck gardener, Physical education teacher, Humorist, Photographer, Diplomat, Airplane mechanic, Meteorologist, Poet, Sociologist, Speculator, Bookkeeper, Deep sea diver, Stock clerk, Dramatic coach, Lawyer, Fish and wildlife specialist, Biologist, Symphony conductor, High school teacher, Buyer, Business teacher, Wrecker (building), Veterinarian, Elementary school teacher, Physician.

John L. Holland
111 St. Albans Way
Baltimore, MD 21212-3332

APPENDIX E
LETTER FROM DR. HOLLAND

Dear MS Hambrick,

I enclose my book. The formulations for each type uses the conceptual definitions.

I have no updated information in the retest of the 1985 VPT. As I recall, we substituted only 3 new items. I called someone in the R+D dept to look in the '85 manual. I found my manual. There were only 4 item changes out of 160. These revisions are detailed on p. 3 of the manual. These changes would not affect the reliability estimates in an appreciable way.

Unfortunately, no one is interested in obtaining retest data but prefer to use the VPT as a research tool. I hope your research goes well.

Dr. Hambrick is also a little difficult to get to the point.

APPENDIX F
MEMO TO MANAGEMENT and CLINICAL RESOURCE TEAMS

MEMORANDUM

TO: MCC, SCC, PICU and NEONATAL ICU
Directors
Clinical Nurse Specialists
Clinical Coordinators
Staff Educators

FROM: Julie Hannink, Staff Educator, ACC & 4 South

DATE: March 28, 1996

RE: RESEARCH PROJECT



You may or may not be aware that I am in the process of completing my Master's of Science in Nursing Degree through Grand Valley State University. One of the requirements for the degree is completion of a research project. I have chosen to focus on the vocational interests of critical care registered nurses, and am requesting the nursing staff in Surgical Critical Care, Medical Critical Care, Pediatric Intensive Care and Neonatal Intensive Care to participate in the study. I would like to provide you with some basic information about the study.

This research project has been approved through the Grand Valley State University Human Subjects Review Board, as well as the Butterworth Hospital Nursing Research and Hospital Research and Human Rights Committees. Each staff RN will receive a packet of information in his or her mailbox on the unit. In the packet will be the following materials:

- ◆ A cover letter introducing myself and the research project
- ◆ A brief respondent characteristics profile that will take approximately 5 minutes to complete
- ◆ An instruction sheet regarding packet completion

- ◆ The research tool, the Vocational Preference Inventory (VPI) developed by Dr. John L. Holland. The tool lists 160 occupational titles to which the respondent indicates a “like” or “dislike” response. It takes approximately 15 minutes to complete.
- ◆ A computer scoring sheet for responses to the VPI.
- ◆ A Certificate of Participation.
- ◆ A #2 lead pencil for completing the computer scoring sheet.
- ◆ A candy bar as a token of my appreciation.
- ◆ A pre-addressed Inter-Office mail label with my name and mailcode on it for the participant to return materials.

All staff RNs are being requested to participate in this study. I would like to request your assistance in three ways.

- ◆ I will be posting a flyer for nursing staff informing them of the project approximately 1 week before packets are distributed into mailboxes. I would like to post this flyer in an area where nursing staff are apt to see and read it. Please let me know where the “hot spots” for posted memos are on your unit.
- ◆ Each potential participant is asked to return materials within 7 days of when they receive the packet, regardless of their decision to participate in the project. This is designed to help assure confidentiality. Some of the staff may not know where the outgoing Inter-Office mail slot is for the unit. Please help them with locating this if they should ask you.
- ◆ I will be sharing group tabulated results once data analysis is completed. When the time comes, I will be requesting information regarding the best communication avenue to use (posted memo, newsletter, etc.).

Key target dates in this project are:

- ◆ Monday, April 1, 1996: Flyer posted informing nursing staff of the project
- ◆ Monday, April 8 through Wednesday, April 10, 1996: Packet distribution
- ◆ Monday, April 15, 1996: Reminder flyer posted regarding project

Thank you in advance for your support of this research project. I am more than happy to meet with you on an individual or group basis if you have additional questions, or would like more information. Please feel free to contact me (ext 3515; pager 4123; or via e-mail) if you have any questions, concerns, or if you would like to arrange a meeting time. Thank you again for your support of this project.

APPENDIX G
FLYER ANNOUNCING STUDY



*ATTENTION ALL RN's who work
in CRITICAL CARE!!!*

Take 20 minutes and participate in a
research project!!!

**WATCH YOUR MAILBOX FOR
DETAILS!!!**

APPENDIX H INFORMATION LETTER

(DATE)

Dear Critical Care Nurse:

Experts across the country are examining the current and future need for and availability of nurses who desire and/or are well suited to work in a critical care environment. This is affecting neonatal, pediatric and adult critical care units. One solution may be to examine what vocational or occupational interests are present in current critical care nurses. This eventually might allow counselors, educators and managers to identify nurses or nursing students who might be well suited for a career in critical care, and encourage or mentor them accordingly.

Please take 15-20 minutes to complete the two enclosed questionnaires. The short Respondant Characteristics Profile gathers basic information. It should take less than 5 minutes to complete. The second tool is called the Vocational Preference Inventory (VPI). It is an easy tool to complete, and will only take about 15 or 20 minutes to complete. Please carefully follow the directions on the enclosed Instruction Sheet.

Regardless of whether you complete the study materials or not, please return the study packet to me. Directions are on the enclosed Instruction Sheet. Completing the tools implies your willingness to participate in the study. The tools are designed for confidentiality and anonymity. Please do not write your name on any of the materials. There are no risks to your participation in this study.

Thank you in advance for your participation, in helping me to complete my Master's degree thesis. I have enclosed a candy bar as a token of my appreciation. Results of the study will be posted on the unit and/or shared via unit newsletter. If you have any questions regarding this study, please feel free to contact me at x 3515 (391-3515) or on digital pager 1111-4123. Thank you again.

Sincerely,

Julene B. Hannink, BSN, RN, CCRN
Staff Educator, Adult Critical Care and 4 South

APPENDIX I INSTRUCTION SHEET

VOCATIONAL PREFERENCE INVENTORY (VPI)

- ⇒ Please use the Grand Valley State College blue and white computer answer sheet to indicate your answers.
- ⇒ Please DO NOT indicate your name or any other identifying information on the computer answer sheet.
- ⇒ Please use a black lead #2 (included in packet) or softer pencil only.
- ⇒ **IMPORTANT:** Use “A” or “True” for a “LIKE” response. Use “B” or “False” for a “DISLIKE” response.
- ⇒ Indicate all responses to Titles 1-160 on the computer answer sheet. Please watch numbering carefully, and ensure that the number of the item you are answering matches with the number on the computer answer sheet where you are indicating your response.

WHEN YOU ARE FINISHED WITH BOTH TOOLS:

- ⇒ Place study materials back in the study packet envelope.
- ⇒ Keep the candy bar, Certificate of Participation and pencil, if you desire.
- ⇒ Place the enclosed label that reads “Julie Hannink, MailCode 122” on the outside of the envelope, then seal or close the envelope.
- ⇒ Place the envelope in any Inter-Office mail outgoing mailbox. If you are unsure of its location, please ask any Clinical Coordinator, Director, Educator or Clinical Nurse Specialist.

THANK YOU AGAIN FOR YOUR PARTICIPATION!!!

APPENDIX J
CERTIFICATE OF PARTICIPATION

***CERTIFICATE
OF
PARTICIPATION***

provided to

for participating in the research project
"Vocational Interest Profiles of
Critical Care Registered Nurses".

Date

Julene B. Hannink, BSN,RN,CCRN, Primary Investigator

APPENDIX K
REMINDER FLYER



*REMINDER TO ALL RN's who
work in CRITICAL CARE!!!*

There's still time!!!
Complete the research project TODAY!!!!

**CHECK YOUR MAILBOX FOR
DETAILS!!!**

**APPENDIX L
THANK YOU LETTER**

(DATE)

Dear Critical Care Nurses:

I would like to personally thank you for your willingness to participate in my recent research project. Your input was extremely valuable, and contributed significantly to the success of my study. I appreciate your willingness to take the time and effort to complete the study materials.

Results of the study will be posted in each unit and/or available via unit newsletter once data analysis has been completed. If you wish any additional information, or have any questions, please feel free to contact me at 391-3515, or on digital pager 4123.

Thank you again for your participation.

Sincerely,

Julie Hannink, BSN, RN, CCRN

LIST OF REFERENCES

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