The Relationship Between Occupational Choice and Perceptions of Professional Nursing Functions and Characteristics

Ellis Quinn Youngkin

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THE RELATIONSHIP BETWEEN OCCUPATIONAL CHOICE
AND PERCEPTIONS OF PROFESSIONAL NURSING
FUNCTIONS AND CHARACTERISTICS

by

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ABSTRACT

THE RELATIONSHIP BETWEEN OCCUPATIONAL CHOICE
AND PERCEPTIONS OF PROFESSIONAL NURSING
FUNCTIONS AND CHARACTERISTICS

Ellis Quinn Youngkin
Old Dominion University, 1990
Director: Dr. Wolfgang Pindur

This study identifies the occupational interests and predominant vocational personality types of freshmen students (undeclared majors, nursing majors, and non-nursing majors), explores perceptions about selected professional nursing functions and characteristics among the students, and examines perceptual differences between groups (majors).

A non-experimental ex post facto design is used to analyze data from 312 students in a large urban university. Descriptive and inferential statistics are applied in data analysis. The following findings support the hypotheses:

1. Nursing continues to attract the traditional student who has Holland’s Social vocational personality type as measured by the Self-Directed Search, although many Social types are choosing rival health occupations.

2. The vocational personality profiles of the majors differ significantly, matching Holland’s high point
code letters for occupations represented by the more homogeneous majors.

3. Significant differences in gender, race, SDS and daydream high point letter codes, and if nursing has ever been considered for a career occur between majors.

4. Perceptions of nursing as measured by the Professional Nursing Functions and Characteristics Interest Inventory (PNFCII) are significantly different between the three groups and the majors. Women in all majors and over half of all respondents perceive nursing favorably.

5. Students with Social vocational personality codes, regardless of group or major, view the functions and characteristics of professional nursing positively.

Implications are as follows:

1. Social students need earlier identification for intensive recruitment by nursing;

2. Non-traditional students, including male, non-white, and more qualified, brighter students, with predominant vocational personality types other than Social, especially Investigative, should be targeted;

3. Recruitment strategies should promote role satisfaction and salary-related benefits, as well as traditional factors of helping people;

4. Nurse role modeling should be promoted in the community to make nursing visible to people who influence occupational choice;
5. The PNFCII instrument may be used in rating interest in nursing, guidance counseling, and recruiting;

6. Changing the name of nursing would not make a significant difference in recruitment; and

7. Nursing must be marketed differently to attract a wider group of people who would impact the fundamental image of the profession positively over time.
CHAPTER I
INTRODUCTION

Nursing, as an evolving profession, is in the throes of a critical shortage of manpower nationwide.\(^1,2,3,4,5\) Large urban universities offering professional nursing education programs have, as one of their missions, provision of quality service to the community in which they function. The qualified graduates from such institutions provide an essential source of nurses to staff not only the institutions' hospitals and agencies, but those of the larger surrounding metropolitan areas. The large urban hospital, especially if associated with a university, is in need of increasing numbers of highly educated nurses to provide the complex care necessitated by acutely and chronically ill clients and a highly technical environment.\(^6,7\) A shortage of nursing applicants threatens the future of health sciences institutions and the urban communities they serve.

Research is needed to identify how the functions and characteristics of professional nursing are viewed by potential applicants. The beginning point of a strategic marketing plan for recruitment focuses on the applicant market, such as college freshmen. Determining the
characteristics of this target population and their perceptions about the profession is a first step in planning marketing strategies that are successful.\textsuperscript{8,9}

**Statement of the Purpose**

The purpose of this study is threefold: first, to determine the perceptions about selected professional nursing functions and characteristics among three groups of freshmen students in a large, urban mid-Atlantic state university who (a) have selected nursing as their occupational choice (major), (b) have committed themselves to an occupational choice (major) other than nursing, or (c) have not committed themselves to an occupational choice (major); second, to determine the occupational interests and predominant vocational personality types of the students in the study; and third, to determine if there is a significant difference among the three groups in the way professional nursing functions and characteristics are perceived.

**Significance of the Study**

In response to the public policy issue of decreasing health care manpower in a time of ever increasing demand, a Commission to study nursing was ordered by the Secretary of Health and Human Services. The final report of this group, addressing the nursing shortage, was published in December, 1988.\textsuperscript{10} The
Commission listed the following as deterrents associated with supplying professional nurses:

1. Declines in minority student enrollments in college and university schools of nursing;
2. A decline in the college-age population as a whole;
3. Many more professional career opportunities that offer better pay and working conditions than nursing for women;
4. Inadequate progressive pay in professional nursing, although the starting salaries are comparable to other professions;
5. Decreased basic nursing education federal support;
6. Stressful and potentially unsafe working environments for nursing practice;
7. Lack of respect and autonomy for professional nurses in the working environment, especially by physicians; and
8. A negative public image of nursing.\(^\text{11}\)

The public policy consequences of a protracted nursing shortage are great. A deteriorating quality of health care provision, ever-worsening work environmental conditions for the professional nurse, and decreasing access to health services by the public were identified. Additionally, as the workload increases for available
nurses, more and greater dissatisfaction with the profession causes nurses to leave and will worsen the stress for existing nurses. An already negative image of the profession will be augmented and will deter potential nurses from choosing the profession as a career.\textsuperscript{12}

Baccalaureate programs to prepare professional nurses are experiencing significant decreases in enrollments in college and university schools of nursing, declining academic credentials of those high school students who do apply, and increasing financial institutional constraints.\textsuperscript{13,14,15,16,17,18,19} A critical concern of nursing leaders is that schools will lower their standards to maintain enrollments, thus graduating substandard nurses and further jeopardizing the public's health.

Concerned faculty, administrators, and consumers of nursing services are calling for new and innovative ways to influence qualified students to enter and graduates to stay in nursing. Marketing research is being examined by nursing education to provide insights for attracting desirable applicants.\textsuperscript{20,21} According to Krachenberg, marketing requires assessing the needs of the target group, developing the goods and services to meet the specific needs, advertising to indicate the goods and services are available, and making them available at the right market.
prices at the best time and place. The consumer, the student in this instance, is the beginning point.

Marketing is not simply selling a product, in this case, an education to become a professional nurse. Rather, it is determining, through research, those attributes of a professional nursing career that are appealing to the target group, and presenting them in ways which stimulate interest in choosing nursing education as the major. Mutual benefits and satisfactions to the institution and the consumer are the aims.

Desired behavioral characteristics and functional role activities of new graduates in professional nursing have been identified by two prominent groups, the American Association of Colleges of Nursing (AACN) and the National League for Nursing (NLN). In order to be accredited by the NLN, baccalaureate schools of nursing utilize criteria set forth by this organization in preparing curricula to graduate students with the desirable role abilities.

However, research on functions and characteristics of professional nursing that might be most appealing or unappealing to prospective college students today is lacking. Thus, a study that could elicit such data from freshmen college students is seen as one prerequisite to modifications of recruiting approaches aimed at this target group. An anticipated future investigation could build upon the information gleaned by introducing perceived
desirable functions and characteristics into a recruiting program to see how they might influence baccalaureate nursing enrollments.

Theoretical Framework

The theoretical model providing the conceptual support for the study is John L. Holland’s theory of vocational personalities and work environments. According to Holland’s theory, individuals generally can be categorized as one of six types of vocational personalities: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). The person tends to want to live and work in an environment that is congruent with his or her vocational personality; thus vocational choice is "an expression of personality." Work environments are comprised predominantly of characteristics that place them in one of six groups, similar to those of the vocational personality types. When people and environments are joined, outcomes can be predicted about vocational choice, stability, and achievement, and educational choice and achievement, as well as a variety of other behaviors.

Holland uses a hexagonal model, as shown in Figure 1, to estimate the "degree of congruency between a person and an occupation (environment)." According to Holland, the closer occupational and personality types are on the hexagon, the nearer the relationship. Individuals who fit
profiles adjacent on the model have more harmonious interests, employment functions, and personal tendencies. Those types of vocational profiles and occupational environs opposite one another on the hexagon, are the most incompatible in relation to interests, personalities, and job duties.

---


A person’s vocational personality type is formed by the "interaction among a variety of cultural and personal forces," including friends, heredity, family, class status, the culture, and the physical environment. Individuals who choose professional nursing as an occupation usually have the Social and Investigative types of vocational personalities predominating in some arrangement with another type to give the individual a three letter code profile, such as SIA or SAI or ISA. These people tend to choose a like environment for work. The staff nurse, one of the more frequent first job choices for the new
baccalaureate graduate, most often has a Social-Investigative-Artistic (SIA) profile. The letter S is the high point letter of the code meaning that the Social characteristics of the personality predominate, such as helping, friendliness, and social competence, since the letter S is the high letter of the code. Investigative characteristics, such as rationalism, analytical and critical thought, and independence are second in influence on career choice, and Artistic characteristics, such as nonconformity, independence, artistic competencies and achievements, originality, and expressiveness are last in influence.

Social students, as well as those with other vocational personalities, regardless of occupational choice, may offer relevant information on what functions and characteristics are desirable in professional nursing. These data could provide clues for future marketing strategies to influence an individual's choice of career.

Super and Bohn state that people have many possible ways they can choose to go in career paths. Assuming this and Holland's theory to be true, then many students uncommitted or committed to a path other than nursing, who have vocational personality makeups appropriate for professional nursing, could become interested in this field if the functions and characteristics these people see as attractive could be identified and promoted in recruiting.
strategies. Additionally, examining the demographic and biographic characteristics of the student respondents is important in providing clues for marketing towards future target groups.

Research Questions and Hypotheses

Three research questions are examined. These questions and the accompanying hypotheses are:

A. What are the occupational interests and predominant vocational personality types of the students in the study? The hypotheses are:

1. Freshmen students in the nursing major group will have a predominantly Social (S) vocational personality profile as measured by Holland’s Self Directed Search (SDS) instrument.

2. There will be a difference in predominant vocational personality profile as measured by Holland’s SDS between three groups of students: (a) students who have selected nursing as their occupational choice (major), (b) students who have committed themselves to an occupational choice (major) other than nursing, and (c) students who have not committed themselves to an occupational choice (major).

B. In what ways, relative to demographic and biographic variables, are the three groups (nursing majors,
non-nursing majors, no declared majors) alike or different? The hypothesis is:

3. There will be differences in the demographic and biographic data between groups.

C. How are selected professional nursing functions and characteristics perceived by the three groups of freshmen students? The hypotheses are:

4. There will be a difference in the perceptions of selected professional nursing functions and characteristics between the three groups.

5. Students in any of the three groups who have predominantly Social vocational personality profiles will view functions and characteristics of professional nursing similarly.

Operational Definitions

For the purpose of this study, the terms are defined as follows:

1. Selected professional nursing functions and characteristics: Those baccalaureate level functions and characteristics of professional nursing as identified from the National League for Nursing criteria for accreditation, from outcome behaviors of the accredited university school of nursing where the study is being conducted, from the American Association of Colleges of Nursing, and from the
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professional literature. A list of has been developed from these resources by the researcher that represents examples of functions and characteristics for the generalist professional nurse.\textsuperscript{33,34,35}

2. Freshmen students: Students living on or off campus in metropolitan Richmond, Virginia, matriculated as full-time freshmen in the university.

3. Large, urban mid-Atlantic state university: Virginia Commonwealth University, a state-supported Virginia university in an urban setting, Richmond, committed to that urban area in its mission, and serving a student population in excess of 20,000 students.

4. Nursing as an occupational choice: Baccalaureate nursing or prenursing is indicated on the student's demographic-biographic questionnaire as the major.

5. Uncommitted to an occupational choice: No major is listed by the student on the demographic-biographic questionnaire.

6. Committed to an occupational choice other than nursing: A major other than nursing is listed on the demographic-biographic questionnaire by the student.

7. Vocational personality pattern or profile: The makeup of the individual's vocational personality as determined by Holland's Self-Directed Search (SDS).\textsuperscript{36}
8. Social vocational personality profile: A pattern on the SDS predominating in the characteristics of the Social type (S).37

9. Self-Directed Search (SDS): An instrument developed by John L. Holland, Ph.D., one part of which estimates the vocational personality profile of the individual for the purpose of assisting in occupational choice.38

10. Occupation or occupational choice: A job or position a person works in or desires to work in for pay that is comprised of activities carried out similarly in a variety of places.39 For the purpose of this study, major, vocation, and occupation will be used interchangeably, and declared major will designate choice of career being pursued.

11. Career: A series of occupations a person works in during a lifetime.40

Assumptions

1. Respondents will answer the study items honestly and to the best of their knowledge.

2. Respondents have a basic awareness of the nursing profession gleaned from the media and life experiences.

3. The measurement instruments are appropriate to measure the behaviors being investigated.
4. Individual vocational personality characteristics which might have influenced individual perceptions of nursing are assessed.

Limitations

1. The design does not control for bias due to self-selection of respondents.

2. Due to a non-randomized design, the results can be generalized only to the respondents.

3. The content validity and the internal reliability, using coefficient alpha, of the Professional Nursing Functions and Characteristics Interest Inventory have been determined. Further explanation concerning validity and reliability of the instruments is discussed in Chapter III.

Chapter Summary

Chapter I introduces the statement of the problem, the purpose of the study, the significance of the problem, the theoretical framework, the research questions and accompanying hypotheses, the operational definitions of terms, the assumptions, and the limitations. Chapter II presents a review of the relevant literature related to Holland's theory and theories of other leading authorities in the vocational field, demographic and biographic factors influencing occupational choice, functions and characteristics of professional nursing, and implications for
marketing strategies in higher education and specifically baccalaureate nursing education.
NOTES


5 Judy Mann, "Curing the Nursing Shortage," The Washington Post, 3 April 1987, C3.


7 Curran, Minnick, and Moss, 444-447.


Ibid., 13-14.


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CHAPTER II
REVIEW OF THE LITERATURE

Introduction

This chapter addresses selected literature relating to the research questions and hypotheses. Holland’s theory that people choose occupations which fit their personalities is the conceptual framework for the study, and provides the basis for the first research question and the first and second hypotheses. Relevant literature addressing occupation and career choice in a brief overview is presented first. Personality and vocational personality types, as well as other theories of occupational interest development that provide clues as to why individuals choose certain career paths, are discussed.

Generally, personality, as an influencing factor, is one of the concepts included in a number of theories of vocational choice. Interests, values, needs, motivation, and self-concept are other variables so interrelated with personality that they are discussed as integral parts of the whole.

Demographic and biographic variables impacting career decision-making are the focus of the second research question and the related third hypothesis. The more
important of these variables are gender, race, socio-economic status, abilities, aptitudes, intelligence, parental influence, and role models and are addressed in the literature review.

Literature related to nursing as a career choice is discussed to provide examples in some of the aforementioned sections, as well as in a separate presentation. Perceptions of professional nursing functions and characteristics by different groups form the foundation for the third research question. A body of literature exists on professional nursing functions and characteristics, and is briefly described in the literature review, but the information is based primarily on what professional nursing itself sees as the critical functions and characteristics. The fourth hypothesis addresses the need for more information from the viewpoint of university students who may or may not be interested in nursing as a career. The perceptions of students may provide insight for promotional activities in marketing the profession. The fifth hypothesis ties the information from the first and the fourth hypotheses together, once again looking at predominant vocational personality type according to Holland’s theory and the perceptions of professional nursing functions and characteristics. The researcher anticipates that students with Social vocational personality profiles will have similar
views about the functions and characteristics of professional nursing.

**Occupational, Vocational, and Career Choice: Overview**

Occupational choice, as a developmental process, tells society something about the person.¹ With expressed choice, the individual is saying how he views himself in the occupation, either as a preference, an ideal, or a reality based on expectation.² The latter recognizes the balance necessary between what is real and what is fantasized in light of societal factors.³

The decision-making process of choosing a career is a complex problem-solving series of events. It requires sorting and synthesizing information about one's self and the impacting societal factors, looking critically at the alternatives available, and then making a commitment decision.⁴

Career is "the sequence of major positions occupied by a person throughout his preoccupational, occupational, and postoccupational life."⁵ Thus, the concept of career includes the student role and any roles that relate to work, as well as positions which favor the particular work, such as family and civic activities. A tendency to choose similar or related work experiences is seen throughout most individuals' lives.⁶ Vocation is work that the individual does as a result of a feeling of obligation. Occupation means a combination of work experiences with similar tasks.
and aims. The term, career, embodies vocation and occupation.

Society allows the individual to pursue a career that he or she finds desirable within the constraints and influences of a variety of variables which may affect the chosen path. Therefore, the person as well as the career may be developed in ways that are consistent with the individual's unique needs or in completely different ways. The person may have a number of jobs during his/her life, and choice is a significant variable.

**Personality and Predominant Vocational Personality Type**

Personality, the "hypothetical construct referring to the aggregation and integration of all the person's qualities," is an individual's own special arrangement or pattern of traits. One's abilities, interests, values, needs, motivations, self-concept, temperament, and perceptual and cognitive styles are integrated and become parts of personality. Personality combines with the effects of environmental and inherited influences over time to produce unique individual actions. Personality traits develop from the individual's needs; thus, the choice of an occupation is affected by personality.

A variety of ways to measure personality are used in career evaluation, including inventories, projective tests, ratings of traits, or expert observers' evaluation of performance. Inventories ask the person to identify
those behaviors, aspirations, and other characteristics seen in himself/herself, with a high score on a particular characteristic equating to having more of that quality.¹¹

Holland’s research has attempted to determine the relationships among occupations and personality characteristics, with the underlying assumption that a person chooses a particular occupation because it fits his/her personality, rather than the personality evolving to fit a certain occupation. The individual chooses an occupation because he or she has one of the six types of vocational personalities predominating, according to Holland.¹²

The occupational classification of a person may offer a more practical way to understand the individual than the conventional personality tests.¹³ Still, it must be recognized that a wide variety of personality types can fit into one occupation, and one individual may be suited to a wide variety of occupations. To manage the functions and roles of a job, the individual needs to have accord between the occupation’s required behavioral functions and his own personality traits.¹⁴ Work provides a way for the person to use his own special qualities and become self-fulfilled and satisfied interpersonally. People who choose people-oriented fields, like nursing, have needs to be liked, accepted, and to help others.

Social class, parental influence, culture, physical environment, peers, and biologically inherited traits are
some of the many factors that interact to determine the personality type. Strong interests develop as certain activities are accepted and others discarded, thus the person develops special competencies for a specific vocational group, having characteristics for goal attainment that are similar to others in the group.

Holland's Personality and Environmental Types

Holland's six personality types are consistent with the six environments of the same names. He arrived at an environmental type by the percentage of total numbers of people in it with the varying personality types. The Social personality/environment is one where social competence, enjoyment in assisting others, understanding others, cooperation, sociability, and flexibility are liked and promoted. The Investigative personality/environment admires scientific accomplishments, and creative and systematic research. Leadership is not revered. The Artistic personality and/or environment allows free, nonconforming, and creative expression. Traits of the Realistic personality/environment are the opposite of the Artistic, valuing money, goods, power, order, systematic behavior, mechanical and technical abilities, and manipulation of people. The Enterprising personality/environment likes aggressive attainment of personal and organizational goals by use of leadership or sales abilities and manipulation of people, and values status, money and power.
Lastly, Conventional personality/environmental traits foster systematic data manipulation through numerical and written orderly and explicit systems, conformity, clerical competence, dependability and money.

People are combinations of several personality types usually with one predominating.\textsuperscript{16} Holland states that there are 720 different combinations of vocational patterns, and that people tend to associate with others like themselves and seek congruent environments. Touchton and Magoon, in sampling Social women who were college freshmen and again three years later to see if they tended to remain consistent in their predominant personality code letter, found that only one-third changed.\textsuperscript{17}

Examples of careers for each personality type are as follows: Investigative - physician, scientist, systems analyst; Realistic - truck driver, electrician, tree trimmer, locksmith, farmer, dressmaker; Artistic - English teacher, composer, decorator, photographer; Conventional - accountant, bookkeeper, cashier; Social - college faculty member, managing editor, nurse, dental hygienist, teacher; Enterprising - flight attendant, business supervisor/manager, credit analyst.\textsuperscript{18}

\textbf{Secondary Assumptions Applied in Holland’s Theory}

Holland applies several secondary assumptions in his theory.\textsuperscript{19} One is that the amount of consistency or relatedness between an individual’s personality types or
the forms of environment he or she is in will influence vocational preference. Secondly, the degree to which the type is differentiated or defined provides predictive power. The person with a well-defined high point code is likely to choose a congruent career, where the person with no clear code number predominating will not. Thirdly, personal identity is also an important factor, being closely associated with clarifying the person's objectives. Holland uses the three factors of consistency, differentiation, and identity to evaluate the personality and environmental types.

He also looks at congruence between the personality and environment, and calculus, which speaks to the spatial arrangement of types on the hexagon. He says that congruence lets the person develop and grow in a positive manner. Calculus allows that the six types are "inversely proportional to the theoretical relationships between them." Types closest together on the hexagon have more interests and personality traits in common; opposites generally share fewer or none.

Villwock et al found that stability of vocational choice can be predicted by looking at the three constructs of congruence, differentiation, and consistency. They gave 167 college men and women the SDS, and used major as vocational choice. Congruence was the degree of agreement between the SDS code and the major code; consistency was
the degree of relationship between the first two letters in the SDS code; and differentiation was how clearly the code was defined. Among other outcomes, they found no confounding effect due to gender on the prediction of vocational behavior, and concluded that no separate theory of vocational choice relative to sex was needed.

**Agreement Between Occupational Choice and Personality Type**

Hecht, investigating differences in race and sex as well as socioeconomic variables of professional nursing students, used Holland's vocational choice theory as the framework for her study. Her findings supported the SIA profile as accurately describing professional nursing students, with these three letters in some configuration reported by 37 percent of the subjects, one of the letters being the high point code letter in 90 percent on the sample (n=210), and 62 percent of the student nurses being categorized as Social by high point code letter.

Hanson, Lamb, and English compared the Holland and Vocational Preference Inventory Profile (VPI) scales for women. The registered nurse occupational scale correlated moderately with Holland's Investigative and Social scales and with a similar scale on the VPI, and the researchers found that women who had interests similar to registered nurses liked science activities and those involving helping people. These findings supported Holland's findings with college students reported in 1968.
In a study of different levels of agreement between vocational interests as expressed and inventoried among college women, Slaney and Russell found a high level of agreement between the score on the VPI and major, and the VPI score and expressed choice. When there was low congruence, they suggested that exploration of perceptions about themselves, relating these to occupational choice, might be useful.

Costa and McCrae, supporting the theory that occupational choice is an indication of personality, suggested that personality traits could be classified into three categories: Openness to Experiences, Neuroticism, and Extraversion, each with its own subscale of characteristics. They found that women of all ages preferred stereotypically feminine occupations, and that women scored higher in the Artistic, Social, and Conventional categories of occupations. Personality was found to be stable in adulthood, and from late adolescence on, vocational interests were highly stable. Investigative and Artistic interests and Openness correlated highly, and Social and Enterprising were strongly associated with Extraversion. No sex differences were found. Warmth, a characteristic of Extraversion, correlated most highly with Social interests.

Smart studied college freshmen males to see if people who were classified by one of the stereotypical Holland types actually had a preference for occupations.
that were consistent with the vocational personality

29  Declared major was used for typing. Findings supported that these college students chose majors that were consistent with their personality types. Additionally, the differences between the six types were highly significant.

In a study to examine the relationships among traditionality of occupational choice, the person's sex-role orientation, and personality in college women, researchers found that there was a strong association between choice of nontraditional career field and personality type (using Holland's three letter code), but not when traditional fields for women were the choices.30 The majority of feminine-typed women preferred traditional career fields. The authors concluded that Holland's assumption of generalizability of the theory that personality will determine the occupational choice must be accepted with caution, although general support for the theory was referenced from other studies. They felt that the theory was more valid for women choosing nontraditional occupations. This finding is in contrast to the aforementioned research studies which tend to support an association between traditional fields chosen by women for occupations and personality type.
Daydreams, Personality Type, and Expressed Choice as Predictors of Occupational Choice

Holland and Gottfredson found current and previous vocational aspirations to be significantly related. Additionally, people who had vocational aspirations and SDS summary codes that were reinforcing, were better able to make sound vocational decisions. The authors stated that after occupational daydreams, the SDS code was the next most efficient predictor of vocational outcomes for women.

Touchton and Magoon, using the first two letters of the SDS code, determined that the best single predictors of college major were the most recent vocational daydreams and a daydream code summary. When the SDS summary code was combined with the daydream code’s summary, the ability to predict major increased. O’Neil and Magoon studied the predictive power of the vocational personality types, and found that the SDS had moderately high efficiency in predicting the final choice of major four years later, as well as the immediate and future vocational plans.

O’Neil, Magoon, and Tracey found moderately high efficiency in predicting actual career and graduate study choice, and ideal and projected choice of a career over a seven year period from the SDS and daydream codes. One letter codes, the highest point value letter, were more predictive than the two or three letter codes. The authors
stated that the vocational choice as expressed by the individual may be as effective a measure of predicting future occupation as an interest inventory.

Borgen and Seling's research supported the importance of expressed choice of occupation, finding that it was the best predictor of college major and career outcome, being significantly more predictive than inventoried interests. Bartling and Hood, studying 408 men and women university students eleven years after they had taken a battery of tests, including the Strong Vocational Interest Blank (SVIB), found that future occupation was better predicted by expressed choice than by measured interest, and both were more accurate when they were congruent. Of importance was the finding that giving the SVIB provided some direction in making a choice for those students who were undecided.

**Interests, Motivations, Values, and Needs as Components of Personality**

An individual's values, interests, motivations, and needs are components of his or her personality. Interests are motivational variables; activities that the individual prefers, which motivate him/her to continue in a particular type of work or recreation. Children have interests similar to their parents and siblings, influenced by heredity, role modeling, positive reinforcement when the child behaves like the parent, and position in the family.
Significant development of interests is based upon likes and dislikes, and most changes in interests take place between the ages of 15 and 18, with some small change from 18 to 25.

Super and Bohn state that interests are how the person pursues values. If one values money, then he/she would tend to seek a career associated with acquiring money and/or related to money. The person may change his mind about the preferred activity or occupation, but the interest tends to remain. New interests can develop after adulthood. The range of career choice and career self-efficacy may be predicted by career interest.

Brown and Lent consider personality, motivational drive, and self-concept to be major parts of interests. Interests are determined by environmental and/or social influences, genetic factors, personality traits, needs and drives, and expression of one’s self-concept. Holland holds that one’s interests tend to cluster in certain vocational personality types, which he calls consistency, and types that are closely aligned on the hexagon share more similar interests.

Interest inventories, such as the Strong-Campbell or Kuder General, may be used to measure interests. Results of these scales tell whether an individual’s interests are within a specific occupational category or group, not the amount or depth of the interests.
Intensity of interests is better measured by expressed interests, which Holland's SDS evaluates.

Strong found that interests in college were significantly associated with occupational behaviors later, and that stability in an occupation also related to inventoried interests. However, a number of different occupations may meet the same career motivational needs. Recognizing that career development can be positively affected, Healy states that, in the future, career counseling will most likely utilize methods to widen and stimulate interests, instead of only naming them. This suggestion has relevance for research to determine those characteristics and functions of a profession that are seen as most positive by a wide variety of people.

Grotevant, Cooper and Kramer, studying white high school seniors, tested and found support for the hypothesis that adolescents who evaluate a wide variety of career choices make selections more congruent with their personality types and interests than those who explore more narrowly. They looked at the degree of congruence between each subject's Holland code, the inventoried interests, and the stated primary occupational choice. The authors stated that an important contribution of the study was to indicate that congruence between interests and occupational choice begins to develop in high school. This finding has relevance for the present research in that...
identified positive aspects of nursing should be advertised to this age group in order to foster awareness and interest.

Values are shaped by the family, peers, school, and work associations.\textsuperscript{48} Whether or not values are influenced by religion depends on how the family accepts and integrates religion into its life. People depend on at least some group(s) for survival, thus they seek to join those that meet their needs, and as a consequence, learn the values of the group, be it a religious group or not.

Crystallization of work values progresses slowly and is not completed by the end of high school. Healy defines work values as "the short- and long-range goals sought by a person through working and the means a person accepts as appropriate for achieving those goals."\textsuperscript{49} Such goals include the highly complex interrelationships between the desired end results and the ways of getting to them. Values are the abstract ideas that drive a person toward actions which bring personal pride. They come from needs, and should make one feel happy, unless the desired ends and the means for attaining such are not congruent.

Work values fall into two categories: values about what work goals are desirable; i.e. opportunities to lead men, becoming rich, being a great artist; and values that say something about working and ways of working that are acceptable; i.e. working in a nice quiet environment,
Leading authors in the field of career psychology state that values, interests, and needs are so intertwined that they cannot be evaluated separately when looking at career decision-making.\textsuperscript{51,52} Ginzberg states that values are a dimension of personality and an essential component of vocational development.\textsuperscript{53}

According to Rosenberg, the basic values most often mentioned when educational objectives are being selected by the individual are: 1) working with others in a helping way, 2) earning a lot of money, 3) gaining prestige and status, and 4) having the opportunity to use creative and special abilities in work.\textsuperscript{54} The desire to have money is tied closely to the need for security. Those planning to go into medicine, nursing, social work, teaching, or some other field where working closely in a helping manner is necessary express the first value most strongly.

Feather found that male medical students frequently chose personal, control-oriented reasons as bases for their career decisions, whereas women students indicated interpersonal, expressive reasons most often.\textsuperscript{55} Both sexes first wished to help others, be challenged, and practice skills competitively. This study supported Holland's coding of physicians, and that career choice reflects the values of students.
Gottfredson and Brown, examining a population of white males in the first ten years after high school, found that many men will take a job in a field that is their second or third choice just to obtain a position that is acceptable to their idea of status. The authors determined that males decided their status preferences early, usually by age 15, and made their educational plans based on these preferences. Thus, educational plans were said to be a reflection of the occupational status that the student was willing to accept. If necessary, because of poor grades, students switched to a different major, but it was in the same level status-wise.

Other Theories of Occupational Interest Development

A number of other theories relating to career selection are helpful in understanding the development of interest in a specific occupational area. In many instances, there is overlap in theoretical explanations. Although some of the theories appear dated, they are viewed as classics in the field and should be addressed in any literature review of occupational choice. However, the data may be limited in their applicability in 1990.

Early Childhood Experiences, Genetics, and Human Needs

Roe’s original theory of vocational behavior incorporated early experiences during childhood, genetic
influences, and Maslow's human need theory as the cornerstones influencing vocational choice, with the last two said to influence vocational decision-making most significantly.\textsuperscript{57} In incorporating Maslow's theory of human needs into her theory, Roe said that if a need were not allowed to be expressed in early childhood, it would eventually die and not exist.\textsuperscript{58} However, if the need were met even partially, it would continue and become important in life.

Many studies have attempted to support Roe's theory. Grigg looked at the differences in recollected parental treatment between women studying mathematics and science as compared to nursing.\textsuperscript{59} No differences were found, although math and science students were more interested as children in gadgets and things than in companionship as were the nursing students. Similar studies were unable to support Roe's original theory.\textsuperscript{60}

Roe and Siegelman changed Roe's theory in 1964 to say that certain personality characteristics were associated with choice of a vocation, and that just because children might have similar childhood experiences this did not mean that they would choose similar vocations.\textsuperscript{61} They decided that other factors, such as the labor market, education, abilities, and chance, impacted the decision. Roe came to the conclusion that people in different vocations had personality qualities that were quite distinct from each other.
Compromises in Choice

Personality and psychological development as viewed by Freud were the bases for a theory of vocational decision-making that says that people use a series of compromises to make a career choice. Ginzberg, Ginsburg, Axelrod, and Herma proposed that four variables are the foundation for compromise: what is available, or reality; what the person can do, or educational; what the person feels, or emotional; and what the person values, or individual values. The theory was generalizable only to the white upper and middle class Anglo-Saxon Protestant and Catholic male. The theorists divided the vocational developmental process into components, and saw the student in college narrowing and refining his focus and goals, yet still being open to other ideas. Thus, recruitment efforts would be most effective prior to and during this stage, according to their theory. Data of these theorists relative to women are quite outdated as they found that girls' interests were almost entirely focused on and oriented toward marriage and not a career.

Basic Human and Ego Function Needs

A number of psychoanalytically based theories for vocational choice have been proposed. For example, Brill said career choice is a way to meet one's basic needs; to sublimate or satisfy a desire for certain pleasures in a realistic manner. Hendrick used ego function to explain
vocational choice, saying that one chooses an occupation that allows him/her to accomplish what the ego needs. Nachman studied lawyers, dentists, and social workers from a psychoanalytic frame of reference, and found that social workers' mothers were more dominant, and social workers were more likely to have some evidence of early childhood deprivation and trauma.

Self-Concept

Super, a leading theorist in the field of vocational psychology, feels that a person could do well in a number of vocations, that people develop concepts of their vocational selves by identifying positively with role models; and that the techniques a person uses for early life adjustment will indicate those he or she will use in later life. The vocational self-concept of the individual who is well-adjusted constantly changes and adapts. Choice of occupation is seen as a way to express one's self-concept.

Super's theory of vocational preference as a means of implementing a concept of self evolved from earlier theories of Carter (1940), Bordin (1943), Lecky (1945), and Allport (1943). Thus, people attracted to an occupation may have similar self-concepts. Ziegler found that certain self-concept characteristics were similar in male college students who preferred the same occupation.
Bare studied the idea that if one has an inaccurate self-concept, then occupational goal setting is affected. She found that junior college students who had a preference for an occupation, but had doubts about their abilities for such a job, were expressing an unrealistic job choice. She suggested that to more closely ally aspirations and reality, students must experiment with a variety of job skills, be informed about the skills, attitudes, and requirements of the job, and be able to self-evaluate in an ongoing manner.

Korman found that people with high self-esteem, another term for self-concept, chose careers that were most likely to satisfy their perceived needs. Congruence of the real and ideal self-concepts were found to be related to the realistic choice of occupational goals Anderson and Olsen.

Several of the classic studies of nurses support Super's theory that self-concept is implemented through occupational choice. In 1962, Morrison found that nursing students had self-concepts like graduate nurses. Brophy found that self-concept and role perceptions were in agreement, and that the less the discrepancy between self-concept and vocational role, the greater the satisfaction with the vocation. In an early study in 1959, nurses working in a New York City hospital were asked to describe themselves, their ideal selves, the kind of
person their jobs required them to be, and given a job satisfaction questionnaire to determine if similarity of the self-concept and of the perceived occupational role requirements correlated with job satisfaction. The correlations were positive and significant.\textsuperscript{73} A later study by Kidrick and Tiedeman in 1961 looked at the actual self or the ideal self in relation to a supervisor's listing of occupational role expectations, and withdrawal from or continuation in nursing school.\textsuperscript{74} In this study only one of the seven schools had a significant relationship between compatibility of self-concept with occupational role requirements, and the authors stated that the time for withdrawal may have led to the results.

Courtland found that self-concept had a greater influence on the aspirations or expectations of white high school students than on black students.\textsuperscript{75} Rotberg, Brown, and Ware studied self-efficacy as measured by a scale developed by the researchers that asked each subject to rate his/her perceptions of ability for 15 occupations, which, in essence, looked at the subjects' self-concepts in relation to these occupations.\textsuperscript{76} They used 152 volunteer community college students, and examined the relation of socioeconomic status (SES), race, gender, career self-efficacy, career interests, and sex role orientation to the range of choice of career in female, male, and nongender dominant careers, as well as the relation of SES, race, sex
role orientation, gender, and career interests to career self-efficacy. Career interests and self-efficacy expectations were the variables which predicted career option range perceived by the subjects. Career interest and sex role orientation predicted the perceived abilities to succeed in certain occupations.

Westbrook and Molla, in a study to see if Holland's characteristic stereotypes were correct, found a highly similar view by men and women of workers in the occupations chosen as stereotypical of each type. Teachers were used as the Social stereotype. The authors stated that individuals are drawn to specific occupations because they can see themselves in that occupation. Thus, the occupation is, in a sense, a description of the individual and a reflection of his/her self-concept.

Ginzberg, in 1972, and Super, in 1975, decided that career goals and other life goals must be in balance if self-concept is to be enhanced. Thus the choice of a vocation is seen as a way of making one's self desirable and most like a revered role model.

Economic, Social and Organizational Controls

A belief that a person has little control over what happens to him in life is the basis for the theory that economic, sociologic, political, and psychologic factors determine what vocation a person chooses. This theory states that uncontrollable chance occurrences influence
educational and vocational decisions. The economic, social, and organizational environments are of significant importance, often predetermining the direction one has to choose, even though education may offer some other choice. The socio-cultural environment in which people develop influences the values placed on certain occupations, and career decisions are seen as compromises between the outside pressures of the greater society and culture, the subcultures, and personal factors. Society expects work in exchange for a desired lifestyle with the material trappings and needed services. So careers are chosen for all the reasons the individual may have and the culture may promote, but also because they are available and needed at that time in society. The family, first, then other existing institutions like the school system and the church, government, professional organizations, and laws are examples of the impacting factors, most likely beyond an individual's control, that determine his/her career path.

Self-Efficacy

Self-efficacy theory, as proposed by Bandura in 1977 and 1982, is the basis for Hackett and Betz's view of career development in women. The theory of self-efficacy states that one does what one believes he/she can be successful in accomplishing. Hackett and Betz stated that women are socialized into having low efficacy expectations in relation to the traditional male occupations, thus
supporting the continuation of segregation in occupations. Clement countered that women may be more realistic than men, recognizing the problems they (women) may encounter in traditionally male occupations and choosing not to deal with them. Betz and Hackett found that there were significant differences in career self-efficacy in the traditional male and female occupations due to gender.

Genetics, Environment, Learning and Skills Influences

Krumboltz, Mitchell, and Jones, basing their theory on Bandura’s Social Learning Theory of 1969, hypothesized that four categories of factors influence career decision-making. These are: genetic endowment and special abilities (i.e. race, sex, physical appearance, intelligence, muscular coordination, musical ability); environmental conditions and events (i.e. available job opportunities, social policies, job selection procedures, labor laws, physical events like floods, technological developments, the educational system, availability and demand for natural resources, neighborhood and community influences); learning experiences (those things a person learns as a result of the way he/she acts in the environment); and task approach skills (those skills that are the result of genetic and environmental influences that are brought to a task). From the interaction of all these influences the person is able to make generalizations about how he does or
might perform, project himself into the future, and eventually arrive at that point where he behaves in the projected way. These authors said that preferences are influenced by positive and negative factors, such as a positive role model, real or vicarious as with motion picture stars. Additionally, a positive role model who makes negative comments about an occupation can influence a person negatively toward that occupation. People who are able to make positive decisions about careers 1) have been exposed to models who have used effective strategies in their career decision-making, and 2) have had access to four categories of factors influence career decision-making.

Developmental-Contextual Career Development

Vondracek, Lerner, and Schulenberg, presenting their views as an adaptation of Lerner’s developmental-contextual framework to career development and not as a theory or model per se, determined that none of the aforementioned theories incorporated all the current knowledge in the field of vocational development and thus did not consider the contextual changes in life or the many faceted characteristics of a person’s career development.87 The authors used a life-cycle approach described by Sonnenfeld and Kotter which encompasses one’s work and family as well as the individual. The authors’ model used this life-span approach plus a "developmental contextual
perspective that recognizes the changing character of the individual’s social, physical, and cultural milestones," in many life arenas, such as home, school, and work, all of which impact career decisions and are viewed as complex and multifaceted. Additionally, women’s occupations were viewed as being quite different from men’s; low-paying, limited in influence, restricted in mobility and options, dead-end, and sex-typed.

The theories presented in this section, including Holland’s vocational personality theory, are summarized in Table 1.

<table>
<thead>
<tr>
<th>Theoretical Concept</th>
<th>Variables</th>
<th>Theorist</th>
</tr>
</thead>
<tbody>
<tr>
<td>A person chooses a vocation and the environment to work congruent with his or her personality.</td>
<td>Vocational personality types and environments.</td>
<td>Holland</td>
</tr>
<tr>
<td>Early childhood experiences, human needs, genetic factors, and personality combine to influence vocational choice.</td>
<td>Childhood experiences; expressed versus unexpressed needs; genetic factors; personality.</td>
<td>Roe; Roe and Siegelman</td>
</tr>
<tr>
<td>People use a series of compromises between what is available, what is felt, what is valued, and what can be done realistically to decide on a career.</td>
<td>Personality; developmental factors.</td>
<td>Ginzberg, Ginsburg, Axelrod, and Herma</td>
</tr>
<tr>
<td>Vocational choice is an expression of self-concept.</td>
<td>Identification with role models; early life adjustment techniques; self-concept development.</td>
<td>Super</td>
</tr>
</tbody>
</table>
### Table 1.--Theories of Vocational Behavior (continued)

<table>
<thead>
<tr>
<th>Theoretical Concept</th>
<th>Variables</th>
<th>Theorist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career choice provides satisfaction of some desires/needs realistically.</td>
<td>Human needs; ego function needs.</td>
<td>Brill; Hendrick</td>
</tr>
<tr>
<td></td>
<td>Economic, sociologic, political, and psychologic factors.</td>
<td>Super and Bachrach</td>
</tr>
<tr>
<td>The individual does what he/she can achieve successfully.</td>
<td>Efficacy expectations; sex role; gender.</td>
<td>Hackett and Betz based on Bandura.</td>
</tr>
<tr>
<td>Career decisions are determined by genetic endowment and special abilities, environmental conditions and events, learning experiences, and skills to approach the tasks.</td>
<td>Race, sex, SES physical appearance, abilities, intelligence, job opportunities, social policies, job selection procedures, laws, physical events, education, societal needs, and learned skills/experiences.</td>
<td>Krumboltz, Mitchell, and Jones</td>
</tr>
<tr>
<td>The developmental-contextual changes the person experiences in all areas of life are multifaceted and complex in impacting career choice.</td>
<td>Developmental, social, physical, cultural factors and life-span milestones.</td>
<td>Vondracek, Lerner, Schulemberg</td>
</tr>
</tbody>
</table>

**Demographic-Biographic Variables Impacting Career Choice**

Many variables have been associated with the choice of occupational pursuits. A brief discussion of selected major career-influencing demographic and biographic factors will facilitate an understanding of why individuals may
choose certain career paths. The variables to be discussed are gender, race, socioeconomic status, parental influences and role models, and abilities, aptitudes, and intelligence, including the role of scholastic aptitude tests.

Gender

Gender is of particular importance to examine when discussing vocational choice influencers, especially when a career in professional nursing, a female dominated occupation, is considered. Seventy-seven percent of all employed women, in 1979, worked in either clerical-bookkeeper type jobs or in blue-collar assembly type work. Limited opportunities and pay hold women back, in spite of changing values and standards which encourage women to seek jobs in male-dominated fields. Vondracek examined the career development of women from a contextual standpoint, saying that the factors of the context are dynamic and the historical changes are thus important. Before World War II (WWII) women were less likely to work for pay. Black lower class women did carry a heavy burden of work, but no one noted such work as important because of where it took place and who was doing it. If the middle class or upper class woman worked, it was viewed with alarm before WWII. With U.S. entry into the war, it became necessary for women to take over a large portion of the work with men away. Since 1940, the number of women in the work force has doubled, in large part a reaction to the increasing need for a higher
income by the typical family and a response to the labor-saving technical advances which reduced the back-breaking characteristics of housework.

The greatest change, according to Vondracek, has occurred in the ranks of married women with children under 18 years of age. A few more than eight percent worked outside the home before WWII; by 1984, 60.5% of this category worked in the labor force. Factors such as discrimination in labor policies, family commitment restrictions, and fear and anxiety that success would breed contempt by men and loss of femininity kept women in female dominant occupations.

Today, 54% of all American women are employed. The family roles of both men and women are significantly altered, many single parent households are headed by women (with most divorced women with children working outside the home), dual provider is the norm with both husband and wife working, and women are seeking careers in fields that heretofore were unavailable to them and demanding comparable pay for comparable work.

However, women tend to go to less prestigious colleges and work in lower-level jobs. They have been unable to gain access to the better schools and jobs as readily as men, and so have been paid as much as 40% less than men for the same work in the same occupations.
Current expectations are that 90% of American women will work 25 years or more, and 42% will be the breadwinners.

After age ten, American women tend to have more verbal and clerical skills and less numerical and spatial ability, but this is not seen in non-western cultures, so differences may be due to socialization. Men are expected to have a career in this society, but women are still expected to put family first, even if they have a career. Consequently, maintaining these dual roles is suggested as the number one cause of stress for women today.91 When careers are chosen, both sexes tend to prefer ones in which the dominant sex is theirs.92 What women perceive men and society to expect does influence their career decisions significantly.

Betz and Hackett studied the relationship of career-related self-efficacy expectations to perceived career options in college men and women.93 They found that greater self-efficacy was associated with being in a sex-appropriate career. Rotberg et al found that gender and sex role predicted career self-efficacy, but not range of career options.94 The authors suggested that gender and sex role orientation probably modify career interests and career self-efficacy, which influence career choice.

Holland found that men prefer the Realistic, Investigative and Enterprising categories of occupations and women prefer Artistic, Social, and Conventional.95
Bem concluded that men in our society tend to exhibit masculine traits of aggression, dominance, and rationality, while women are nurturing, emotional, and sensitive, viewed as feminine characteristics. Bem stated that some people are high in both and have the most flexible and adaptable behaviors, while those low in both are very inflexible and limited in how they can behave.

Harren et al found that androgyny, possessing high levels of both masculine and feminine traits, is associated with career decision-making progress. Moreland et al determined that androgynous women progressed more rapidly in career decisions than other women, but androgynous and masculine men were more advanced than these women or other males. Wolfe and Betz concluded that masculine women tend toward nontraditional fields, while androgynous women are more likely to select traditional fields. Feminine women tend to choose careers with low pay, low status, and few opportunities for advancement.

Gianakos and Subich stated that college major limits an individual’s later career options, and thus affects future earning power. The choice of major is seen as one result of sex role socialization, and feminine individuals who choose majors congruent with sex role should be aware that such a choice may limit later financial rewards and job opportunities. The researchers found that Social majors were the predominant choice among women.
in a 1984 study of 608 midwestern university freshmen students regardless of the sex role type. Men tended, regardless of sex role type, to choose Investigative and Conventional majors. They concluded that sex and sex role type were important variables in the choice of college major. In this study, 85% of education, 99% of nursing, and 100% of social work majors were women, indicating that certain fields are viewed as sex appropriate for women only. The findings of this study provided support for Holland’s hexagonal model and consistency of types.

Hurwitz and White, in evaluating the aforementioned study, pointed out that most of the subjects were just beginning their college careers, and may have based their choices on stereotypes. The implications were that career counselors should help both sexes not overlook opportunities that would be appropriate for them simply because an occupation tends to be dominated by the opposite sex.

Counselors tend to support women’s career restrictions, finding traditional career pursuits as less deviant and less meriting of counseling. Counselors see occupations as male or female, and tend to advise poorer paying occupations requiring less education and more supervision to women. However, if counselors have more information about the person other than sex, such as grades, sex is seen as less of an influence in the counseling.
One school of thought is that women primarily consider life-style options in deciding on a career major in college, weighing occupational options secondarily. In one study, college women fell into one of five groups as freshmen, and showed an increasing tendency to remain in one of the categories throughout college. The groups were careerists, noncareerists, defectors (people who moved from careerist to noncareerist), convert (noncareerists who became careerists), and shifters (people who wavered).

Children are exposed to sex-stereotyping of occupations very early. In one study, kindergartners saw work differences for men and women as appropriate. One major influence was the role of television stereotyping. However, children, who watched women in nontraditional roles on television, tended to be less rigid in the possible work roles seen for women. Today, women are choosing business, physical science, engineering, and any number of nontraditional roles, thus nursing is losing qualified applicants that twenty years ago would have chosen nursing for a career.

Walsh and Huston indicated that there is evidence to support two views; that persistent differences related to gender are present in men and women in the same occupations, and that men and women in traditional gender occupations when compared using the SDS are similar. Prediger and Hanson found the former to be true, especially when
nontraditional gender occupations were pursued. When working men and women employed in traditional occupations were tested using the SDS and the Vocational Preference Inventory (VPI), Walsh et al found that women and men in the same occupation tended to not be differentiated by the tests.

Lunneborg found no significant correlation between gender and scales to measure career decision-making in college students. Vocational maturity and chosen major correlated significantly with vocational planning. Thus, the author said that differential vocational counseling because of sex did not seem indicated.

Barrett (1979) and Smith (1979) found that most women still worked in typically female occupations, with half of the quarter of working women in health care (except medicine), education (not higher), domestic services, and food services. These jobs are lower in prestige and pay than the typically male jobs. Teaching and nursing exemplify both of these characteristics.

Bridges and Bower outlined the possible reasons that women have been relegated into these types of jobs as follows:

1. Children are pointed toward sex-related fields early in their lives;

2. Experiences that children have in early socialization provide information that the child can use in
occupational experience;

3. Husbands, teachers, other significant family members and adults encourage prevailing occupational sex-stereotyping; and

4. Women in college perceive a strong gender bias in their choice of an occupation.112

The authors examined perceived job discrimination and sex role orientation effects on evaluation of opportunities. They concluded that the maleness or femaleness of an occupation does influence the perception of job availability for women in college, but the very attractive characteristics of the high prestige male dominated fields may allay any negative influence of the gender-relatedness of that field, so that the woman feels positive in pursuing it.

Super and Bohn state that not only actual marriage, but the possibility of marriage, affect the type of career a women chooses.113 When brothers and sisters were compared, girls in high school and college were more likely to choose jobs that require short-term preparation, feeling that a large investment in money and time for vocational preparation is wasted.

Dunne, Elliott, and Carlsen studied the sex differences in educational and occupational aspirations of adolescents in a rural community.114 In previous research, Dunne had found that women limited themselves in their
choices of potential jobs, a phenomenon called "female foreclosure." However the newer studies were showing that young women were not limiting themselves so rigidly and were more often choosing male-oriented jobs. In their later study, the researchers found that young rural women had higher educational and occupational aspirations than the men, still tended to aspire to more female-dominated occupations, but did not limit themselves just to these stereotypical jobs, and did not see homemaking as a career. However, aspirations did not correlate as well with attainment for the women as they did for the men.

Race

Race is another factor greatly impacting the career choices individuals have available to them in this country. Circumstances which put minorities at a disadvantage educationally and occupationally, such as poorer socioeconomic status and lack of access, continue despite the equal opportunity advocacy of the last decades. Blacks hold far fewer high-level jobs than whites, are twice as likely to be unemployed as whites, and lack the sponsors to get the best jobs or into the best schools that are available to whites. Additionally, many colleges and universities will accept children of alumni first, which automatically increases the number of whites.

Racial and religious constraints can either urge some members of these groups on to achieve and persevere in
spite of the handicaps and prejudices, or they can prevent other members from achieving or even trying.\textsuperscript{116} Thus, the two major factors of race or minority status affecting career path are first, how great is the barrier that has to be overcome, and second, how motivated is the person. If the barriers are broad and difficult to surmount, the person tends to lose motivation.

Research shows that blacks like and choose more of the Social types of occupations, and score higher on the Social, Conventional, and Enterprising scales than whites.\textsuperscript{117,118} Blacks have higher occupational aspirations than whites on the status scale.

Curry and Picou studied the factors influencing 544 rural youth in Louisiana in occupational choice.\textsuperscript{119} They found that blacks whose fathers were less than high school graduates had higher occupational aspirations than whites whose fathers were in the same category of educational attainment. However, blacks whose fathers graduated from high school or higher had lower aspirations than whites with fathers of comparable educational attainment. They felt that the two variables of race and education of father confounded each other to some extent.

**Socioeconomic Status**

Socioeconomic status (SES) derives from the family background, education, and economic holdings of the person in the community.\textsuperscript{120} One is born into a SES level, and
tends to stay in that same level. The beliefs, aspirations, activities, and habits of people in a SES group are often similar, and in part depend on the opportunities allowed by the economic level. The greater the share of resources, the more advantaged the group.

Occupational aspiration is one area significantly related to SES. Without financial support, most children of lower SES cannot go to the prestigious universities. Additionally, lower class children lack the number of successful role models, the career information access, the exploration and skill development access, and the peer associations to stimulate achievement that middle and upper class children have.

The socialization that comes from living within each class provides the information about the occupations typical of that class. What is important to workers in one class in an occupation is not necessarily important to workers in another class. Intrinsic factors to increase job satisfaction are not the highest priorities of lower level employees. Money and security tend to be the issues with these people. Career achievement, including advancement or maintenance, is one of the main effects of class.

Education offers the means for career mobility, and, theoretically, SES advancement, with the most prestigious schools providing the best avenues. The availability
of entry is limited to the wealthy and to those who qualify for loans. The likelihood that business, law, or medicine will be the chosen career path increases as wealth increases.\textsuperscript{125} Patterns of careers which remain stable and conventional, such as those in business or law, are most common at the higher SES levels.\textsuperscript{126} A picture of multiple, trial, unstable jobs is typical at the lower level. Courtland, in studying 375 tenth graders in five rural high schools, found that SES, along with parental influence, self-concept, and gender were the best predictors for occupational expectations and desires.\textsuperscript{127}

Parental and Role Model Influence

Family may be the most critical determinant in vocational decision-making, and perceived parental influence has a significant association with the career aspirations and expectations of children.\textsuperscript{128} The family allows the child to try on different adult roles for acceptance or rejection, thus shaping values and preferences for careers.\textsuperscript{129}

Henderson found that fathers and sons had greater similarity of interests in early adolescence than by the twelfth grade.\textsuperscript{130} One conclusion was that other role models may be more important as the adolescent grows older. Segal and Szako found that 12-13\% of sons chose the same occupation as their father, suggesting that some association exists between parental identification and
vocational choice. Additionally, male and female college students' levels of occupational aspiration correlated significantly with parental interactions in the formative years. Grandy and Stahmann tested the hypothesis that parents' own personality types are encouraged in their children, using Holland's coding to type parents and children. Results supported that fathers and sons were significantly related, but mothers and sons were not. A significant relationship was found between both parents and their female children, with a slightly stronger association between mothers and daughters.

Parents and peers are influential in molding certain attitudes of the adolescent. Saltiel studied the influence of a variety of significant others on educational and occupational aspirations of rural high school students. The influence of significant others was specific in relation to the adolescent's ambitions for a career and schooling, which indicated that adolescents viewed these areas as quite distinct and sought input from others as related to the two areas separately. The peer of the adolescent or the teacher was a strong influence over educational choice or occupational choice, but not over both. An adult friend or employer was influential over occupation. Opposite-sexed friends tended to influence education. Mothers tended to be more influential than fathers over daughters' educational and occupational
aspirations. Same-sex peers tended to influence occupation only in males and education only in females; teachers were the opposite.

Holland studied parental influence, but found no significant correlations between the attitude of the mother and the child's vocational personality type. He did find that authoritarian mothers and Conventional children were associated, and Social fathers tended to value self-control. Additionally, the occupation of the father and the son's predominant code letter were highly associated. Also, he found that the high point code and the first career choice were significantly consistent, with the next two career choices being in congruent fields of the vocational personality code.

According to Smith, black youth have fewer positive adult role models than whites, and a lack of exposure to the Protestant work ethic. This author's conclusion was that they have less of an opportunity to relate positive meanings with the value of work. Also, whites were seen as taking a significantly more favorable view toward work than blacks. Smith stated that a lack of security leading to an inability to deal with needs on a higher plane, such as self-actualization in work, caused blacks to feel this way. The father as a role model is discussed as a frequently missing significant other in the black lower socioeconomic family. If present, fathers in this SES level
were said by Smith to often lack the knowledge and skills to help their children with their occupational decisions.

Weishaar et al studied 597 beginning college women for their primary influencers. Males (190) were used as a comparison group. Regardless of sex, students were influenced most by males, especially fathers. However, women in traditional fields were influenced most by females. Students most sure of their career choices were influenced primarily by someone in a field closely related to their choice. Many students stated that more than one person was influential in their choice. For males, after fathers came relatives other than parents and high school counselors. Males were the primary influencers of males in 86% of the sample. Females listed mothers, adult acquaintances, elementary school teachers, and both parents in this order after fathers as primary influencers.

Fifty-eight percent of females were influenced by males; thirty-eight percent by females. Females choosing nontraditional careers were most often influenced by males; those choosing traditional fields, by females. A significant relationship between vocational fields and sex of the influencers existed. Twice as many females were influenced by their mothers as males.

Abilities, Aptitudes, and Intelligence

Abilities, aptitudes, and intelligence are biographic variables significantly influencing career choice.
Factors such as intelligence, social status, and achievement, which provide the basis for a person's general achievement academically, are strongly related to occupational knowledge.\textsuperscript{138}

If one is able to perform a task or series of tasks well, then he is felt to have an ability for that task.\textsuperscript{138} Ability conveys the acquisition arena. When one gains experience with a specific aptitude, one develops ability.\textsuperscript{140}

Crites stated that general aptitude is related to the level and stability of occupational selection, that people with higher aptitudes choose occupations at the professional level, that choice of occupation is related to general aptitude, and that vocational aspiration is highly related to general aptitude.\textsuperscript{141}

Depending on the amount of experience and positive or negative reinforcements, abilities change, rising and falling with the feedback effects.\textsuperscript{142} All abilities have ranges for performance, and most people fall somewhere within the normal range. Super and Bohn said that a normal distribution exists for learning abilities, and that success in some areas of training can be predicted accurately by one or more aptitude tests.\textsuperscript{143} Grades, paper and pencil tests, and performance ratings are the usual ways abilities are measured. The problem with using grades to compare and admit students to college is the diversity of
testing and evaluation among high schools, making grades too subjective to be of value.\textsuperscript{144} Also, standardized tests are limited, only indicating a person's abilities.

Abilities and aptitudes, coupled with interests and motivations, influence people to choose certain career paths. For example, Super and Bohn proposed that an aptitude for medicine means that the person has ability in verbal reasoning, an interest in science, biologic science experience, and a drive for status.\textsuperscript{145} Rose and Elton examined the relationship between congruence, differentiation, and consistency and vocational interests and academic aptitude in 280 college women with stable career choices during college and 327 who were not stable in their choices over the four years of college.\textsuperscript{146} The American College Test, a test of academic aptitude, two mental ability tests, the Vocational Preference Inventory (VPI), and the Strong Vocational Interest Bank were utilized. The researchers found that a match between Holland's personality type, as measured by the VPI, and the college major which indicated congruence, was an important predictor of stability in career choice. Of interest, most of the stable women had Investigative personality types predomining and the authors felt this factor influenced congruency. Additionally, those women who were more stable in career choice over the four years, had academic aptitude and interest scores that were significantly higher.
Super and Bohn said that there are three types of abilities: general or reasoning ability, less general or cognitive ability, and sensory or motor capacities.\textsuperscript{147} Reasoning ability is what is usually thought of as general intelligence. The types of abilities most often tested are verbal reasoning, numerical reasoning, spatial visualization or judgement, perceptual speed and accuracy, and manual dexterities. Nursing requires a high level of functioning in all of these abilities.

General learning, abilities to adapt, and aptitudes and experiences are measured by scales called intelligence tests. Such measures are used to predict how a person will achieve in school or work. Healy stated that whether or not scholastic aptitude and intelligence are viewed as the same, or scholastic aptitude is seen as "more specific manipulation of verbal, mathematical, and spatial problems," intelligence must be considered a significant influencing variable in the choice of a career.\textsuperscript{148}

Those individuals who achieve highly in an occupation have not been found to test significantly higher on intelligence tests than others in the same occupation, but upwardly mobile individuals, who move to a higher level occupation, do test significantly higher than those who do not move.\textsuperscript{149} Intelligence tests are presently considered biased against women and minorities, and the single use of such tests in occupational selection is open to

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controversy. In professional schools, intelligence tests scores are not predictive of achievement above certain cutoff scores.

Educators continue to conflict about education’s effect on intelligence scores. Some studies support the premise that intelligence is an inherited trait and is not increased by education. The argument is that the person’s place in comparison to comparably educated persons is not changed. Others say that education raises intelligence. Significant literature exists in this area and will not be dealt with in this review.

Since 1964, scholastic aptitude (SAT) scores have decreased generally. Special cram courses immediately prior to taking the tests will raise the scores, but educators wonder if this is a measure of increased intelligence and how valuable the tests really are now. Why overall scores have declined is of great concern, and some voice that the college students of today do not have the same abilities to learn that the students 20 and 30 years ago had, but the reasons for this possibility are not known. Others say that with everyone now pressed to take the tests, the pool is watered down with unqualified students, thus causing a decline in scores.

Super and Bohn stated that the first major investigations on the relationship between intelligence and occupations grew out of World War I, when recruits and
inductees were tested to match them to appropriate jobs. Kelso, Holland, and Gottfredson warn that aptitude tests are narrow in the range of abilities that they measure and, hence, weak in their usefulness to predict. Lowman et al found that primary abilities are structured similarly to interests, and that Social people's interests are significantly associated with interpersonal relations abilities, and Investigative types correlate highly with intellectual abilities.

Nursing as an Occupational Choice

Attracting more men into nursing is difficult since nursing is viewed as a highly female occupation. Shinar studied sexual stereotypes of occupations in 120 men and women undergraduates at Ohio State University, and found that men and women do stereotype occupations quite definitively and with a high degree of agreement. Second only to manicurists, registered nurses were seen as highly female. The jobs of pharmacist, pediatrician, and managing editor were seen as male. The range of maleness to femaleness of an occupation was from 1 to 6.667; nursing scored an average of 6.0.

Ninety-seven percent of nurses are women. However, Johnson et al determined that there are men interested in nursing and they need to be found, urging efforts at locating those with attitudes congruent with majors in nursing. Their study of attitudes toward nursing of
both nursing and non-nursing college men showed that in spite of negative feelings about nursing by non-nursing men and a prevailing belief among this group that nursing is for women only, 21% (48 of 247) said they would be willing to consider nursing as a career. Eighty-nine percent of the nursing students were satisfied with their major, and did not view the profession as female.

In a study to determine the concept of the "ideal nurse," Minnigerode et al asked 186 graduate and undergraduate nursing students to rate the ideal nurse on 24 attributes. The ideal nurse was found to be both highly male and female despite nursing being a strongly sex-specific profession. The authors noted that the current problems in nursing are in part due to the peer group pressure to reject just those qualities of nursing that are masculine, such as assertive behavior, that could move the profession forward. They urged more efforts to recruit men to begin to resolve this feminine emphasis.

Tomis said that nurses perpetuate the sex-stereotyping by discriminating against men in nursing, and society's paternalistic attitudes further discriminate against nursing by devaluing women in general. She noted that women do not encourage men in nursing, fearing dominance of the profession if too many men do enter. Her argument was that nurses must pull together to make the profession genderless, just as teaching has become.
Silver and McAtee advocated changing the name of nursing to a non-gender label to encourage more men as well as women to enter the profession. They suggested the title of health care practitioner, and saw this person offering the important traditional care and nurturance to patients as well as "a wide spectrum of other health services and care including many functions and activities previously reserved to medicine."\(^{160}\)

Hecht found that more men than women students were likely to hold other nonnursing degrees. She suggested that recruitment strategies for men be aimed at the Social and Investigative types, focusing on older men who are not sure what career they wish but wish a change. For blacks, emphasis should be placed on opportunities socially and financially. She proposed that "the white-starched, feminine image of nursing needs to be altered."\(^{161}\)

Ginzberg stated that one way to increase nurses at the baccalaureate level is to recruit more low-income minority students.\(^{162}\) Nearly thirteen percent of young men and women coming into the labor market are black, yet fewer than six percent of nurses are black. Ginzberg suggests improving programs to help these students enter nursing, especially aiming recruiting at the young women.

Young women’s options in the sixties were more limited than they are today, even for those women of higher SES. The women’s movement has allowed women to think of
themselves more autonomously and assertively, thus women who might have chosen other fields in the sixties may have opted for nursing simply because little else was offered for them. Tremendous changes in their aspirations, regardless of SES, are being seen, with women now choosing any major they wish and not being held to the traditional female occupations. Eli Ginzberg stated that "the critical point about women in the labor market today is the vast opening of opportunities."\textsuperscript{163}

\textbf{Functions and Characteristics of the Professional Nurse}

In order to provide a basis for understanding the functions and characteristics of professional nursing, available literature pertinent to this area was reviewed. Most information gave perspectives from the profession’s viewpoint. Limited data about the image of nursing that embodied information about some functions and characteristics of professional nursing from the college/university student’s perspective were found, and none according to college major.

According to the final report from the Secretary of Health and Human Services’ 1988 Commission on Nursing, nurses must have the educated ability to monitor changes in patients; recognize clues to impending and potential difficulties and their ramifications; be perceptive to rapidly changing human and environmental factors; manage health care delivery, such as infection control and quality care
assessment; and manage complex diagnostic and treatment modalities. The state of the nursing profession for today's nurse is such that she or he:

must possess a broad array of knowledge, skills, and abilities to meet the challenges of contemporary health care. Today, nursing means working in difficult and complex situations. It requires being able to think clearly and professionally. It requires using expertise, sensitivity and creativity to make critical and often urgent decisions. Nursing takes leadership, initiative, managerial expertise and, increasingly, advanced education. It is work in which complexity and emotional strain are continually encountered, often leading to job dissatisfaction and career disillusionment.

In 1986, after two years of research, the American Association of Colleges of Nursing produced a document called "Essentials of College and University Education for Professional Nursing." Socialization, educational parameters, values and professional behaviors, as well as necessary knowledge and professional nursing practice skills for the profession were defined.

The AACN stated that "professional nursing practice is based on liberal and professional knowledge, clinical and cognitive skills, and the value system of the individual. Professional nursing encompasses the care of individuals, families, groups, and communities as well as health teaching and health promotion."

At the heart of nursing practice are knowledge and knowledge application, which necessitate clinical judgment
and new and creative ways of dealing with health care. Three primary roles were identified, with knowledge and nursing practice components delineated for each. These were provider of care, coordinator of care, and member of a profession. The major functions and activities of the practicing professional nurse are embodied in these roles.

As a provider of care, the nursing functions are to:

1. Procure appropriate health data through history and physical examination techniques;
2. Make and document correct nursing diagnoses;
3. Develop a plan of care collaboratively with the patient/client and others significantly related to the care, based on goals and planned interventions;
4. Communicate the plan of care and implement it in conjunction with other health care professionals and their plans of care;
5. Assist the patient/client in meeting basic physiological needs in all states of health and illness, considering the related culture, beliefs, and environment;
6. Promote psychological and sociological health in individuals, families, and communities;
7. Work collaboratively with other health care professionals to implement the plan of care;
8. Consider ethical and legal issues in health care
delivery, assisting patients/clients in interpreting rights;

9. Document and convey care data correctly and effectively;

10. Provide health promotion, maintenance, and restorative education to individuals and groups;

11. Assess and evaluate care outcomes in terms of quality and expectations;

12. Provide care to groups of patients/clients in any setting;

13. Utilize clinical and research data in analyzing and planning for care needs.¹⁶⁹

As a coordinator of care, the professional nurse must be able to:

1. Utilize leadership skills and strategies, such as change theory, to promote positive nursing goal identification and attainment through group action;

2. Provide effective guidance, supervision, and evaluation of nursing personnel to ensure safe and effective care implementation;

3. Work effectively with others, including the patient/client and family, for the betterment of health care;

4. Make appropriate referrals when indicated;

5. Identify and facilitate needed changes to improve health care;
6. Recognize, promote, and utilize cost effective strategies for care;

7. Ensure safety in the environment.\textsuperscript{170}

Lastly, being a member of the profession necessitates that the nurse:

1. Incorporate those parameters that are legal, ethical, professional, and institutional in practicing responsibly and accountably;

2. Be an advocate for health care;

3. Participate in quality assurance strategies to ensure effective care and needed changes;

4. Participate in collection of data, and act on information that will ensure safe, legal, and ethical health care practices;

5. Participate in and support activities that will improve and advance the profession and health care.\textsuperscript{171}

The National League for Nursing (NLN) is the accrediting body in the United States for schools of nursing. In developing curricula to prepare professional nurses, baccalaureate schools of nursing utilize the NLN criteria for baccalaureate education as the bases for the desired product outcomes of the educational process. Additionally, the philosophies of the university and the school, and societal needs and trends that are and will futuristically impact the health care delivery system and the nursing profession are considered.
Baccalaureate graduates from the study university are expected to be able to:

1. Apply theories and knowledge from other disciplines to nursing practice;
2. Assist clients, families, groups and communities to achieve maximum levels of development and health potential;
3. Use the nursing process in providing primary, secondary, and tertiary care for individuals, families, groups and communities in a variety of health care settings;
4. Use the nursing process as a method of inquiry in new or unique situations;
5. Demonstrate interest in continuing professional development;
6. Participate effectively in professional and community organizations;
7. Integrate professional values into practice and demonstrate knowledge of nursing issues;
8. Practice nursing in a manner that reflects professional integrity;
9. Apply nursing theory and nursing research findings to practice;
10. Perform technical/psychomotor skills consistent with the role;
11. Communicate effectively with clients, health care providers, and the public;

12. Collaborate with members of other health care disciplines;

13. Function as a staff nurse and assume a beginning leadership role in nursing practice; and

14. Participate in the change process to improve the delivery of nursing care and health care in specific health care systems.172

The characteristics desired of the school of nursing graduates of the study university reflect the NLN criteria as well as the roles outlined by the AACN for the professional nurse. Along with the AACN practice skills, they were the basis for the categories for the Professional Nursing Functions and Characteristics Interest Inventory utilized in data collection in this study (Appendix C).

In the keynote address at the Virginia Nurses' Association 1987 Convention, Jean Steel, Assistant Professor at Boston University and former chairperson of the American Nurses' Association's Cabinet on Nursing Practice, called nursing a "multifaceted profession," in which members have a multitude of choices of what they can do within the profession by virtue of the fact that the profession prepares them for many roles.173 Of these roles, she discussed specialty development expertise in a clinical field, research, management, public policy
activities, and higher education. Her main thesis was that what nurses do is "useful, successful, supportive, and 'good'," characteristics that are aesthetically important, but not always appreciated by society.\textsuperscript{174}

Steel's assessment of the professional nurse providing a needed service to society is true, but does not necessarily make society recognize the merits of the profession, nor send applicants rushing to become nurses. The State of Indiana and the national nursing honor society, Sigma Theta Tau International, conducted a survey in the fall of 1988, on public perception of an ideal career and a nursing career.\textsuperscript{175} Information to enhance nursing recruitment was the overall objective of the research. Ten thousand college freshmen and students in grades 6 through 12, and adults considered significant in influencing their lives in the realm of career choice, were randomly sampled after groups were proportionately selected that would be representative of Indiana's population in general. Completed questionnaires were returned by 1,155, 11.5\% of the total group.

Most respondents were female, white, urban residents, and high school or college graduates. Nursing as a career was viewed as requiring harder work, a heavier workload, more emphases on manual skills, and greater utilization of high technology than an ideal career.
Nursing and an ideal career were equally valued in relation to caring for people as a positive characteristic of a career, intellectual application, career security, scholastic achievement being necessary for career development, and academic achievement.

Nursing as a career was viewed as receiving less respect and appreciation, having fewer opportunities for decision-making, being a less safe career, requiring less need to obtain and apply knowledge, providing lower financial remuneration and less leadership opportunities, and having less power. College students felt that nurses had less career security and less scholastic achievement than is needed for career development, but felt that nurses had to obtain and apply knowledge equally with the ideal career. Basically, college students saw nursing as emphasizing manual skills, having a heavy workload, and placing too much emphasis on high technology utilization. Students of school age were more positive in their attitudes toward nursing career characteristics than were any other group, although all subgroups had positive attitudes toward nursing as a career.

The results of the Indiana survey tend to reflect a national image of nursing which the Secretary’s Commission has identified as being negative. Poor working conditions, such as stressful situations, shift work, having to perform non-nursing job functions, increased responsibility
for more and sicker patients needing more complex technological care, and unsafe and hazardous environments were cited as one reason for the shortage in nursing. Non-competitive pay levels, with reasonable starting salaries, but poor salary progression, was another major factor. A negative public image of the nurse as "'overworked and underpaid,'...as lacking in intellectual and professional qualities, ...as a professional having little autonomy, ...controlled by physicians," and having little influence on the health care setting was perceived.\textsuperscript{177}

Dimino, in a study of high school seniors and college freshmen to determine the image of nursing, found that nursing students chose nursing as a career primarily for altruistic reasons.\textsuperscript{178} The job characteristics of nursing attractive to the nursing students included mobility in job finding, diversity of choices of jobs within the profession, and variability or ease with which the individual could change from one specialty to another. Reasons for disinterest in nursing by non-nursing students were very similar to those negatives identified in the previous report. Increased pay, better benefits, more men in nursing, a unisex name, better and more stable working hours, and better working conditions were some of the characteristics Dimino found the non-nursing respondents felt were needed to make the profession more attractive. Of interest is the finding that over half of the nursing students made
their decisions to become nurses either the senior year in high school or during college, which has implications for actively continuing to recruit qualified candidates in college, even if these people think they want another career.

To summarize the findings in this chapter, occupational choice is an expression of how the person sees himself or herself. People tend to choose work in related experiences during their lives. Environment, heredity, and the individual's unique characteristics, such as interests, values, needs, and self-concept, merge to form personality and influence occupational choice.

Holland's research is based on the premise that people choose occupations congruent with their personalities because working in such an environment allows more complete expression and fulfillment of self. People in certain occupations, like nursing, tend to have similar personality characteristics. The six types of vocational personalities and environments Holland identifies are Social, Investigative, Artistic, Realistic, Enterprising, and Conventional. Social persons enjoy helping and understanding others, being socially competent, and are flexible.

A person's vocational personality is comprised of several types with one generally predominating. The better defined the personality type is, the more predictive is the
determination of occupational fields. The Self-Directed Search (SDS) instrument provides a three letter code for personality type. Research generally has found that gender is not a confound in predicting vocational outcomes from knowing the SDS and major. Additionally, men and women in a traditional gender occupation, such as nursing, have similar SDS codes.

Studies support that the Social type predominates for nursing, and women tend to prefer traditional occupational fields. Vocational aspirations or daydreams are efficient predictors of college major and vocational choice for women. If both the SDS and daydream summary codes are known, the ability to predict the major increases. Expressed career choice is as efficient in predicting outcomes.

Values are pursued through interests which motivate career directions and are determined by a variety of factors, such as genetic endowment and personality traits. Holland found that interests cluster in certain vocational personality types. The SDS measures the intensity of interests. Congruence between interests and occupational choice begins to develop in high school. More than one occupation may meet the person's motivational needs. Rosenberg found that the basic values most often mentioned for educational objectives are working with others in a helping way, earning a lot of money, gaining status and
prestige, and having the opportunity to use one’s abilities.

A review of other theories of occupational development gives support to the premise that interest in a career field is the result of a variety of factors, all interacting and impacting the decision. A summary of selected theories is provided in Table 1. Demographic and biographic variables affecting career choice include such factors as gender, race, socioeconomic status, parental and other role models, and special aptitudes and abilities. In spite of increasing opportunities, women tend to prefer careers in which the dominant sex is theirs, which may limit opportunities and pay. High levels of both masculine and feminine traits are associated with progress in choosing a career. Androgynous women tend to choose more traditional fields, but feminine women choose careers with low pay, low status, and few opportunities for advancement. Choice of major is one result of sex and sex role socialization. Social majors are the most prevalent choice among women.

Counselors tend to perpetuate women’s career restrictions, more frequently advising women into traditional roles. However, women today are choosing more broadly. Blacks like and choose more Social types of occupations than any other, and score higher on Social, Conventional, and Enterprising scales than whites.
Occupational aspirations significantly relate to socioeconomic status (SES). SES affects financial support for education, the number of successful role models, available career information, skill development, and many other factors impacting career choice. SES, parental influence, self-concept, and gender are the best predictors for occupational desires.

Parental influence shapes values and significantly influences occupational choice. The SDS code of the parent is significantly associated with the that of the children, especially with daughters, the mother’s being stronger. The peer of the adolescent or the teacher are strong influences over either educational choice or occupational choice. Women in traditional fields have been most influenced by females, though all students are primarily influenced by their fathers.

The choice of an occupation is related to general aptitude and abilities when coupled with interests and motivations. Intelligence is a significant variable in career choice, but the use of intelligence tests as the single evaluation tool for acceptance or hiring is considered limited due to test bias. Declining SAT scores over the last 25 years is of concern. Those women more stable in career choice over time have academic aptitude and interest scores significantly higher than those less stable.
Nursing is viewed primarily as a highly female occupation with 97% women. Potential applicant pools should include older men changing careers and black men and women with attitudes congruent for nursing. The ideal nurse is described as having both male and female personality traits. Changing the name of nursing to a genderless name may make the profession more acceptable to future applicants.

The professional nurse today must be able to think and act effectively and efficiently in complex and critical situations, be a leader, have initiative, be creative, and an expert manager. National League for Nursing criteria for baccalaureate graduates and American Association of Colleges of Nursing roles of the professional nurse reflect such complex characteristics and functions. Nursing as a career is generally viewed in a positive way, but the workload is seen as heavier, with an emphasis on manual skills, using more technology, and offering less pay, respect, power, safety, and leadership opportunities.

Chapter Summary

This chapter presents selected relevant literature that supports Holland's theory of vocational choice and personality fit, with descriptions of additional theories that provide information about personality and other important factors impacting career decision-making. Demographic and biographic variables influencing the
individual's choice of occupation or college major are discussed. Where available, data linking these variables with personality type and other factors are presented.

Professional nursing functions and characteristics as seen by nursing, the public, and selected college students are presented. Data on how students in a declared major, including nursing, or not in a major perceive the profession's functions and characteristics, and how these perceptions relate to vocational personality type so that specific groups might be targeted for marketing purposes is unknown and is addressed by this study.

**Chapter Summary**

This chapter presents a review of selected literature relating to personality, occupational choice, selected variables influencing choice of an occupation, and functions and characteristics of professional nursing.

Chapter III presents a description of the research design and methodology, including the population, sample, setting, procedures, and data analyses.
NOTES


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9 Healy, 89.


11 Healy, 90.

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147 Super and Bohn, 13-20.

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175 Frederick May, Joan Austin and Victoria Champion, *Attitudes, Values and Beliefs of the Public in Indiana Toward Nursing as a Career: A Study to Enhance Recruitment into Nursing* (Indianapolis: Sigma Theta Tau, International Honor Society of Nursing, Inc., 1988).

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CHAPTER III

METHODOLOGY

Introduction

This study examines the differences in perceptions about selected professional nursing functions and characteristics among three groups of freshmen students in a large, urban mid-Atlantic state university. The three groups are (1) students who have selected nursing as their occupational choice (major); (2) students who are uncommitted to an occupational choice (undeclared major), and (3) students who are committed to an occupational choice (major) other than nursing. This chapter describes the research methodology, defining the research design, the study population and the sampling procedures, the setting, the research instruments, the procedure including the human subject protection precautions, the data collection, and data analysis procedures.

Research Questions and Hypotheses

Three research questions are examined. These questions and the accompanying hypotheses are as follows:

A. What are the occupational interests and
predominant vocational personality types of the students in the study? The hypotheses are:

1. Freshmen students in the nursing major group will have a predominantly Social (S) vocational personality profile as measured by Holland's Self-Directed Search (SDS) instrument.

2. There will be a difference in predominant vocational personality profile as measured by Holland's SDS between the three groups.

B. In what ways, relative to demographic and biographic variables, are the three groups alike or different? The hypothesis is:

3. There will be differences in the demographic and biographic data between groups.

C. How are selected professional nursing functions and characteristics perceived by the three groups of freshmen students? The hypotheses are:

4. There will be a difference in the perceptions of selected professional nursing functions and characteristics between the three groups.

5. Students in any of the three groups who have predominantly Social vocational personality profiles will view functions and characteristics of professional nursing similarly.
Research Design

This comparative-descriptive study employs a non-experimental ex post facto design to determine if the perceptions about selected professional nursing functions and characteristics among college freshmen students differ between the groups. The nonexperimental design has been chosen because subjects occur naturally, with the independent variable, occupational choice as designated by major, either present or absent. Therefore, it is not possible to assign subjects randomly to the independent variable.

The researcher recognizes the limitations inherent in such non-randomized designs. Randomization, while not an assurance for equality of groups, does offer the best chance for all possible characteristics that could affect the outcomes to be spread evenly across the groups. Lack of randomization means that inferences of causal relationships cannot be determined, results can be generalized only to the study group, and self-selection could be the reason for the results obtained.

Population and Sample

The population of interest is all full-time matriculated academic campus freshmen attending Virginia Commonwealth University (VCU) in Richmond, Virginia (n = 1840 for 1988-1989; n = 1740 for 1989-1990). The sample has been selected in three ways.
First, in January, 1989, disproportionate stratified random sampling was used. There are five schools on the academic campus: business, the arts, community and public affairs, social work, and humanities and sciences. Prenursing majors and undeclared majors are housed in humanities and sciences. All prenursing, social work, and community and public affairs students were included in sampling because numbers were small for these groups. Random samples of 70 each were drawn from business, humanities and sciences, and art majors, and from undeclared majors with the aim of obtaining 30 in each category. The total sample desired was 223. Four hundred seventy-nine (479) letters with informed consent forms were mailed out in early March 1989 (Appendix A). In spite of follow-up phone calls or written reminder letters, only 36 (7.5%) completed packets ultimately were returned from this original inquiry. Packets contained the Demographic-Biographic Inventory (Appendix B), the Professional Nursing Functions and Characteristics Interest Inventory (Appendix C), the Self-Directed Search instrument (Appendix D), a letter of explanation (Appendix E), and the stamped, self-addressed envelope.

The second round of data collection was assisted by the English Department of the university in April, 1989. According to the head of Freshmen English, students are assigned randomly to classes, so a random sample of whole
classes was taken (n=15). Three hundred packets were distributed in the classes to full-time students. Packets contained the explanatory letter (Appendix F), the informed consent form, and the study instruments. The English professors asked full-time students to participate. Fifty packets (16.6%) were returned with completed or mostly completed instruments. Missing data were usually SAT scores. The researcher was unable to obtain these scores from the registrar as they were deleted from the computer files in the second half of the second semester of the freshman year.

In the third and final round of data collection, freshmen English students were approached once again in the same manner, but at the beginning of the Fall semester, August, 1989. The purpose of this final round was to obtain a more representative sample from the business, art, humanities and sciences, and undeclared majors (Appendix G). Three hundred packets were dispensed; two hundred twenty-two (74%) were returned. With the assistance of the Prenursing Club advisor, four additional freshman prenursing students completed packets. The researcher postulates that the higher rate of return in the Fall, 1989, is because the students were asked to participate early in the semester before they became heavily involved in the course requirements of the semester.
The final sample consists of 33 prenursing students, 216 declared majors in fields other than nursing, and 63 undeclared majors. The declared majors are 30 health (non-nursing); 52 business-related, community and public affairs; 63 fine arts; 29 humanities; and 42 science majors. Total sample size is 312.

Setting

The study has been conducted at Virginia Commonwealth University, an urban university with an enrollment of more than 20,000 students. The university is located in Richmond, Virginia, which has a metropolitan population in excess of 500,000. This university was chosen because the School of Nursing is willing to use the results and recommendations in future recruitment of students.

Instruments

The three basic questions studied are as follows:

1. What are the occupational interests and predominant vocational personality types of the students in the study? The instrument used is the Self-Directed Search (SDS) by John L. Holland (Appendix D). The purpose of the tool is to help people in examining potential occupations or to help them understand their choices. Scoring indicates the estimates pattern of a person's interests and competencies. Permission for use was
Validity and reliability have been previously established over a twenty-six year period in numerous studies. The SDS summary code test-retest reliability averages about .90. Reviewing scale convergence as a component of construct validity, the correlations range from .53 to .89 and .62 to .90 for women and men respectively. Convergence means that two different scales measuring the same construct result in similar scores. Concurrent and predictive validity have been average to high defined by hit rates ranging from 46.7 to 76% and 39.6 to 79.3% respectively. Hit rates, as defined by Holland, are congruence percentages between the SDS summary code and the present or later occupation.

Horton and Walsh, in studying the concurrent validity of Holland’s instrument, found that the SDS does discriminate as Holland had theorized among occupational groups. The Investigative, Artistic, Social, and Conventional scales discriminated consistently among occupational groups for these categories, with subjects in these groups having their highest mean score on the scale consistent with their occupation.

Holland and Nafzinger conducted a correlational investigation to test the validity of the SDS scales. They compared the SDS with six established vocational
choice tests and inventories and found that the summary scales of the SDS correlated more closely to this battery of tests than the SDS subscales. Their inference from this was that the summary scales scores provide information on a complex entity including interest, personality, and aptitude measures. The Kuder Social Services subscale did correlate most highly with the SDS Social Summary scale, as did the Kuder Scientific scale with the SDS Investigative subscale.

Wolfe and Betz examined the validity of Holland's vocational categories for women and men specifically looking at how valid the categories were for each type of woman. They found that those occupational choices classified as Social were predominantly occupations traditionally associated with women. Interestingly, in examining personality-occupational choice congruence (meaning the high point codes matched), the women pursuing nontraditional careers had more congruence between personality and choice codes than women pursuing traditional careers. The authors concluded that the theory was more valid for nontraditional careers. However, due to a larger number of research studies supporting congruence between choice of traditional occupations and vocational personality for women, the researcher for this study does not accept this premise in conducting the investigation.
Smart investigated freshmen males to see if the careers they preferred were actually consistent with their dominant personality types. He used declared major as career orientation, and found that students did prefer and seek degrees in occupations that would agree with their personalities, supporting Holland’s theory. The opportunity to work with people in their career choice was very important to the Social types. This was congruent with Holland’s description of this type of person having greater interpersonal relationship skills and being more oriented toward people.

Walsh, Hildebrand, Ward, and Matthews found that blacks without college degrees chose Social kinds of occupations more often, and that the women of either black or white race were more similar than different on the SDS scales. Doughtie, Chang, Alton, Wakefield, and Yom found similar results with black and white college undergraduates. These investigators also found evidence to support the relationship between constructs on Holland’s hexagon.

In 1968, Holland published results from a sample of over 2,000 college students from 28 colleges which he used to revise and hone his theory of vocational choice and to categorize careers. Nursing did not develop as an occupation for men at that time. It did fall into the Social-Intellectual classification for women, and medicine
fell into the Intellectual category, as did most of the sciences. Holland later changed the name of this category to Investigative.

In a study specifically designed to assess professional nurses using the SDS, Hecht examined race and gender personality differences of students entering seven baccalaureate schools of nursing. This study was the first to use the SDS with nursing students exclusively. The SDS and a questionnaire to obtain socioeconomic data were given to all entry-level male and black students, and a 20 percent random sample of female students (n=210). Sixty-one percent of the respondents had SDS codes with S or I as the highest first two code letters. SIA, SAI, and ISA were the most frequently occurring codes, and S was the first letter code most often. These findings support Holland’s contention of SIA as the most common code for the professional nurse.

Hecht found that race made no significant difference in the distribution of three letter codes, collectively or separately, but gender did make a difference. Women had S as a high point code 66 percent of the time as opposed to 33 percent for men. I was the high point code more often with the men, and they also had the letter R in first position more frequently.

In a study to compare SDS scale scores obtained by men and women in traditional male occupations, Walsh,
Horton, and Gaffey concluded that men and women in engineering (R), medicine (I), and the ministry (S) as measured by mean raw scores on the SDS scale, were similar. They did not look at subjects in a Social occupation, but did find that the Investigative scales of the VPI (Vocational Preference Inventory) and the SDS did not differentiate among physicians of the two sexes.

Conversely, Prediger and Hanson, in testing basic assumptions of Holland's theory, found that differences in raw score codes of high school men and women seeking the same occupations, especially if nontraditional, were significant. They concluded that personalities may be different. A code of S was seen with 85 percent of the women, versus 38 percent of the men. Artistic was the next most common code for women. Dentists, math teachers, physical education teachers, political scientists, and computer programmers were included in the women's occupational groups that had the SA code, but men in these same occupational groups usually had no A code, but a combination of I, E, and S, especially I and S.

Alston, Wakefield, Doughtie, and Bobele decided to see if Holland's measures were measuring the same constructs for men and women college students, and found that
they were.\textsuperscript{18} Sex did not emerge as a significant factor, supporting Holland's belief that the SDS is not biased for or against either sex. Schaefer found that the SDS "was not contingent upon such variables as activities, competence, self-estimates of abilities, and ...the interaction effect of sex," and recommended the SDS for inclusion in ongoing career development programs.\textsuperscript{19}

Hanson, Lamb, and English found that Holland's Investigative and Social scales correlated moderately with the occupation of registered nurse.\textsuperscript{20} They also determined that women other than registered nurses, but with similar interests, liked activities found in the Social and Investigative scales.

Overall, the findings from these studies support the reliability and validity of determining vocational personality profiles of prospective professional nursing students by using Holland's SDS instrument. In addition to the SDS score, each subject is asked at the beginning of the SDS instrument to list occupational daydreams in the order of most recent to least recent. The first occupation listed gives an indication of the vocational aspirations of the subjects. According to Holland and Gottfredson, Touchton and Magoon, Borgen and Seling, and Bartling and Hood, expressed vocational choice is a predictor of college major and career outcome.\textsuperscript{21,22,23,24,25}
2. In what ways, relative to demographic and biographic variables, are the three groups alike or different? The instrument to gather demographic-biographic data is a questionnaire prepared by the researcher containing a quantitative component and selected open-ended items for general comments and ideas of the participants (Appendix B). In a pilot study, sixty (60) university sophomores were randomly chosen from the different academic schools and asked to fill out this questionnaire. The eleven (18.3%) returns led to a few editorial changes in the form. Otherwise, the desired information was obtained without difficulty.

Selected variables indicated in the literature as significantly related to occupational choice are included. These are race, gender, socioeconomic status (family income), achievement (high school grade point average, Scholastic Aptitude Test Score), occupation(s) of parent(s) (primary breadwinner and occupation), and role model (the person influencing the student the most in the choice of a career).

The two factors most important to students in career choice are determined by asking an open-ended question. Additionally, information relating to religious involvement and/or affiliation; why nursing may have been considered as an occupational choice, or why not; and if a name change might make the nursing profession more
attractive to some people since the literature indicates some support for a non-sexist name has been obtained.

3. How are selected professional nursing functions and characteristics perceived by the three groups? The instrument used, called The Professional Nursing Functions and Characteristics Interest Inventory (PNFCII), was developed by the researcher and is a fifty-four item questionnaire with a Likert scale in which selected examples of baccalaureate level functions and characteristics of professional nursing are rated from one, "greatly dislike," to five, "greatly like" (Appendix C) (see Operational Definitions). The major categories come from the study institution’s 1985 Self-Study Report for the National League of Nursing with a few changes in wording for clarity.

Use of nationally recognized and accepted professional nursing functions and characteristics as identified from the National League for Nursing criteria for accreditation, from outcome behaviors of the accredited university school of nursing in the study setting, from the American Association of Colleges of Nursing, and from the professional literature to develop the examples in categories for the instrument provide content validity. No other such tool has been identified in the literature.

Reliability and validity were determined in a pilot study with professional nursing faculty, and sophomore
students from the academic campus. An expert panel of seven faculty representing major clinical nursing areas addressed in the PNFCII evaluated the instrument for content and face validity. Modifications were made based on the recommendations of these experts. Additions and changes were aimed at clarifying the examples in the categories, editing poorly worded examples, adding examples, and mechanical improvements of the questionnaire. Specific changes recommended by the faculty reviewers and incorporated in the scale are listed in Appendix H.

A random sample of sixty sophomore students from the different schools was mailed the PNFCII with the demographic-biographic questionnaire. Eleven (18.3%) returned completed instruments. Coefficient alpha was used to measure internal consistency reliability. The reliability on each item was 0.97. Anything above 0.95 is considered very high and indicative of homogeneity and internal consistency. The overall pilot reliability score for the instrument was 0.97.

One pilot student respondent said that the items on integrity and ethical behavior (25-31) were difficult to answer with "greatly like" to "greatly dislike," and questioned how people might answer these items, indicating that they might answer positively if they agreed with the behavior as appropriate even if they would not like to do it. The researcher concluded that this would give
satisfactory data, and left the codes unchanged. No other negative comments related to this issue surfaced from the faculty reviewers or the other pilot study respondents.

The researcher is aware of the limitations of using a new, unestablished instrument, but the use of established criteria from the national organizations evaluating professional nursing education offers a basis for validity. This study is a test of the instrument's ability to discriminate positive and negative perceptions of various groups. It is anticipated that students choosing occupations other than nursing will have lower total scores than those choosing nursing.

**Procedure**

Consent to conduct the research was obtained from appropriate Virginia Commonwealth University officials. The committees to approve research involving human subjects for the study university and the researcher's supervising university gave permission for the research. Subjects were asked to participate and informed of their rights and the benefits and any potential risks of participating in the introductory letter (Appendices A, F, G). Three forms of the explanatory letter were used due to the need to gather data in three phases. Informed consent was obtained by a signature on a form provided with the letter. Subjects in the first phase returned the form to the researcher in an enclosed preaddressed and stamped envelope. Those students
agreeing were mailed a second letter (Appendix E), the demographic-biographic questionnaire, the SDS tool, and the PNFCII instrument, and asked to return them in a provided stamped, preaddressed envelope.

In the second and third phases, the English professors handed out packets containing the introductory letter, the informed consent form, and the study instruments. Completed packets were sealed and returned to the researcher. For four prenursing students, the same procedure was used with the Prenursing advisor in the Biology Department.

All participants were asked if they wished an explanation of their SDS code. If they did, an explanation was mailed to the participants in the first and second phases, and returned via the professor in the third phase. Prenursing students obtained through the biology professor were mailed SDS explanations. An example of the SDS explanation is in Appendix I.

Data collection began in March 1989, and ended October 1989. Envelopes and tools were coded for sorting and follow-up. All identifying information has been kept confidential and is to be destroyed once the study is completed.

Data Analysis

Both descriptive and inferential statistical analyses of the data are utilized. Frequency distributions
and percentages systematically organize and describe the raw data. The frequency distributions of two variables are crosstabulated in contingency tables. Such tables provide the degree and magnitude of relationships. Chi-square analysis with contingency tables determines if two variables are associated. By comparing expected with real frequency values for each cell, the chi-square statistic \( x^2 \) is determined. If it is larger than the theoretical value, after the degrees of freedom and the level of significance have been determined, the test statistic is significant, indicating the probability that the two variables are related.

Two assumptions for using chi-square are that the sample size is large enough and that each cell's expected value is greater than 5. No more than 20 percent of the cells may have the expected frequency below 5. Where excessive small expected frequencies exist, categories have been combined unless the combinations would have been meaningless.

Due to the increased likelihood of having a Type 1 error when the same data set is used to do multiple analyses, a correction has been employed which adjusts the alpha level of significance. The method used to adjust for this problem is Bonferroni's inequality which gives a "region possessing probability greater than that
demanded." The adjusted values are provided for alpha for any test statistic when multiple tests have been done.

Cramer's V is a measure of association used with the chi-square statistic to provide information about the strength of the association between the variables. Cramer's V may be used with large or small contingency tables and has a value range of 0 to 1, with 1 representing a perfect association.

To determine if a significant difference exists between groups of the independent variable on some measure of the dependent variable, analysis of variance (ANOVA) and analysis of covariance (ANCOVA) are used. ANOVA, a parametric analysis which tests the significance of differences between group means, may be used with more than two groups. The variability between the groups is compared with the variability within the groups. The test statistic, an F-ratio, is interpreted after the degrees of freedom and the level of significance are determined. If it is greater than the theoretical F-ratio, the null hypothesis is rejected.

One-way ANOVA is used to determine the differences between group means for levels of one independent variable. A two-way ANOVA is employed when the differences in means and the combined interaction effects of two independent variables are determined. The Tukey B multiple comparison procedure is used to determine which
pairs of groups' means are different when a significant F-ratio is found.\textsuperscript{39} Two necessary assumptions for using ANOVA are that each group must be a random sample from a normal population, and in the population, the variance in all groups must be equal.\textsuperscript{40} Since the sample is not randomly selected, histograms of the scale scores on the Professional Nursing Functions and Characteristics Interest Inventory (PNFCII) have been used to determine that normal distributions for groups' scores exist.

Analysis of covariance (ANCOVA) is utilized to control for the interactions of variables significantly associated with the PNFCII scores. If selected variables have the potential to influence the dependent variable, they may confound the dependent-independent relationship being studied and should be controlled.\textsuperscript{41} The use of ANCOVA to control for such possible confounds is important since it allows the researcher to use pre-existing groups with more assurance of findings.

E\textsuperscript{2} or Eta is a correlation ratio and is interpreted as a PRE statistic, derived by dividing the between sum of squares by the total sum of squares which gives a proportion, or the amount of variation in the dependent variable that can be explained by the influence of the independent variable.\textsuperscript{42} Eta is not influenced by non-linear relationships. Multiple classification analysis is employed to determine which groups differ significantly.\textsuperscript{43}
A step-wise multiple regression analysis is utilized to examine the predictive power of the significant variables indicated by chi-square analysis associated with the PNFCII score. According to the contribution the variables make in explaining the variance in the dependent variable, variables are entered into the equation or excluded automatically if they do not meet the previously established criteria statistically. Missing values, managed by a listwise deletion process which provides the same sample for correlation, is used to provide an estimate of significance that is conservative.

Assumptions that the distribution of the residuals should be near normal and that the variance is constant have been tested for violations prior to computing the regression analysis. A scatterplot of the standardized residuals against the predicted values is used for this evaluation. The Multiple R statistic, a correlation coefficient indicating the strength of the relationship; R squared, the coefficient of determination analysis; and beta values, standardized correlation coefficients, are used to interpret the multiple regression analysis. The multiple correlation coefficient (R) provides information on how well the regression equation fits the data, and ranges from 0 to 1. R squared, considered the more useful statistic for multiple correlation, ranges from 0 to 1 and indicates how much of the variance in the dependent
variable, proportionately, is explained by the independent variables.\textsuperscript{49} Beta provides a standardized regression coefficient by using the amount of net change in standard deviation units of the dependent variable for a change in the independent variable that equals one standard deviation.\textsuperscript{50} This statistic assists in evaluating each independent variable's influence on the dependent variable.

Data analysis by research questions and hypotheses is as follows:

A. What are the occupational interests and predominant vocational personality types of students in the study?

1. Freshmen students in the nursing major group will have a predominantly Social vocational personality profile as measured by Holland's Self-Directed (SDS) instrument.

Frequency distributions and percentages are utilized to determine predominant SDS high point one letter and two letter codes for the groups. The dominant high point code letter is used in the inferential statistical computations. Further breakdown of majors for the declared non-nursing major group is provided. The occurrence of specific Holland personality types and college majors according to gender, race, annual family income, and other variables is determined with contingency tables. Categories are collapsed where needed for statistical purposes.
2. There will be a difference in predominant vocational personality profile as measured by Holland’s SDS between the three groups. Data analysis includes the use of contingency tables with chi-square analysis to see if differences exist in the three groups (nursing majors, non-nursing majors, undeclared majors).

B. How are the three groups alike or different relative to the demographic and biographic variables?

3. There will be differences in the demographic and biographic data between groups. Data analysis uses contingency tables to describe groups relative to demographic and biographic variables. Chi-square analysis is employed to see if significant differences exist. Again, categories are collapsed if indicated for statistical examination.

C. How are selected professional nursing functions and characteristics perceived by the three groups of freshmen students?

4. There will be a difference in the perceptions of selected professional nursing functions and characteristics between the three groups.

Analyses of variance and covariance are used to determine if a significant difference exists between the groups on the scores on the nursing instrument (PNFCII).
Groups are compared using the analysis of covariance to adjust for differences in selected demographic variables. Multiple comparison analysis is employed to see which group(s) differ significantly. Covariates are determined by computing a chi-square analysis of the demographic and biographic variables with the PNFCII scores. Those variables that are significantly associated are used as covariates.

5. Students in any of the three groups who have predominantly Social vocational personality profiles will view functions and characteristics of professional nursing similarly.

A two-way analysis of variance is used to see if the three groups differ on the nursing tool (PNFCII) according to their high point letter SDS codes. An additional two-way analysis of variance is used to break the declared majors down into the specific groups to examine SDS high point codes.

Regression analysis is employed to examine the predictive power of the chi-square-determined significant variables associated with the PNFCII score.

Chapter Summary

In summary, this chapter describes the methodology of the study. This is a nonexperimental comparative-descriptive investigation to see if the perceptions about professional nursing functions and characteristics differs
significantly between three groups: prenursing, declared nonnursing majors, and undeclared majors. The convenience sample consists of 312 full-time freshmen students at Virginia Commonwealth University. Data are analyzed using descriptive statistics, such as percentages and frequency distributions, and inferential statistics, such as contingency tables with chi square analysis, analyses of variance and covariance, and regression analysis. Chapter IV will describe the sample. The research questions and hypotheses will be presented with statistical findings for each.
NOTES

2 Ibid., 115.
4 Ibid., 58-120.
5 Polit and Hungler, 249.


23 J. M. O'Neil and T. M. Magoon, "The Predictive Power of Holland's Investigative Personality Type and


27 Ibid., 276.

28 Ibid., 287.


30 Polit and Hungler, 312.


33 L. D. Goodwin, "Increasing Efficiency and Precision of Data Analysis: Multivariate vs. Univariate
131


35 Norusis, 275.

36 Polit and Hungler, 306.

37 Ibid., 309.

38 Ibid., 310.

39 Norusis, 263-264.

40 Ibid., 257.


43 Norusis, 262.

44 Ibid., 149.

45 Ibid.

46 Jendrick, 150.


48 Jendrick, 144.

49 Ibid.

CHAPTER IV
PRESENTATION OF FINDINGS

Introduction

The purpose of this study is threefold: first, to determine the perceptions about selected professional nursing functions and characteristics among three groups of freshmen students in a large, urban mid-Atlantic state university who (a) have selected nursing as their occupational choice (major), (b) have committed themselves to an occupational choice (major) other than nursing, or (c) have not committed themselves to an occupational choice (major); second, to determine the occupational interests and predominant vocational personality types of the students in the study; and third, to determine if there is a significant difference among the three groups in the way professional nursing functions and characteristics are perceived.

The study design and data collection have been developed within the context of John Holland's vocational personality theory framework. This chapter presents the findings. First, the sample will be described. Then, the research questions and hypotheses will be presented with the statistical findings.
Description of the Subjects

Data were collected from March, 1989 through October, 1989. Four hundred seventy-nine requests for participants were mailed and six hundred research packets were issued through the English Department of the study institution to freshmen students. Four packets were issued through the biology department. A total of 312 subjects returned completed or nearly completed demographic-biographic questionnaires. Of these, 310 completed the Professional Nursing Functions and Characteristics Interest Inventory (PNFCII). The participation rate was 29%. Three hundred three students completed the SDS instrument, a 28% rate of participation.

Characteristics of the study sample are given in tables 2 through 6. The average age of the respondents is 19 years of age. Most are white, single women without dependents who attended public high schools, are not employed, and come from families with annual incomes of $40,000 or more where the father is the primary breadwinner and is in a white collar occupation. The father, mother, or teacher influenced more than half of the participants in their occupational choices.

More than half have "B" high school grade point averages. Scholastic Aptitude Test scores (SAT) for those reporting their scores (n=249) range from 600 to 1430 with an average total SAT score of 950. The average math and
Table 2.—Characteristics of the Sample, by Age, Gender, and Race (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>Undeclared Majors</th>
<th>Nursing Majors</th>
<th>Non-nursing Majors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (n = 312)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-19</td>
<td>16.4</td>
<td>9.3</td>
<td>59.9</td>
<td>85.6</td>
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<tr>
<td>20-47</td>
<td>3.9</td>
<td>1.2</td>
<td>9.3</td>
<td>14.4</td>
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<tr>
<td>Total</td>
<td>20.3</td>
<td>10.5</td>
<td>69.2</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Gender (n = 312)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10.3</td>
<td>0.3</td>
<td>26.3</td>
<td>36.9</td>
</tr>
<tr>
<td>Female</td>
<td>9.9</td>
<td>10.3</td>
<td>42.9</td>
<td>63.1</td>
</tr>
<tr>
<td>Total</td>
<td>20.2</td>
<td>10.6</td>
<td>69.2</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Race (n = 311)</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>18.0</td>
<td>7.7</td>
<td>53.1</td>
<td>78.8</td>
</tr>
<tr>
<td>Black</td>
<td>1.0</td>
<td>2.6</td>
<td>13.2</td>
<td>16.7</td>
</tr>
<tr>
<td>Other</td>
<td>0.9</td>
<td>0.3</td>
<td>3.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>19.9</td>
<td>10.6</td>
<td>69.5</td>
<td>100.0</td>
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</table>
Table 3.—Characteristics of the Sample, by Annual Family Income, Employment Status, Primary Breadwinner, and Occupation of Primary Breadwinner (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>Undeclared Majors</th>
<th>Nursing Majors</th>
<th>Non-nursing Majors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual family income in dollars</strong> (n = 292)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12,000</td>
<td>3.1</td>
<td>1.4</td>
<td>5.8</td>
<td>10.3</td>
</tr>
<tr>
<td>12,000 - 24,999</td>
<td>2.1</td>
<td>1.4</td>
<td>12.3</td>
<td>15.8</td>
</tr>
<tr>
<td>25,000 - 39,999</td>
<td>3.8</td>
<td>2.7</td>
<td>14.0</td>
<td>20.5</td>
</tr>
<tr>
<td>40,000 +</td>
<td>12.3</td>
<td>5.1</td>
<td>36.0</td>
<td>53.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>21.3</td>
<td>10.6</td>
<td>68.1</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Employment status</strong> (n = 311)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>1.6</td>
<td>0.0</td>
<td>5.1</td>
<td>6.8</td>
</tr>
<tr>
<td>Part-time</td>
<td>8.4</td>
<td>4.5</td>
<td>31.5</td>
<td>44.3</td>
</tr>
<tr>
<td>Unemployed</td>
<td>10.3</td>
<td>6.1</td>
<td>32.5</td>
<td>48.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.3</td>
<td>10.6</td>
<td>69.1</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Primary breadwinner</strong> (n = 310)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>13.2</td>
<td>6.1</td>
<td>41.6</td>
<td>60.9</td>
</tr>
<tr>
<td>Mother</td>
<td>2.6</td>
<td>2.6</td>
<td>10.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Both parents</td>
<td>4.3</td>
<td>1.9</td>
<td>15.2</td>
<td>21.4</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
<td>0.0</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.4</td>
<td>10.6</td>
<td>69.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Occupation of primary breadwinner</strong> (n = 299)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>1.0</td>
<td>0.3</td>
<td>3.0</td>
<td>4.3</td>
</tr>
<tr>
<td>White collar</td>
<td>15.1</td>
<td>7.4</td>
<td>47.8</td>
<td>70.2</td>
</tr>
<tr>
<td>Blue collar</td>
<td>3.3</td>
<td>2.7</td>
<td>13.8</td>
<td>19.8</td>
</tr>
<tr>
<td>Nurse</td>
<td>0.7</td>
<td>0.0</td>
<td>2.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Professional</td>
<td>0.3</td>
<td>0.0</td>
<td>2.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.0</td>
<td>0.3</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.4</td>
<td>10.7</td>
<td>68.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 4.--Characteristics of the Sample, by High School Grade Point Average (HSGPA), Total SAT Score (SAT), and High School Attended (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>Undeclared Majors</th>
<th>Nursing Majors</th>
<th>Non-nursing Majors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HSGPA (n = 310)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>1.9</td>
<td>1.3</td>
<td>8.1</td>
<td>11.3</td>
</tr>
<tr>
<td>B</td>
<td>11.9</td>
<td>6.8</td>
<td>39.4</td>
<td>58.1</td>
</tr>
<tr>
<td>C</td>
<td>6.1</td>
<td>2.6</td>
<td>20.3</td>
<td>29.0</td>
</tr>
<tr>
<td>D</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19.9</td>
<td>10.7</td>
<td>69.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

| **SAT (n = 249)** |                   |                |                     |       |
| 600 - 899        | 4.0               | 5.2            | 22.1                | 31.3  |
| 900 - 1199       | 16.9              | 4.8            | 43.0                | 64.7  |
| 1200 - 1499      | 0.4               | 0.0            | 3.6                 | 4.0   |
| **Total**        | 21.3              | 10.0           | 68.7                | 100.0 |

| **High school attended (n = 312)** |       |       |         |       |
| Public            | 18.6  | 9.6   | 61.9    | 90.1  |
| Private/parochial | 1.6   | 1.0   | 7.3     | 9.9   |
| **Total**         | 20.2  | 10.6  | 69.2    | 100.0 |
Table 5.—Characteristics of the Sample, by Person Influencing Most in Occupational Choice (PIM), Most Important Factor in Occupational Choice (Factor 1), and Second Most Important Factor in Occupational Choice (Factor 2) (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>Undeclared Majors</th>
<th>Nursing Majors</th>
<th>Non-nursing Majors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIM (n = 306)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one/self</td>
<td>6.2</td>
<td>2.6</td>
<td>18.3</td>
<td>27.1</td>
</tr>
<tr>
<td>Father</td>
<td>3.9</td>
<td>0.7</td>
<td>12.4</td>
<td>17.0</td>
</tr>
<tr>
<td>Mother</td>
<td>1.6</td>
<td>2.3</td>
<td>13.4</td>
<td>17.3</td>
</tr>
<tr>
<td>Teacher</td>
<td>3.3</td>
<td>0.3</td>
<td>13.7</td>
<td>17.3</td>
</tr>
<tr>
<td>People in field</td>
<td>2.6</td>
<td>2.3</td>
<td>4.9</td>
<td>9.8</td>
</tr>
<tr>
<td>Friends/relatives</td>
<td>2.6</td>
<td>2.0</td>
<td>6.9</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.3</td>
<td>10.1</td>
<td>69.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

| **Factor 1 (n = 303)** |                   |                |                    |       |
| Helping others/        | 1.3               | 2.6            | 2.3                | 6.2   |
| service                |                   |                |                    |       |
| Challenge and          | 1.3               | 1.3            | 8.2                | 10.9  |
| responsibility         |                   |                |                    |       |
| Respect/honesty        | 0.3               | 0.3            | 2.6                | 3.3   |
| Satisfaction           | 10.5              | 3.0            | 33.6               | 47.0  |
| Salary/power           | 4.3               | 1.6            | 15.8               | 21.7  |
| Environment/           | 2.3               | 1.4            | 7.2                | 10.9  |
| workmates              |                   |                |                    |       |
| **Total**              | 20.1              | 10.2           | 69.7               | 100.0 |

| **Factor 2 (n = 294)** |                   |                |                    |       |
| Helping others/        | 0.7               | 0.6            | 6.8                | 8.1   |
| service                |                   |                |                    |       |
| Challenge and          | 1.0               | 2.3            | 11.0               | 14.4  |
| responsibility         |                   |                |                    |       |
| Respect/honesty        | 0.0               | 0.7            | 1.3                | 2.0   |
| Satisfaction           | 4.7               | 2.7            | 12.0               | 19.4  |
| Salary/power           | 11.0              | 2.7            | 32.8               | 46.5  |
| Environment/           | 2.3               | 0.7            | 6.7                | 9.7   |
| workmates              |                   |                |                    |       |
| **Total**              | 19.7              | 9.7            | 70.6               | 100.0 |
Table 6.—Characteristics of the Sample, by Involvement in Religion (IIR), Religious Affiliation (RA), and Ever Considered Nursing for a Career (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>Undeclared Majors</th>
<th>Nursing Majors</th>
<th>Non-nursing Majors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IIR (n = 312)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very</td>
<td>2.0</td>
<td>2.6</td>
<td>6.4</td>
<td>11.0</td>
</tr>
<tr>
<td>Moderately</td>
<td>5.4</td>
<td>4.2</td>
<td>23.4</td>
<td>33.0</td>
</tr>
<tr>
<td>Minimally</td>
<td>5.1</td>
<td>1.9</td>
<td>18.6</td>
<td>25.6</td>
</tr>
<tr>
<td>Not at all</td>
<td>7.7</td>
<td>1.9</td>
<td>20.8</td>
<td>30.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.2</td>
<td>10.6</td>
<td>69.2</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>RA (n = 312)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>6.7</td>
<td>2.6</td>
<td>19.2</td>
<td>28.5</td>
</tr>
<tr>
<td>Protestant</td>
<td>8.7</td>
<td>5.4</td>
<td>31.1</td>
<td>45.2</td>
</tr>
<tr>
<td>Catholic</td>
<td>3.2</td>
<td>1.3</td>
<td>10.6</td>
<td>15.1</td>
</tr>
<tr>
<td>Other</td>
<td>1.6</td>
<td>1.2</td>
<td>8.4</td>
<td>11.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.2</td>
<td>10.5</td>
<td>69.3</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Ever considered nursing (n = 312)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5.4</td>
<td>10.3</td>
<td>13.5</td>
<td>29.2</td>
</tr>
<tr>
<td>No</td>
<td>14.7</td>
<td>0.3</td>
<td>55.8</td>
<td>70.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20.1</td>
<td>10.6</td>
<td>69.3</td>
<td>100.0</td>
</tr>
</tbody>
</table>
verbal scores are each 470, however, only 163 reported their math and 162 their verbal SAT scores.

The two factors identified as most important in a career by the students are satisfaction or happiness in the job and money or money-related benefits. More than half of the sample are either minimally involved in religion or not at all. Most students are protestants, and of these, Baptists predominate. Only 33 of the total sample are nursing majors, yet 91 respondents report considering nursing as a career.

Occupational Choices (Majors) of the Sample

Table 7 presents the declared and undeclared major groups, giving the frequency and percent of the total sample for each. Two hundred forty-nine (79.8%) students list a declared major. The remaining 63 (20.2%) students are considering a major or are undecided. Thirty-three students (10.5%) are declared prenursing majors. The Health majors include non-nursing fields such as premedicine, predentistry, physical therapy, occupational therapy and dental hygiene. The Business category encompasses any sphere of business, marketing, accounting, public administration, and community affairs. Art includes all art, theater, music, and related majors. The Humanities group embraces prelaw, political science, education, social work, communications, as well as the traditional humanities majors. The Sciences include majors in the psychological,
sociological, and hard sciences. The majority of undeclared majors who are considering a choice are thinking about a business-related major (51%). Only one indicates an interest in nursing. Twenty-three percent are considering health fields other than nursing.

Table 7.—Frequency of Majors

<table>
<thead>
<tr>
<th>Major (n = 312)</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health (non-nursing)</td>
<td>30</td>
<td>9.6</td>
</tr>
<tr>
<td>Nursing</td>
<td>33</td>
<td>10.5</td>
</tr>
<tr>
<td>Business/public administration</td>
<td>52</td>
<td>16.7</td>
</tr>
<tr>
<td>Arts (music/theatre)</td>
<td>63</td>
<td>20.2</td>
</tr>
<tr>
<td>Sciences</td>
<td>42</td>
<td>13.5</td>
</tr>
<tr>
<td>Humanities</td>
<td>29</td>
<td>9.3</td>
</tr>
<tr>
<td>Undeclared</td>
<td>63</td>
<td>20.2</td>
</tr>
<tr>
<td>Total</td>
<td>312</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Analyses of Data Relating to Research Questions

Research Question A

Research Question A: What are the occupational interests and predominant vocational personality types of the students in the study?

Hypothesis 1

Hypothesis 1: Freshmen students in the nursing major group will have a predominantly Social (S) vocational personality profile as measured by Holland’s Self-Directed Search (SDS) instrument.

The vocational personality code findings for the
subjects are presented in table 8 as well as the relationships of the demographic-biographic variables to the predominant SDS high point code letter and the predominant codes for each of the majors (see tables 9 through 12).

Table 8.—Frequency of Two High Point Letter SDS Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>35</td>
<td>11.2</td>
</tr>
<tr>
<td>AS</td>
<td>35</td>
<td>11.2</td>
</tr>
<tr>
<td>SA</td>
<td>25</td>
<td>8.0</td>
</tr>
<tr>
<td>IS</td>
<td>23</td>
<td>7.4</td>
</tr>
<tr>
<td>SE</td>
<td>22</td>
<td>7.1</td>
</tr>
<tr>
<td>CE</td>
<td>13</td>
<td>4.2</td>
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<td>AE</td>
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<td>3.2</td>
</tr>
<tr>
<td>EA</td>
<td>10</td>
<td>3.2</td>
</tr>
<tr>
<td>Other</td>
<td>73</td>
<td>25.9</td>
</tr>
<tr>
<td>Total</td>
<td>303</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Key:  S = Social  
A = Artistic  
I = Investigative  
E = Enterprising  
R = Realistic  
C = Conventional

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Table 9.—Chi-Square ($x^2$) Analysis of High Point SDS Code Types by Gender, Annual Family Income, and Major (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong> (n = 304)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7.2</td>
<td>9.2</td>
<td>7.6</td>
<td>7.3</td>
<td>3.9</td>
<td>1.3</td>
<td>36.5</td>
</tr>
<tr>
<td>Female</td>
<td>25.0</td>
<td>12.8</td>
<td>8.6</td>
<td>7.2</td>
<td>1.7</td>
<td>8.2</td>
<td>63.5</td>
</tr>
<tr>
<td>Total</td>
<td>32.2</td>
<td>22.0</td>
<td>16.2</td>
<td>14.5</td>
<td>5.6</td>
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<td>100.0</td>
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<tr>
<td>$x^2$</td>
<td>29.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$p$</td>
<td>.00005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cramer's V</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
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<th>A</th>
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<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
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<tr>
<td><strong>Annual family income in dollars</strong> (n = 285)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>&lt;12,000</td>
<td>3.2</td>
<td>3.9</td>
<td>0.4</td>
<td>0.7</td>
<td>1.0</td>
<td>1.0</td>
<td>10.2</td>
</tr>
<tr>
<td>12,000 - 24,999</td>
<td>4.9</td>
<td>3.9</td>
<td>0.6</td>
<td>3.5</td>
<td>1.0</td>
<td>1.8</td>
<td>15.7</td>
</tr>
<tr>
<td>25,000 - 39,999</td>
<td>6.0</td>
<td>2.1</td>
<td>6.0</td>
<td>2.1</td>
<td>1.1</td>
<td>3.2</td>
<td>20.5</td>
</tr>
<tr>
<td>40,000+</td>
<td>17.5</td>
<td>11.9</td>
<td>9.8</td>
<td>9.1</td>
<td>2.5</td>
<td>2.8</td>
<td>53.6</td>
</tr>
<tr>
<td>Total</td>
<td>31.6</td>
<td>21.8</td>
<td>16.8</td>
<td>15.4</td>
<td>5.6</td>
<td>8.8</td>
<td>100.0</td>
</tr>
<tr>
<td>$x^2$</td>
<td>31.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$p$</td>
<td>.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cramer's V</td>
<td>0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major</strong> (n = 304)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5.3</td>
<td>4.9</td>
<td>2.0</td>
<td>3.6</td>
<td>2.3</td>
<td>2.0</td>
<td>20.1</td>
</tr>
<tr>
<td>Health</td>
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<td>0.7</td>
<td>3.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>9.9</td>
</tr>
<tr>
<td>Nursing</td>
<td>7.2</td>
<td>0.7</td>
<td>2.0</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>10.5</td>
</tr>
<tr>
<td>Business</td>
<td>3.0</td>
<td>0.7</td>
<td>0.3</td>
<td>6.3</td>
<td>0.3</td>
<td>5.9</td>
<td>16.5</td>
</tr>
<tr>
<td>Arts/music</td>
<td>3.6</td>
<td>11.8</td>
<td>1.3</td>
<td>0.7</td>
<td>1.6</td>
<td>0.7</td>
<td>19.7</td>
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<tr>
<td>Science</td>
<td>4.6</td>
<td>1.3</td>
<td>5.3</td>
<td>1.3</td>
<td>0.7</td>
<td>0.7</td>
<td>13.8</td>
</tr>
<tr>
<td>Humanities</td>
<td>3.3</td>
<td>2.0</td>
<td>1.3</td>
<td>2.3</td>
<td>0.7</td>
<td>0.7</td>
<td>9.5</td>
</tr>
<tr>
<td>Total</td>
<td>32.2</td>
<td>22.1</td>
<td>16.1</td>
<td>14.5</td>
<td>5.6</td>
<td>9.5</td>
<td>100.0</td>
</tr>
<tr>
<td>$x^2$</td>
<td>206.9</td>
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<td>.00005</td>
<td></td>
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<tr>
<td>Cramer's V</td>
<td>.37</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.
Table 10.—Chi-Square ($x^2$) Analysis of High Point SDS Code
by Person Influencing Most in Occupational Choice (PIM) and
First Letter of the Daydream Code
(in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIM (n = 298)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one/self</td>
<td>9.1</td>
<td>7.1</td>
<td>4.0</td>
<td>2.0</td>
<td>1.7</td>
<td>3.4</td>
<td>27.2</td>
</tr>
<tr>
<td>Father</td>
<td>5.7</td>
<td>2.7</td>
<td>2.0</td>
<td>5.7</td>
<td>0.3</td>
<td>1.0</td>
<td>17.4</td>
</tr>
<tr>
<td>Mother</td>
<td>5.7</td>
<td>3.4</td>
<td>4.0</td>
<td>2.0</td>
<td>0.0</td>
<td>2.0</td>
<td>17.1</td>
</tr>
<tr>
<td>Teacher</td>
<td>3.4</td>
<td>5.7</td>
<td>2.7</td>
<td>2.0</td>
<td>2.0</td>
<td>1.0</td>
<td>16.8</td>
</tr>
<tr>
<td>People in field</td>
<td>3.4</td>
<td>2.0</td>
<td>2.3</td>
<td>1.3</td>
<td>0.0</td>
<td>1.0</td>
<td>10.1</td>
</tr>
<tr>
<td>Others</td>
<td>4.4</td>
<td>1.7</td>
<td>2.3</td>
<td>1.3</td>
<td>1.7</td>
<td>1.0</td>
<td>11.4</td>
</tr>
<tr>
<td>Total</td>
<td>31.7</td>
<td>22.6</td>
<td>16.3</td>
<td>14.3</td>
<td>5.7</td>
<td>9.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 44.4$ 25df $p = .009$ Cramer’s V = 0.17

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
</table>
| Daydream code  
(n = 296) |
| S | 22.0 | 2.7 | 3.0 | 0.0 | 0.3 | 0.7 | 28.7  |
| A | 2.4 | 17.9 | 1.4 | 2.0 | 2.0 | 1.0 | 26.7  |
| I | 4.7 | 0.7 | 10.1 | 1.7 | 0.3 | 1.0 | 18.6  |
| E | 1.7 | 1.0 | 0.7 | 8.4 | 1.4 | 2.4 | 15.5  |
| R | 0.3 | 0.0 | 0.3 | 0.7 | 1.4 | 0.0 | 2.7   |
| C | 1.4 | 0.3 | 0.0 | 0.7 | 1.4 | 0.0 | 4.7   |
| Total | 32.5 | 22.6 | 15.5 | 14.2 | 5.4 | 9.8 | 100.0 |

$x^2 = 414.4$ 25df $p = .00005$ Cramer’s V = 0.53

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.
Table 11.—Chi-Square ($x^2$) Analysis of High Point SDS Code by First and Second Most Important Factors Influencing Occupational Choice (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 (n = 296)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helping others</td>
<td>4.4</td>
<td>0.3</td>
<td>1.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>6.4</td>
</tr>
<tr>
<td>Challenging</td>
<td>3.0</td>
<td>3.4</td>
<td>1.0</td>
<td>1.7</td>
<td>0.7</td>
<td>0.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Respect</td>
<td>2.0</td>
<td>0.7</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>12.5</td>
<td>13.2</td>
<td>8.4</td>
<td>5.7</td>
<td>3.4</td>
<td>4.7</td>
<td>47.9</td>
</tr>
<tr>
<td>Salary</td>
<td>5.7</td>
<td>4.1</td>
<td>3.7</td>
<td>4.4</td>
<td>0.7</td>
<td>2.7</td>
<td>21.3</td>
</tr>
<tr>
<td>Environment</td>
<td>3.7</td>
<td>1.0</td>
<td>1.4</td>
<td>2.4</td>
<td>0.7</td>
<td>1.7</td>
<td>10.9</td>
</tr>
<tr>
<td>Total</td>
<td>31.3</td>
<td>22.7</td>
<td>16.2</td>
<td>14.5</td>
<td>5.5</td>
<td>9.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 54.8$   25df   $p = .004$   Cramer’s $V = 0.19$

<table>
<thead>
<tr>
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<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 2 (n = 292)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Helping others</td>
<td>4.8</td>
<td>0.3</td>
<td>1.0</td>
<td>0.7</td>
<td>0.3</td>
<td>0.7</td>
<td>7.9</td>
</tr>
<tr>
<td>Challenging</td>
<td>5.1</td>
<td>4.5</td>
<td>1.4</td>
<td>2.7</td>
<td>0.7</td>
<td>0.3</td>
<td>14.7</td>
</tr>
<tr>
<td>Respect</td>
<td>1.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>7.2</td>
<td>4.5</td>
<td>3.8</td>
<td>2.1</td>
<td>0.3</td>
<td>1.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Salary</td>
<td>8.9</td>
<td>10.6</td>
<td>8.9</td>
<td>8.2</td>
<td>4.1</td>
<td>6.2</td>
<td>46.9</td>
</tr>
<tr>
<td>Environment</td>
<td>3.8</td>
<td>1.7</td>
<td>1.0</td>
<td>1.0</td>
<td>0.4</td>
<td>1.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Total</td>
<td>31.2</td>
<td>21.9</td>
<td>16.4</td>
<td>14.7</td>
<td>5.8</td>
<td>9.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 51.3$   25df   $p = .009$   Cramer’s $V = 0.19$

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.
Table 12.—Chi-Square ($x^2$) Analysis of High Point SDS Code by Involvement in Religion and If Ever Considered Nursing for a Career Choice (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involved in religion (n = 304)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very</td>
<td>3.9</td>
<td>3.0</td>
<td>1.6</td>
<td>1.0</td>
<td>0.3</td>
<td>1.4</td>
<td>11.2</td>
</tr>
<tr>
<td>Moderately</td>
<td>13.8</td>
<td>5.9</td>
<td>5.9</td>
<td>3.3</td>
<td>1.6</td>
<td>2.3</td>
<td>32.8</td>
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<tr>
<td>Minimally</td>
<td>6.6</td>
<td>3.9</td>
<td>4.3</td>
<td>4.6</td>
<td>3.0</td>
<td>3.6</td>
<td>26.0</td>
</tr>
<tr>
<td>None</td>
<td>7.9</td>
<td>9.2</td>
<td>4.3</td>
<td>5.6</td>
<td>0.7</td>
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<td>16.1</td>
<td>14.5</td>
<td>5.6</td>
<td>9.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 25.2$ 15df $p = .05$ Cramer's V = 0.17

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever considered nursing (n = 304)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15.8</td>
<td>3.6</td>
<td>5.9</td>
<td>1.3</td>
<td>0.3</td>
<td>2.4</td>
<td>29.3</td>
</tr>
<tr>
<td>No</td>
<td>16.4</td>
<td>18.4</td>
<td>10.2</td>
<td>13.2</td>
<td>5.3</td>
<td>7.2</td>
<td>70.7</td>
</tr>
<tr>
<td>Total</td>
<td>32.2</td>
<td>22.0</td>
<td>16.1</td>
<td>14.5</td>
<td>5.6</td>
<td>9.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 38.6$ 5df $p = .00005$ Cramer's V = 0.36

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, C = Conventional.

Vocational Personality Code Findings

The high point letters of the Self-Directed Search (SDS) vocational personality codes have been determined by 303 (97%) of the 312 subjects. Thirteen of thirty different combinations of high point two letter codes that occur are reported in table 8. The top five two letter codes contain Social (S) as one of letters. Since sixty-four percent (193) of the respondents are women, this would be
expected. Thirty-nine percent of the women are Social and 20% are Artistic (A). Thirty-six percent (110) of the respondents are men and of these, Artistic (25.2%) and Investigative (I) (20.7%) codes are highest. Social and Enterprising (E) are next highest with 19.8% each.

The single high point letter code findings are crosstabulated and reported in tables 9 through 12 with \((p \leq .05)\) significant demographic-biographic variables. Significant variables are gender, annual family income, major, the person influencing the student the most in an occupational choice, the first two factors considered most important in an occupational choice, the amount of involvement in religion, whether or not the student has ever considered nursing for a career, and the first letter of the daydream code. The daydream code first letter is the aspired-for occupation's first code letter using Holland's classification.

The tables include the Cramer's V values. Cramer's V is a symmetric measure of the strength of association between nominal variables, used with chi-square analysis.\(^1\) Its value is between 0 and 1. When no relationship occurs and the two variables are independent, the value of Cramer's C is 0. A perfect association is 1. For the purposes of this study, an association of moderate strength is between .30 and .60. Gender, major, daydream code first
letter, and if nursing has ever been considered for a career fall within this range.

Of the original group of significant variables, only gender and if nursing has ever been considered for a career do not require combining categories to meet the necessary expected frequency of numbers within cells for chi-square analysis. Therefore, the SDS categories have been collapsed into SIA and ERC, based on Holland's Hexagonal model of adjacent types having more characteristics in common and on the research which has identified SIA as the most common code for the registered nurse. Additionally, the other variables are combined as follows: annual family income into (1) $0 to $24,999 and (2) $25,000 plus; person influencing the most into (1) self, (2) parents, and (3) others; factors influencing the most in occupational choice into (1) Helping-Challenging-Respect and (2) Satisfaction-Salary-Environ; involvement in religion into (1) Very-Moderate and (2) Minimally-None; majors into (1) None, (2) Health (including Nursing and Non-nursing Health), (3) Humanities-Sciences, (4) Business, and (5) Arts; and daydream code into (1) SIA and (2) ERC.

Combining categories and applying Bonferroni's or Yates' corrections to the alpha level has resulted in religious involvement, daydream code, and major remaining statistically significant along with gender and if nursing has ever been considered for a career (table 13).
Table 13.—Results of Chi-Square Analysis of SDS High Point Code with Demographic-Biographic Variables Before and/or After Categories Combined

<table>
<thead>
<tr>
<th>Variable</th>
<th>$x^2$</th>
<th>$p$</th>
<th>Categories Combined</th>
<th>Unadjusted $p$ Value</th>
<th>Adjusted $p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (n = 311)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>29.9</td>
<td>.00005*</td>
<td>No</td>
<td>.00005*</td>
<td>.0008*</td>
</tr>
<tr>
<td>Race</td>
<td>13.1</td>
<td>.2171</td>
<td>Yes</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>31.1</td>
<td>.009</td>
<td>Yes</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>HSGPA</td>
<td>21.1</td>
<td>.13</td>
<td>Yes</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>High school attended</td>
<td>9.1</td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAT category</td>
<td>50.6</td>
<td>.12</td>
<td>Yes</td>
<td>.98</td>
<td></td>
</tr>
<tr>
<td>Primary breadwinner</td>
<td>20.2</td>
<td>.16</td>
<td>Yes</td>
<td>.84</td>
<td></td>
</tr>
<tr>
<td>Occupation of primary breadwinner</td>
<td>41.5</td>
<td>.41</td>
<td>Yes</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>Involvement in religion</td>
<td>25.2</td>
<td>.05*</td>
<td>Yes</td>
<td>.01*</td>
<td>.02*</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td>42.6</td>
<td>.57</td>
<td>Yes</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Ever considered nursing</td>
<td>38.6</td>
<td>.00005*</td>
<td>No</td>
<td>.0001*</td>
<td>.0001*</td>
</tr>
<tr>
<td>Daydream code</td>
<td>414.4</td>
<td>.00005*</td>
<td>Yes</td>
<td>.00005*</td>
<td>.00005*</td>
</tr>
<tr>
<td>Factor 1</td>
<td>54.8</td>
<td>.004*</td>
<td>Yes</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Factor 2</td>
<td>51.3</td>
<td>.009*</td>
<td>Yes</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td>Person influencing most</td>
<td>44.4</td>
<td>.009*</td>
<td>Yes</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Declared major</td>
<td>206.9</td>
<td>.00005*</td>
<td>Yes</td>
<td>.00005*</td>
<td>.0008*</td>
</tr>
</tbody>
</table>

* $p = \leq .05$
Bonferroni's inequality adjustment gives a region of greater probability than asked for when the chance for Type 1 error is increased due to multiple testing.\textsuperscript{3} Yates' correction is automatically applied to the chi-square statistic with SPSS\textsuperscript{X} to make the significance level more demanding with tables with two rows and two columns.\textsuperscript{4}

In analyzing gender and SDS code, seventy-seven percent (76 of 98) of students with Social codes are women, and the Social vocational type is the largest single category for all women respondents. The implied relationship between women, Social characteristics, especially interpersonal skills, and a nursing career choice is discussed in Chapter V.

In all SDS categories except R, the greatest number of students for that code have matching first letter codes with their daydream first letter codes, supporting Holland's theory that congruence frequently occurs between the dreamed-of career and the high point code of the SDS.

Fifty-five percent (56) of the Social students indicate a high to moderate involvement in religion. In contrast, the Artistic students tend to be less or not at all involved in religion (60\%). Enterprising (70\%) and Realistic (64\%) students are similarly less or not at all involved. Investigative students are moderately to minimally involved (64\%), whereas Conventional students are...
distributed fairly evenly among the degrees of involvement, with most (38%) minimally involved.

The variable, if nursing ever considered for a career, is significantly associated (p ≤ .05) with the SDS high point code letter. Social students predominate as would be expected since more women consider nursing for a career (table 12).

When the daydream code high point letter combined categories (SIA and ERC) are analyzed with the chi-square statistic, the variables that are significant (p ≤ .05) are if nursing ever considered for a career (adjusted p = .006) and declared major (adjusted p = .0008).

Declared Major and Predominant SDS Code

Table 14 presents the predominant high point letter of the SDS code for each major group and the next most frequent code letter. Social is the high point letter for nursing majors (69%), supporting the first hypothesis. It is also the high point letter for non-nursing health majors (53.3%). Additionally, it is high for the humanities and undeclared majors and is the second high point letter for the Sciences and Arts majors. Although the association between SDS code high point letter and declared major is significant (adjusted p = .0008), the strength of the association using Cramer’s V is moderate.

Table 15 provides similar data as in Table 14 except the information relates to declared major and the
Table 14.—Frequency of Declared Major and Two SDS High Point Code Letters (in Percentages)

<table>
<thead>
<tr>
<th>Major</th>
<th>Percent-</th>
<th>Most Fre-</th>
<th>Second Fre-</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n = 304)</td>
<td>n</td>
<td>age of</td>
<td>quent High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total n</td>
<td>Point Letter</td>
</tr>
<tr>
<td>Nursing</td>
<td>32</td>
<td>10.5</td>
<td>S(68.8)</td>
</tr>
<tr>
<td>Health</td>
<td>30</td>
<td>9.9</td>
<td>S(53.3)</td>
</tr>
<tr>
<td>Business-related</td>
<td>50</td>
<td>16.4</td>
<td>E(38.0)</td>
</tr>
<tr>
<td>Arts</td>
<td>60</td>
<td>19.7</td>
<td>A(60.0)</td>
</tr>
<tr>
<td>Sciences</td>
<td>42</td>
<td>13.8</td>
<td>I(38.1)</td>
</tr>
<tr>
<td>Humanities</td>
<td>29</td>
<td>9.5</td>
<td>S(34.5)</td>
</tr>
<tr>
<td>Undeclared</td>
<td>61</td>
<td>20.1</td>
<td>S(26.2)</td>
</tr>
</tbody>
</table>

Chi-Square Analysis: SDS high point code letter and major
\[ x^2 = 206.9 \] adjusted \( p = .0008 \) Cramer's V = .37

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.

Table 15.—Frequency of Declared Major and Two SDS High Point Code Letters of Daydream Code (in Percentages)

<table>
<thead>
<tr>
<th>Major</th>
<th>Percent-</th>
<th>Most Fre-</th>
<th>Second Fre-</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n = 298)</td>
<td>n</td>
<td>age of</td>
<td>quent High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total n</td>
<td>Point Letter</td>
</tr>
<tr>
<td>Nursing</td>
<td>32</td>
<td>10.7</td>
<td>S(90.6)</td>
</tr>
<tr>
<td>Health</td>
<td>30</td>
<td>10.1</td>
<td>S(56.7)</td>
</tr>
<tr>
<td>Business-related</td>
<td>49</td>
<td>16.4</td>
<td>E(42.9)</td>
</tr>
<tr>
<td>Arts</td>
<td>61</td>
<td>20.5</td>
<td>A(77.0)</td>
</tr>
<tr>
<td>Sciences</td>
<td>41</td>
<td>13.8</td>
<td>I(53.7)</td>
</tr>
<tr>
<td>Humanities</td>
<td>28</td>
<td>9.4</td>
<td>S(39.3)</td>
</tr>
<tr>
<td>Undeclared</td>
<td>57</td>
<td>19.1</td>
<td>A(35.1)</td>
</tr>
</tbody>
</table>

Chi-Square Analysis: Daydream high point code letter and major
\[ x^2 = 341.2 \] adjusted \( p = .0008 \) Cramer's V = .48

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high point code letter of the daydream code, also gained from the SDS instrument. Again, the association is significant between the two variables (adjusted $p = .0008$). Cramer’s $V$ indicates moderate strength of association.

The first hypothesis is supported. The predominant SDS high point code letter for the nursing majors is Social, as anticipated from the literature review.

**Hypothesis 2**

Hypothesis 2: There will be a significant difference in predominant vocational personality profile as measured by Holland’s SDS between three groups of students:

1. Students who have selected nursing as their occupational choice (major);
2. Students who are uncommitted to an occupational choice (major); and
3. Students who are committed to an occupational choice (major) other than nursing.

There is a significant difference between the three groups in predominant vocational personality profile as measured by the high point letter code of Holland’s SDS. Data are provided in table 16. Chi-square analysis indicates a significant difference in the groups (adjusted $p = .008$). Cramer’s $V$ measure of the strength of the association is weak (.23).
Table 16.—Chi-Square ($x^2$) Analysis of Groups and SDS High Point Code Letter (in Percentages)

<table>
<thead>
<tr>
<th>Groups (n = 304)</th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>5.3</td>
<td>4.9</td>
<td>2.1</td>
<td>3.6</td>
<td>2.3</td>
<td>2.0</td>
<td>20.2</td>
</tr>
<tr>
<td>Nursing</td>
<td>7.2</td>
<td>0.7</td>
<td>2.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
<td>10.5</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>19.7</td>
<td>16.4</td>
<td>12.1</td>
<td>10.5</td>
<td>3.3</td>
<td>7.2</td>
<td>69.3</td>
</tr>
<tr>
<td>Total</td>
<td>32.2</td>
<td>22.0</td>
<td>16.2</td>
<td>14.5</td>
<td>5.6</td>
<td>9.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 31.7$ 2df (after categories combined)
adjusted $p = .05$ (after SDS categories combined into SIA and ERC)
Cramer's $V = 0.19$

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.

Additionally, this contingency table has 22% of the cells with expected frequencies below 5, so it has been collapsed into a three (groups) by two (SIA and ERC) table. The chi-square ($x^2$) statistic remains significant, even after Bonferroni's correction is applied (unadjusted $p = .003$; adjusted $p = .05$).

In examining the data more closely, 69% of the nursing majors are Social types, 19% are Investigative, and 6% are Artistic. Undeclared majors are spread across all the types fairly evenly, but the highest percent (26%) are Social with Artistic next highest (24%). Declared non-nursing majors also are most frequent in these two categories; Social (28%) and Artistic (24%). When groups are broken down into majors, clearly the higher frequency
of Social non-nursing health majors contributes to the overall higher frequency of Social types.

Findings similar to those in table 16 are shown in table 17 for groups and the high point letter of the daydream code. However, twenty-nine (90.6%) of the nursing majors are Social types. The rest are either I or A, in keeping with the findings of Holland.

Table 17.--Chi-Square ($x^2$) Analysis of Groups and Daydream High Point Code Letter (in Percentages)

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups (n = 298)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>3.4</td>
<td>6.7</td>
<td>3.4</td>
<td>4.4</td>
<td>1.0</td>
<td>0.3</td>
<td>19.2</td>
</tr>
<tr>
<td>Nursing</td>
<td>9.7</td>
<td>0.3</td>
<td>0.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>10.7</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>15.4</td>
<td>19.8</td>
<td>14.4</td>
<td>11.4</td>
<td>1.7</td>
<td>7.4</td>
<td>70.1</td>
</tr>
<tr>
<td>Total</td>
<td>28.5</td>
<td>26.8</td>
<td>18.5</td>
<td>15.8</td>
<td>2.7</td>
<td>7.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 76.6 \quad 2df$ (after categories combined)
adjusted $p = .02$ (after daydream categories combined into SIA and ERC)
Cramer’s $V = 0.21$

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.

Summary

Thus, for Research Question A, Hypothesis 1 is supported. Freshmen students in the nursing major do have predominantly Social (S) vocational personality types using Holland’s Self-Directed Search (SDS) instrument. The demographic-biographic variables of gender, involvement in
religion, if nursing has ever been considered for a career, the high point letter of the daydream code using Holland’s classification, and declared major are significantly related to the SDS high point letter. The SDS and daydream code high point letters are expected to be congruent due to conceptual overlap.

Hypothesis 2 is supported. A significant difference in SDS high point letter code exists between the three groups (undeclared majors, nursing majors, and non-nursing majors). Similar findings are true for the daydream code high point letter and the same groups. However, the strengths of the associations are weak.

Research Question B

Research Question B: In what ways, relative to demographic and biographic variables, are the three groups (nursing majors, non-nursing majors, undeclared majors) alike or different?

Hypothesis 3

Hypothesis 3: There will be differences in the demographic and biographic data between groups.

The findings related to the demographic and biographic variables and the three groups, as well as the majors, follow.
Demographic and Biographic Differences in Groups

Tables 18 through 21 present the chi-square analyses of three groups (undeclared majors, nursing majors, and non-nursing majors) and selected demographic and biographic variables which differ significantly or were significant after applied corrections for multiple testing and low cell expected frequencies. The SDS and daydream high point letter codes have been described in the preceding sections.

Table 18.—Chi-Square ($x^2$) Analysis of Groups with Race and Gender (in Percentages)

<table>
<thead>
<tr>
<th>Major (n=311)</th>
<th>White</th>
<th>Black</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>18.0</td>
<td>0.9</td>
<td>1.0</td>
<td>19.9</td>
</tr>
<tr>
<td>Nursing</td>
<td>7.7</td>
<td>2.6</td>
<td>0.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>53.1</td>
<td>13.2</td>
<td>3.2</td>
<td>69.5</td>
</tr>
<tr>
<td>Total</td>
<td>78.8</td>
<td>16.7</td>
<td>4.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 8.6$  
2df (after categories combined)  
adjusted p (after categories combined into "white" and "other") = .06 (ns)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>10.3</td>
<td>9.9</td>
<td>20.2</td>
</tr>
<tr>
<td>Nursing</td>
<td>0.3</td>
<td>10.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>26.3</td>
<td>42.9</td>
<td>69.2</td>
</tr>
<tr>
<td>Total</td>
<td>36.9</td>
<td>63.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 21.6$  
2df  
adjusted p = .0008  
Cramer's $V = .26$

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<table>
<thead>
<tr>
<th>People Influencing Most</th>
<th>No one</th>
<th>Father</th>
<th>Mother</th>
<th>Teacher</th>
<th>People in Field</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major (n= 306)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>6.2</td>
<td>3.9</td>
<td>1.6</td>
<td>3.3</td>
<td>2.6</td>
<td>2.6</td>
<td>20.3</td>
</tr>
<tr>
<td>Nursing</td>
<td>2.6</td>
<td>0.7</td>
<td>2.3</td>
<td>0.3</td>
<td>2.3</td>
<td>2.0</td>
<td>10.1</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>18.3</td>
<td>12.4</td>
<td>13.4</td>
<td>13.7</td>
<td>4.9</td>
<td>6.9</td>
<td>69.6</td>
</tr>
<tr>
<td>Total</td>
<td>27.1</td>
<td>17.0</td>
<td>17.3</td>
<td>17.3</td>
<td>9.8</td>
<td>11.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[ x^2 = 20.7 \] 10df adjusted p = 0.3 (ns)

<table>
<thead>
<tr>
<th>Involvement in Religion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Major (n = 312)</td>
</tr>
<tr>
<td>Undeclared</td>
</tr>
<tr>
<td>Nursing</td>
</tr>
<tr>
<td>Non-nursing</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

\[ x^2 = 10.9 \] 2df adjusted p (after categories combined into "yes" and "no" = 0.53 (ns)
Table 20.—Chi-Square Analysis ($x^2$) of Groups with First and Second Most Important Factors Influencing Occupational Choice (in Percentages)

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Helping</td>
<td>(1) Helping</td>
</tr>
<tr>
<td>(2) Challenge</td>
<td>(2) Challenge</td>
</tr>
<tr>
<td>(3) Respect</td>
<td>(3) Respect</td>
</tr>
<tr>
<td>(4) Satisfaction</td>
<td>(4) Satisfaction</td>
</tr>
<tr>
<td>(5) Salary</td>
<td>(5) Salary</td>
</tr>
<tr>
<td>(6) Environment</td>
<td>(6) Environment</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major (n = 304)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>1.3</td>
<td>1.3</td>
<td>0.3</td>
<td>10.5</td>
<td>4.3</td>
<td>2.3</td>
<td>20.1</td>
</tr>
<tr>
<td>Nursing</td>
<td>2.6</td>
<td>1.3</td>
<td>0.3</td>
<td>3.0</td>
<td>1.6</td>
<td>1.3</td>
<td>10.2</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>2.3</td>
<td>8.2</td>
<td>2.6</td>
<td>33.6</td>
<td>15.8</td>
<td>7.2</td>
<td>69.7</td>
</tr>
<tr>
<td>Total</td>
<td>6.2</td>
<td>10.9</td>
<td>3.3</td>
<td>47.0</td>
<td>21.7</td>
<td>10.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 32.5$, 2df (after categories combined),
adjusted $p$ (after categories combined into A (1, 2, 3) and B (4, 5, 6) = .15(ns)

<table>
<thead>
<tr>
<th>Major (n = 299)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>0.6</td>
<td>1.0</td>
<td>0.0</td>
<td>4.7</td>
<td>11.0</td>
<td>2.3</td>
<td>19.7</td>
</tr>
<tr>
<td>Nursing</td>
<td>0.8</td>
<td>2.3</td>
<td>0.7</td>
<td>2.7</td>
<td>2.7</td>
<td>0.7</td>
<td>9.7</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>6.7</td>
<td>11.0</td>
<td>1.3</td>
<td>12.0</td>
<td>32.8</td>
<td>6.7</td>
<td>70.6</td>
</tr>
<tr>
<td>Total</td>
<td>7.9</td>
<td>14.4</td>
<td>2.0</td>
<td>19.4</td>
<td>46.5</td>
<td>9.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 20.4$, 2df (after categories combined),
adjusted $p$ (after categories combined into A (1, 2, 3) and B (4, 5, 6) = .48(ns)
Table 21.—Chi-Square ($x^2$) Analysis of Groups with Total SAT Score Categories and If Ever Considered Nursing for a Career (in Percentages)

<table>
<thead>
<tr>
<th>SAT Category</th>
<th>(600-899)</th>
<th>(900-1199)</th>
<th>(1200-1499)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>4.0</td>
<td>16.9</td>
<td>0.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Nursing</td>
<td>5.2</td>
<td>4.8</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>22.1</td>
<td>43.0</td>
<td>3.6</td>
<td>68.7</td>
</tr>
<tr>
<td>Total</td>
<td>31.3</td>
<td>64.7</td>
<td>4.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 11.3$ 2df (after categories combined)
adjusted p (after categories combined into 600-1099 and 1100-1499) = .62 (ns)

<table>
<thead>
<tr>
<th>Ever Considered Nursing</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>5.4</td>
<td>14.7</td>
<td>20.1</td>
</tr>
<tr>
<td>Nursing</td>
<td>10.3</td>
<td>0.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>13.5</td>
<td>55.8</td>
<td>69.3</td>
</tr>
<tr>
<td>Total</td>
<td>29.2</td>
<td>70.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 83.5$ 2df
adjusted p = .0008
Cramer’s V = .52

Gender and if nursing ever considered for a career are variables with significant differences between groups at the .05 level using chi-square analysis. Cramer’s V indicates associations of weak and moderate strength (.26 and .52) respectively. Eighteen percent of the undeclared majors and thirteen percent of the health non-nursing people have considered nursing for a career, as well as the nursing majors.
Race, person influencing most, involvement in religion, the first and second characteristics considered most important in a career, SAT category, family income, employment status of the student, primary breadwinner, occupation of primary breadwinner, high school attended, and religious affiliation are not statistically significant variables with groups.

Table 22 provides a more in-depth examination of differences between majors according to variables which are statistically significant ($p \leq .05$). Race, gender, and if nursing has ever been considered for a career are statistically significant with major using chi-square analysis after the alpha adjustment for multiple tests. High point letters of the SDS and daydream codes are also significant, but have been discussed earlier. High school grade point average, occupation of the primary breadwinner, the person who influences the occupational choice most, SAT category, high school attended, primary breadwinner, and religious affiliation are not statistically significant variables with major.

The percentages among the majors according to race show that most of the black students are business and public administration majors, with the next largest group as nursing majors. Forty-three percent of the students in the "other" category are science majors; 21% are undeclared. These students are primarily of Asian descent.
Table 22.—Chi-Square ($x^2$) Analysis of Majors with Race, Gender, and If Ever Considered Nursing for a Career (in Percentages)

<table>
<thead>
<tr>
<th>Major (n = 311)</th>
<th>White</th>
<th>Race</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>18.0</td>
<td>1.0</td>
<td>1.0</td>
<td>19.9</td>
</tr>
<tr>
<td>Health</td>
<td>7.7</td>
<td>1.6</td>
<td>0.3</td>
<td>9.6</td>
</tr>
<tr>
<td>Nursing</td>
<td>7.7</td>
<td>2.6</td>
<td>0.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Business</td>
<td>11.6</td>
<td>5.1</td>
<td>0.0</td>
<td>16.7</td>
</tr>
<tr>
<td>Arts</td>
<td>17.7</td>
<td>2.3</td>
<td>0.3</td>
<td>20.3</td>
</tr>
<tr>
<td>Sciences</td>
<td>9.3</td>
<td>2.3</td>
<td>1.9</td>
<td>13.5</td>
</tr>
<tr>
<td>Humanities</td>
<td>6.8</td>
<td>1.9</td>
<td>0.6</td>
<td>9.3</td>
</tr>
<tr>
<td>Total</td>
<td>78.8</td>
<td>16.7</td>
<td>4.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$x^2 = 13.6$ 6df (after categories combined)  
Cramer's $V = .21$  
adjusted $p$ (after categories combined into "white" and "other") = .008

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Ever Considered Nursing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Major (n = 312)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>10.3</td>
<td>9.9</td>
<td>20.2</td>
<td>5.4</td>
<td>14.7</td>
</tr>
<tr>
<td>Health</td>
<td>2.6</td>
<td>7.1</td>
<td>9.6</td>
<td>3.8</td>
<td>5.8</td>
</tr>
<tr>
<td>Nursing</td>
<td>0.3</td>
<td>10.3</td>
<td>10.6</td>
<td>10.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Business</td>
<td>4.5</td>
<td>12.2</td>
<td>16.7</td>
<td>1.9</td>
<td>14.7</td>
</tr>
<tr>
<td>Arts</td>
<td>9.0</td>
<td>11.2</td>
<td>20.2</td>
<td>3.5</td>
<td>16.7</td>
</tr>
<tr>
<td>Sciences</td>
<td>5.8</td>
<td>7.7</td>
<td>13.5</td>
<td>2.9</td>
<td>10.6</td>
</tr>
<tr>
<td>Humanities</td>
<td>4.5</td>
<td>4.8</td>
<td>9.3</td>
<td>1.3</td>
<td>8.0</td>
</tr>
<tr>
<td>Total</td>
<td>36.9</td>
<td>63.1</td>
<td>100.0</td>
<td>29.2</td>
<td>70.8</td>
</tr>
</tbody>
</table>

$x^2 = 28.9$ 6df (after categories combined)  
adjusted $p = .002$  
Cramer's $V = .30$

$x^2 = 91.8$ 6df adjusted $p = .0008$  
Cramer's $V = .54$
Most students in all majors are white due to the nature of the sample which reflects the university as a whole. Although male students are only 37% of the total, most of them are either undeclared (27.8%) or art (24.3%) majors. The women students are fairly evenly distributed across the majors. However, ninety-seven percent (32 of 33) of the nursing majors are women, and seventy-three percent (22 of 30) of the non-nursing health majors are women, also. Undeclared majors are almost equally divided between men (50.8%) and women (49.2%).

The variable, if ever considered nursing for a career, is significantly associated with major, as would be anticipated from the data on groups. Most students in all majors except nursing have not ever considered nursing for a career. The strength of the relationship between major and if nursing has been considered for a career is moderate.

Although involvement in religion is not statistically significant after the alpha adjustment, it is important theoretically. Forty-eight percent of those very involved in their religions are either nursing majors or art majors, higher percentages than for any other group of majors. Only 6.3% of those not at all involved in religion are nursing majors. The largest percentage of those not at all involved in religion are undeclared majors, with art majors being the next highest. Business and undeclared
majors comprise the largest group minimally involved in religion.

Another variable not statistically significant after alpha correction is high school grade point average (HSGPA), yet this variable is theoretically important to evaluate. The highest percentage of students with an A high school grade point average (30%) is in non-nursing health careers. The highest percentage of students with B averages is undeclared majors (21%), with business (19%) and art (18%) majors close behind. Art majors comprise the greatest percentage of students with C (27%) or D (80%) averages. Nursing students tend to have either B (64%) or C (24%) averages, whereas students choosing other health fields tend toward B (60%) or A (27%) averages. Business, art, science, and humanities students have B averages primarily (65%, 52%, 54%, 52% respectively), with C averages next in frequency (25%, 38%, 32%, 31% respectively).

Although not a statistically significant variable after alpha adjustment, person influencing the student most in occupational choice offers some interesting information that could be useful for marketing. Health majors tend to be most influenced by themselves or by no one in particular. Nursing students are almost equally influenced by themselves (26%), their mothers (23%), and people in the field (23%).
The highest percentage (44.4%) of those listing helping others as the most important factor in a career choice are nursing students. The undeclared majors (16.7%) and non-nursing health majors (16.7%) are next in choosing this factor as most important. More nursing students (29%) list satisfaction as the most important factor in a career with helping others listed by 26%. Satisfaction and salary are the main factors listed by other health and non-nursing majors.

The choice of a challenging, independent career is listed primarily by art majors (33%). Of those students choosing respect as the most important factor, science majors are the largest group (40%). Satisfaction is chosen as the most important factor by 143 students (47%). Salary is the next factor listed as most important by 66 students (22%), with business majors comprising 27% of the group. Working conditions and work mates are also chosen as most important by more business majors (21%).

Summary

The third hypothesis is supported. There are statistically significant differences in groups according to major in relation to the selected demographic and biographic variables of race, gender, if nursing has ever been considered for a career, and the high point code letters of both the SDS and the daydream codes.
Reasons Students Had or Had Not Considered Nursing for a Career

Of the 90 students who have considered nursing for a career, 70% list reasons as an interest in helping others, liking people, wanting to feel needed, or having a past experience as a nursing aid or a hospital volunteer. Thirty percent perceive nursing as an interesting, challenging, and rewarding profession, or they have considered it because they have friends or relatives who are nurses.

Of those who have not considered nursing for a career (222), the following reasons are given: 13% think nursing has a poor image; nurses are mean, rude or hurtful; the working conditions are poor; nursing is a career just for women; or they fear they will "catch" AIDS. Twenty-nine percent cannot bear the sight of blood, hate needles dislike the smell of the hospital or the environment, or get upset around sick people. The largest group, 55%, have never thought about nursing for a career, are not interested in it, dislike anything to do with medicine, feel the education required is too expensive, or feel the degree requires too much education.

In light of the literature suggestion that a name change might make the profession more appealing, the students were asked if nursing had a different name, would they be interested in it as a career. Twenty-nine (9%) indicate they would be interested; 222 (71%) would not; 22 (7%) are unsure; and 39 (13%) state not applicable.
those giving a reason for the "yes" response, most (26 of 29) would like nursing regardless of the name since they have decided to become nurses. The others (3 of 29) think a more professional name would give nursing greater respect and attract more men.

For the 199 who believe a name change would not increase their interest, most feel the name clearly describes the profession and the activities carried out in it. Six feel the name makes no difference; it is still the same career regardless of the name.

Research Question C

Research Question C: How are selected professional nursing functions and characteristics perceived by the three groups of freshmen students?

Hypothesis 4

Hypothesis 4: There will be a difference in the perceptions of selected professional nursing functions and characteristics between the three groups.

A description of the data from the Professional Nursing Functions and Characteristics Interests Inventory (PNFCII) relating to mean total scores, mean scores of categories, items with positive and negative ratings, significant demographic and biographic variables, and differences in groups on the instrument scores follows.
Description of Data from the PNFCII

Table 23 presents the summed scale scores of the students who completed the PNFCII. Each question in the instrument is scored from 1 (greatly dislike) to 5 (greatly like). Table 24 presents the means for subscale categories of functions and characteristics. The categories considered positive aspects of professional nursing practice by the sample are E, G, H, I, and K. These categories of functions and characteristics are concerned with the intellectual and interpersonal aspects of nursing practice. Some functions and characteristics (table 25) are considered more negatively, and are largely related to the contextual or situational aspects of nursing practice, such as shift work. The physical care of patients is considered a more negative function of nursing.

Table 23.—Frequencies of Scores of the Professional Nursing Functions and Characteristics Interest Inventory (in Percentages)

<table>
<thead>
<tr>
<th>Scale Evaluation</th>
<th>Range of Scores</th>
<th>Frequency (n = 310)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatly dislike</td>
<td>0–96</td>
<td>2</td>
</tr>
<tr>
<td>Dislike</td>
<td>97–139</td>
<td>9</td>
</tr>
<tr>
<td>Neutral</td>
<td>140–182</td>
<td>34</td>
</tr>
<tr>
<td>Like</td>
<td>183–225</td>
<td>43</td>
</tr>
<tr>
<td>Greatly like</td>
<td>226–270</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

m = 184.5
Table 24.—Scores for PNFCII Categories

<table>
<thead>
<tr>
<th>Category (n = 310)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Application of theories and knowledge from other disciplines to nursing practice</td>
<td>3.3</td>
</tr>
<tr>
<td>B: Assistance of clients, families, groups and communities in achieving maximum levels of development and health potential</td>
<td>3.5</td>
</tr>
<tr>
<td>C: Use of the problem-solving process or scientific method in providing care in a variety of health care settings</td>
<td>3.1</td>
</tr>
<tr>
<td>D: Uses systematic problem-solving to gather data in new or unique situations</td>
<td>2.9</td>
</tr>
<tr>
<td>E: Demonstrates interest in continuing professional growth and development after graduation</td>
<td>3.6</td>
</tr>
<tr>
<td>F: Participates effectively in professional and community organizations</td>
<td>3.5</td>
</tr>
<tr>
<td>G: Integrates professional values into practice and demonstrates knowledge of professional issues</td>
<td>3.7</td>
</tr>
<tr>
<td>H: Practices in a manner that reflects professional integrity</td>
<td>3.9</td>
</tr>
<tr>
<td>I: Applies nursing theory and nursing research findings in practice</td>
<td>3.6</td>
</tr>
<tr>
<td>J: Performs technical and psychomotor skills consistent with the role</td>
<td>3.5</td>
</tr>
<tr>
<td>K: Communicates effectively with clients, health care providers and the public</td>
<td>3.7</td>
</tr>
<tr>
<td>L: Collaborates with members of the other health care disciplines</td>
<td>3.5</td>
</tr>
<tr>
<td>M: Functions as a staff nurse and assumes a beginning leadership role in nursing practice</td>
<td>3.2</td>
</tr>
<tr>
<td>N: Participates in the change process to improve the delivery of nursing care and health care in specific health care systems</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Score key: mean scores $\leq 2.5 =$ negatively perceived
mean scores $\geq 3.6 =$ positively perceived
Table 25.—Mean Scores of Selected Condensed Items from the Professional Nursing Functions and Characteristics Interest Inventory

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>H 30 Questions physician erroneous order</td>
<td>4.0</td>
</tr>
<tr>
<td>H 31 Is a patient advocate</td>
<td>4.0</td>
</tr>
<tr>
<td>H 29 Admits error in giving medication</td>
<td>3.9</td>
</tr>
<tr>
<td>B 6 Teaches infant feeding to new parents</td>
<td>3.8</td>
</tr>
<tr>
<td>G 26 Gives informed consent to patient/family</td>
<td>3.8</td>
</tr>
<tr>
<td>K 40 Uses correct grammar and punctuation</td>
<td>3.8</td>
</tr>
<tr>
<td>N 53 Incorporates constructive criticism</td>
<td>3.8</td>
</tr>
<tr>
<td>E 19 Joins professional organization</td>
<td>3.7</td>
</tr>
<tr>
<td>E 20 Subscribes to professional journals</td>
<td>3.7</td>
</tr>
<tr>
<td>F 23 Volunteers in local community group</td>
<td>3.7</td>
</tr>
<tr>
<td>G 25 Tells drug-abusing colleague to report self</td>
<td>3.7</td>
</tr>
<tr>
<td>G 28 Testifies at a state hearing on health</td>
<td>3.7</td>
</tr>
<tr>
<td>I 32 Suggests new method of care for infant</td>
<td>3.7</td>
</tr>
<tr>
<td>K 39 Assesses ability of patient before teaching</td>
<td>3.7</td>
</tr>
<tr>
<td>K 41 Gives clear, interesting contraceptive talk</td>
<td>3.7</td>
</tr>
<tr>
<td>A 2 Uses psychological theories with children</td>
<td>3.6</td>
</tr>
<tr>
<td>B 7 Counsels adolescent drug abusers about AIDS</td>
<td>3.6</td>
</tr>
<tr>
<td>C 14 Teaches teenage mothers about contraception</td>
<td>3.6</td>
</tr>
<tr>
<td>E 21 Attends continuing education offerings</td>
<td>3.6</td>
</tr>
<tr>
<td>G 27 Shares current knowledge with colleagues</td>
<td>3.6</td>
</tr>
<tr>
<td>I 33 Teaches based on practical use in home</td>
<td>3.6</td>
</tr>
<tr>
<td>J 35 Provides care to newborn in delivery room</td>
<td>3.6</td>
</tr>
<tr>
<td>K 42 Offers support group sessions to staff</td>
<td>3.6</td>
</tr>
<tr>
<td>L 43 Ensures home care for a patient</td>
<td>3.6</td>
</tr>
<tr>
<td>A 3 Plans program for vaccinations</td>
<td>3.0</td>
</tr>
<tr>
<td>B 5 Assists postoperative patient to cough</td>
<td>3.0</td>
</tr>
<tr>
<td>C 9 Performs physical examination</td>
<td>3.0</td>
</tr>
<tr>
<td>C 14 Visits obese patient at home to counsel</td>
<td>3.0</td>
</tr>
<tr>
<td>D 16 Reports findings about patient’s rash</td>
<td>3.0</td>
</tr>
<tr>
<td>D 18 Compares quality and cost effectiveness plans</td>
<td>3.0</td>
</tr>
<tr>
<td>M 50 Works weekends and evenings for more pay</td>
<td>3.0</td>
</tr>
<tr>
<td>C 12 Provides incision care postoperatively</td>
<td>2.8</td>
</tr>
<tr>
<td>D 17 Triages patients for care in Emergency Room</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Score key:  
Mean scores ≤ 2.5 = negatively perceived  
Mean scores ≥ 3.6 = positively perceived
Chi-Square Analysis of Demographic and Biographic Variables and the PNFCII Scores

Gender, major, and if nursing has ever been considered for a career are statistically significant variables (p ≤ .05) when crosstabulated with the PNFCII scores using chi-square analysis. Table 26 gives the adjusted significances after categories are combined due to more than 20% of cells having expected frequencies below 5.

Table 26.—Demographic and Biographic Variables Associated with Professional Nursing Functions and Characteristics Interest Inventory Scores (p = .05)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>$\chi^2$</th>
<th>Adjusted p (After Categories Combined)</th>
<th>Cramer's V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>305</td>
<td>18.9</td>
<td>.002</td>
<td>.25</td>
</tr>
<tr>
<td>Major</td>
<td>305</td>
<td>29.9</td>
<td>.003</td>
<td>.22</td>
</tr>
<tr>
<td>Primary breadwinner</td>
<td>303</td>
<td>3.1</td>
<td>3.2 (ns)</td>
<td></td>
</tr>
<tr>
<td>Ever considered nursing</td>
<td>305</td>
<td>48.0</td>
<td>.0008</td>
<td>.40</td>
</tr>
<tr>
<td>SDS high point letter</td>
<td>293</td>
<td>2.3</td>
<td>0.31 (ns)</td>
<td></td>
</tr>
<tr>
<td>Daydream high point letter</td>
<td>298</td>
<td>4.2</td>
<td>1.8 (ns)</td>
<td></td>
</tr>
</tbody>
</table>

Forty-four of 113 (39%) men students like or greatly like the examples presented in the items as compared to 114 of 192 (65%) of the women. More men
dislike or greatly dislike the examples than women (15% to 8%). The strength of the association is weak.

In relation to major, overall, students are positive about the examples (55%). Students with no declared major are neutral (46%) or like (29%) the examples. Nursing and Health (non-nursing) majors like or greatly like (82%) the examples. Business majors are neutral (36.5%) or like (42.3%) the examples; arts majors are similar (neutral = 42%; like = 37%). Science majors tend to like (57%) or be neutral (29%); humanities majors are similar (like = 52%; neutral = 31%). Eleven percent of the students greatly dislike or dislike the examples. Again, strength of the association is weak.

If the student has ever considered nursing for a career, there is a significant association with scoring positively on the instrument. Eighty-five percent (77 of 90) of students who say they have considered nursing like or greatly like the examples. The students who have not considered nursing are neutral about (44%) or like the examples (38%). Twenty-seven (73%) of 37 students who have scores indicating a very positive perception of nursing functions and characteristics have considered nursing.

Analysis of Variance Between Groups on PNFCII Scores

A one-way analysis of variance (ANOVA) is used to determine if a difference at the .05 level of significance
exists in the total mean scores and the subscale mean scores of the three groups (undeclared majors, nursing majors, and non-nursing majors) on the PNFCII. The total mean scores as well as all the subscale mean scores except Scale I have statistically significant F values indicating true differences in the three groups (table 27). Category I deals with appreciation of research and theory in practice.

Table 27.—One-Way Analysis of Variance: Differences in Total and Subscale Mean Scores on PNFCII Between the Three Groups (Undeclared, Nursing, and Non-nursing Majors)

<table>
<thead>
<tr>
<th>PNFCII Scale</th>
<th>F Value</th>
<th>Adjusted p Value</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>23.18</td>
<td>.0008</td>
<td>305</td>
</tr>
<tr>
<td>A</td>
<td>9.67</td>
<td>.002</td>
<td>305</td>
</tr>
<tr>
<td>B</td>
<td>21.34</td>
<td>.0008</td>
<td>305</td>
</tr>
<tr>
<td>C</td>
<td>32.74</td>
<td>.0008</td>
<td>305</td>
</tr>
<tr>
<td>D</td>
<td>14.73</td>
<td>.0008</td>
<td>304</td>
</tr>
<tr>
<td>E</td>
<td>10.16</td>
<td>.002</td>
<td>303</td>
</tr>
<tr>
<td>F</td>
<td>5.76</td>
<td>.05</td>
<td>304</td>
</tr>
<tr>
<td>G</td>
<td>19.39</td>
<td>.0008</td>
<td>303</td>
</tr>
<tr>
<td>H</td>
<td>8.91</td>
<td>.003</td>
<td>303</td>
</tr>
<tr>
<td>I</td>
<td>5.30</td>
<td>.08*</td>
<td>303</td>
</tr>
<tr>
<td>J</td>
<td>14.08</td>
<td>.0008</td>
<td>302</td>
</tr>
<tr>
<td>K</td>
<td>7.36</td>
<td>.01</td>
<td>302</td>
</tr>
<tr>
<td>L</td>
<td>15.25</td>
<td>.0008</td>
<td>302</td>
</tr>
<tr>
<td>M</td>
<td>12.41</td>
<td>.0008</td>
<td>302</td>
</tr>
<tr>
<td>N</td>
<td>9.33</td>
<td>.002</td>
<td>302</td>
</tr>
</tbody>
</table>

*Not significant

Tukey-b multiple comparison procedures are computed to determine which pairs of groups have different means. Such procedures give information on true differences.5
In every instance, Group 2, the nursing majors, differs significantly from the undeclared and non-nursing majors. The latter two groups never differ significantly.

The two necessary assumptions for using ANOVA are that each group must be a random sample from a normal population, and in the population, the variances in all groups must be equal. These assumptions are not totally met. An attempt was made to obtain random samples for each group. Packets were offered to randomly selected English classes whose students had been randomly assigned (according to the head of Freshmen English) to the classes, as well as to randomly chosen students by mail, but self-selection biased the results. Histograms computed of the scores for each group are essentially normal in distribution with unimodal peaks and peaks of the mode not overly skewed, thus meeting one of the criteria. However, the results must be viewed with caution. Bonferroni’s inequality correction has been applied to reduce the chance of Type 1 errors.

One-way ANOVA to see where the differences in PNFCII scores by majors actually rest shows a statistically significant difference in the groups of majors (0 = undeclared; 1 = health non-nursing; 2 = nursing; 3 = business; 4 = arts; 5 = science; and 6 = humanities) for the total PNFCII score and all the subscales at the .05 level or less after Bonferroni’s correction is applied, except subscales I and K. Table 28 presents these data and the results of
Table 28.—One-Way Analysis of Variance: Significant Differences in Total and Subscale Mean Scores on PNFCII Between Majors

<table>
<thead>
<tr>
<th>PNFCII Scale</th>
<th>F Value</th>
<th>Adjusted p Value</th>
<th>n</th>
<th>Tukey-b Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10.91</td>
<td>.0008</td>
<td>246</td>
<td>1 with 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>A</td>
<td>6.98</td>
<td>.0008</td>
<td>246</td>
<td>5 with 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 with 4,6,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 4,6,3</td>
</tr>
<tr>
<td>B</td>
<td>10.37</td>
<td>.0008</td>
<td>246</td>
<td>1 with 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>C</td>
<td>15.11</td>
<td>.0008</td>
<td>246</td>
<td>1 with 4,3,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>D</td>
<td>6.04</td>
<td>.0008</td>
<td>245</td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>E</td>
<td>5.50</td>
<td>.002</td>
<td>244</td>
<td>2 with 4,5,6,3</td>
</tr>
<tr>
<td>F</td>
<td>4.74</td>
<td>.006</td>
<td>245</td>
<td>3 with 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 with 4,5</td>
</tr>
<tr>
<td>G</td>
<td>9.01</td>
<td>.0008</td>
<td>244</td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>H</td>
<td>4.54</td>
<td>.009</td>
<td>244</td>
<td>2 with 3,4,5,6</td>
</tr>
<tr>
<td>I</td>
<td>3.26</td>
<td>.11</td>
<td>244</td>
<td>not significant</td>
</tr>
<tr>
<td>J</td>
<td>6.44</td>
<td>.0008</td>
<td>243</td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>K</td>
<td>3.52</td>
<td>.06</td>
<td>243</td>
<td>not significant</td>
</tr>
<tr>
<td>L</td>
<td>6.81</td>
<td>.0008</td>
<td>243</td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>M</td>
<td>4.96</td>
<td>.003</td>
<td>243</td>
<td>2 with 1,3,4,5,6</td>
</tr>
<tr>
<td>N</td>
<td>4.06</td>
<td>.03</td>
<td>243</td>
<td>2 with 1,3,4,5,6</td>
</tr>
</tbody>
</table>

Key for majors, indicating groups making significant difference

1 = Health non-nursing  
2 = Nursing  
3 = Business-related  
4 = Arts-related  
5 = Sciences  
6 = Humanities

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the Tukey-b multiple comparison procedure to determine groups making the difference. In every instance, the nursing group differs significantly from two or more of the other groups. On the total score and subscales B, C, D, G, J, M, and N, the nursing majors differ significantly with all other groups. On subscales A, E, F, and H, the nursing group does not differ significantly with group 1, the other health majors. Again, the assumption of random sampling is not strictly maintained, although each of the majors has a unimodal central peak on histogram, and appears fairly normally distributed. Thus, the findings must be interpreted with caution.

Analysis of Covariance of PNFCII Scores

To control for the interactions of several variables, analysis of covariance (ANCOVA) is utilized. Variables found to be significantly associated with the PNFCII scores after Bonferroni's correction for the three groups using chi-square analysis are introduced as covariates. Covariates are gender, major, and if nursing has ever been considered for a career. The underlying theory of covariance is that if selected variables have the potential to influence the dependent variable, the PNFCII score, they may confound the dependent-independent relationship being studied and should be controlled. Thus, ANCOVA allows statistical equation of groups on the
independent variable (groups) by controlling those variables related to the dependent variable.

Table 29 provides data from the ANCOVA to see if the differences in the three groups (undeclared, nursing, non-nursing) remain statistically significant when the above covariates are controlled. Even when these variables are used as covariates, the difference between the groups remains statistically significant (adjusted p = .002).

Table 29.—Analysis of Covariance: Significant Variables as Covariates in Difference in Total Mean Scores of PNFCII by Groups

<table>
<thead>
<tr>
<th>Covariates</th>
<th>F Value</th>
<th>Adjusted p Value</th>
<th>E</th>
<th>E²</th>
<th>Differing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, if ever considered nursing for a career, and declared major</td>
<td>17.01</td>
<td>.002</td>
<td>.20</td>
<td>.22</td>
<td>Nursing</td>
</tr>
</tbody>
</table>

E square or Eta is an interclass correlation statistic derived by dividing the between sum of squares by the total sum of squares which gives a proportion.² Twenty-two percent (E² = .22) of the change in the dependent variable, the PNFCII score, can be explained by the independent variable. In other words, approximately 22% of the time, the amount of variation in the dependent variable, perceptions of professional nursing functions and

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characteristics as measured by the PNFCII, can be explained by the influence of the independent variable, major. Thus, the inference is that some of the individual differences may be reasonably attributed to occupational choice (major). Multiple classification analysis is computed to see which groups differ. Group 2, the nursing majors, is the significantly differing group.

Summary

Hypothesis 4 is supported. There is a significant difference in the perceptions of selected professional nursing functions and characteristics between the three groups, with the nursing group having a significantly more positive view of the items.

Hypothesis 5

Hypothesis 5: Students in any of the three groups who have predominantly Social vocational personality profiles will view functions and characteristics of professional nursing similarly.

Cell means of PNFCII scores (Table 30) by groups and SDS high point letter provide support for the last hypothesis. All groups of Social students have positive total mean scores; undeclared = 3.87, nursing = 4.45, and non-nursing declared = 3.69. Nursing students are predominantly more positive in their views of the examples as per total score than any other group except for one
Enterprising subject. The mean score for nursing students is 4.10, as compared to 3.31 for undeclared and 3.42 for non-nursing majors. The mean score for Social students is 4.00. Any score of 3.6 or more is considered positive. Artistic and Conventional students have positive mean scores.

Table 30.—Cell Means for Total PNFCII Scores by Groups and High Point SDS Code Letter

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Row Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups (n = 298)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undeclared</td>
<td>3.87</td>
<td>3.20</td>
<td>3.07</td>
<td>3.27</td>
<td>2.50</td>
<td>4.00</td>
<td>3.31</td>
</tr>
<tr>
<td>Nursing</td>
<td>4.45</td>
<td>4.50</td>
<td>4.50</td>
<td>3.00</td>
<td>0.00</td>
<td>4.00</td>
<td>4.10</td>
</tr>
<tr>
<td>Non-nursing</td>
<td>3.69</td>
<td>3.54</td>
<td>3.16</td>
<td>3.59</td>
<td>3.30</td>
<td>3.27</td>
<td>3.42</td>
</tr>
<tr>
<td>Column Means</td>
<td>4.00</td>
<td>3.74</td>
<td>3.57</td>
<td>3.29</td>
<td>2.90</td>
<td>3.75</td>
<td></td>
</tr>
</tbody>
</table>

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.

Table 31 provides similar data for majors. In most of the SDS categories except Social and Enterprising, the nursing scores bring the means up. In Social, all of the majors except the humanities are positive, and in Enterprising, the humanities majors bring the mean up. Of interest are the higher mean scores (4.0) of Conventional students in four majors (undeclared, nursing, arts, and sciences). The mean score of 5.0 for the Business-Realistic (R) cell represents one student, and, thus skews...
Table 31.—Cell Means for Total PNFCII Scores by Majors and High Point SDS Code Letter

<table>
<thead>
<tr>
<th>Major (n = 298)</th>
<th>S</th>
<th>A</th>
<th>I</th>
<th>E</th>
<th>R</th>
<th>C</th>
<th>Row Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeclared</td>
<td>3.87</td>
<td>3.20</td>
<td>3.07</td>
<td>3.27</td>
<td>2.50</td>
<td>4.00</td>
<td>3.32</td>
</tr>
<tr>
<td>Health</td>
<td>3.87</td>
<td>3.75</td>
<td>3.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3.54</td>
</tr>
<tr>
<td>Nursing</td>
<td>4.45</td>
<td>4.50</td>
<td>4.50</td>
<td>3.00</td>
<td>0.00</td>
<td>4.00</td>
<td>4.10</td>
</tr>
<tr>
<td>Business</td>
<td>3.67</td>
<td>3.00</td>
<td>3.50</td>
<td>3.53</td>
<td>5.00</td>
<td>3.11</td>
<td>3.63</td>
</tr>
<tr>
<td>Arts</td>
<td>3.70</td>
<td>3.50</td>
<td>3.19</td>
<td>3.00</td>
<td>2.80</td>
<td>4.00</td>
<td>3.37</td>
</tr>
<tr>
<td>Sciences</td>
<td>3.64</td>
<td>3.44</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>4.00</td>
<td>3.59</td>
</tr>
<tr>
<td>Humanities</td>
<td>3.50</td>
<td>3.50</td>
<td>2.67</td>
<td>4.00</td>
<td>3.50</td>
<td>0.00</td>
<td>3.43</td>
</tr>
<tr>
<td>Column Means</td>
<td>3.81</td>
<td>3.56</td>
<td>3.35</td>
<td>3.38</td>
<td>3.46</td>
<td>3.82</td>
<td></td>
</tr>
</tbody>
</table>

Note: In the High Point SDS Code, S = Social, A = Artistic, I = Investigative, E = Enterprising, R = Realistic, and C = Conventional.

The Business majors' mean. If this extreme is eliminated, the mean becomes 3.36, a more representative mean.

A two-way anova determines if significant differences exist in the means of two factors, and then if an interaction effect exists between the two variables. The results of a two-way analysis of variance using the three groups (undeclared majors, nursing majors, and non-nursing majors) and the high point letter of the SDS code as the independent variables, and the total score on the PNFCII as the dependent variable are presented in Table 32. There are significant differences (p = .0005) in groups and SDS code, indicating main effects from both on the dependent variable. The explained or between variation is also significant (p = .0005), but no interaction effect.
between the two independent variables is indicated. Table 33 presents similar information except specific major is used instead of group. Again, no significant interaction effect is seen.

Summary

Hypothesis 5 is supported. Students with predominantly Social SDS Codes view selected functions and characteristics of professional nursing similarly, in a positive direction.

Table 32.—Two-way Analysis of Variance: Dependent Variable, PNFCII Score, by Independent Variables, Groups and High Point SDS Code Letter (n = 298)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td>41.65</td>
<td>7</td>
<td>5.95</td>
<td>9.55</td>
<td>.0005*</td>
</tr>
<tr>
<td>Groups</td>
<td>15.90</td>
<td>2</td>
<td>7.95</td>
<td>12.76</td>
<td>.0005*</td>
</tr>
<tr>
<td>SDS High Point Letter</td>
<td>14.52</td>
<td>5</td>
<td>2.91</td>
<td>4.66</td>
<td>.0005*</td>
</tr>
<tr>
<td>Two-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>groups SDS</td>
<td>9.20</td>
<td>9</td>
<td>1.02</td>
<td>1.64</td>
<td>.103**</td>
</tr>
<tr>
<td>Explained</td>
<td>50.85</td>
<td>16</td>
<td>3.18</td>
<td>5.10</td>
<td>.0005*</td>
</tr>
<tr>
<td>Residual</td>
<td>175.08</td>
<td>281</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225.93</td>
<td>297</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All significance levels beyond .000 presented as .0005
**Not significant
Table 33.—Two-way Analysis of Variance: Dependent Variable, PNFCII Score, and Independent Variables, Major and High Point SDS Code Letter (n = 298)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td>43.03</td>
<td>11</td>
<td>3.91</td>
<td>6.30</td>
<td>.0005*</td>
</tr>
<tr>
<td>Major</td>
<td>17.29</td>
<td>6</td>
<td>2.88</td>
<td>4.64</td>
<td>.0005*</td>
</tr>
<tr>
<td>SDS High Point Letter</td>
<td>10.79</td>
<td>5</td>
<td>2.16</td>
<td>3.47</td>
<td>.005</td>
</tr>
<tr>
<td>Two-way interactions</td>
<td>20.78</td>
<td>25</td>
<td>0.81</td>
<td>1.334</td>
<td>.135**</td>
</tr>
<tr>
<td>major and SDS code</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explained</td>
<td>63.81</td>
<td>36</td>
<td>1.77</td>
<td>2.85</td>
<td>.0005*</td>
</tr>
<tr>
<td>Residual</td>
<td>162.13</td>
<td>261</td>
<td>0.621</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225.93</td>
<td>297</td>
<td>0.761</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All significance levels beyond .000 presented as .0005

**Not significant

**Predictive Variables**

To examine the predictive power of the variables associated with the PNFCII score, especially those indicated by chi-square analysis, the variables have been entered as dummy variables into multiple regression analysis in a step-wise manner with the score on the PNFCII as the dependent variable. Table 34 presents the levels and percentages of the dummy variables loaded into the regression equation.
Table 34.—Dummy Variables in Step-Wise Multiple Regression Analysis with PNFCII Score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>1 = white</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>0 = black, other</td>
<td>21</td>
</tr>
<tr>
<td>Sex</td>
<td>1 = female</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>0 = male</td>
<td>37</td>
</tr>
<tr>
<td>Primary breadwinner</td>
<td>1 = father</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>0 = mother, both, others</td>
<td>39</td>
</tr>
<tr>
<td>Factor 1</td>
<td>1 = satisfaction with job and salary</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>0 = all other reasons</td>
<td>33</td>
</tr>
<tr>
<td>Ever considered</td>
<td>1 = no</td>
<td>71</td>
</tr>
<tr>
<td>nursing as career</td>
<td>0 = yes</td>
<td>29</td>
</tr>
<tr>
<td>First letter</td>
<td>1 = S-I-A</td>
<td>74</td>
</tr>
<tr>
<td>daydream code</td>
<td>0 = E-R-C</td>
<td>26</td>
</tr>
<tr>
<td>First letter</td>
<td>1 = S-I-A</td>
<td>74</td>
</tr>
<tr>
<td>SDS code</td>
<td>0 = E-R-C</td>
<td>30</td>
</tr>
<tr>
<td>Major</td>
<td>1 = other</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>2 = nursing</td>
<td>11</td>
</tr>
</tbody>
</table>

Note: High school grade point average and total SAT scores were entered using the actual scores.

Before computation of regression analysis, the assumptions were tested for violations. The first assumption is that the distribution of the residuals should be near normal. A residual is "the difference between the observed and predicted values of the dependent variable."11
Secondly, the variance must be checked to see if it appears constant. This was done by calculating a scatterplot of the standardized residuals against the predicted values. The scatterplot is approximately horizontal, indicating no distinct pattern of increasing or decreasing residuals with the predicted values.

Table 35 gives the values associated with the significant variables in the equation. These variables are if nursing has been ever considered for a career, high school grade point average, the factor considered as most important in an occupation, and declared major. Variables not entered into the equation due to lack of significance are gender, race, primary breadwinner, total SAT score, the high point letter for the daydream code, and the high point letter for the SDS code.

The multiple R statistic, a correlation coefficient indicating the strength of the relationship, increases as the four significant variables are entered. The strength of the relationship is moderate at .50. The adjusted R square (.239), the coefficient of determination, indicates that 24% of the proportion in variance of the PNFCII values can be explained by the values of the three variables.

The Beta values, standardized correlation coefficients, indicate moderate to weak strength of relationships. Although statistically significant, the
Table 35.—Variables in the Equation for Stepwise Multiple Regression Analysis of PNFCII Scores (p ≤ .05)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step</th>
<th>Multiple R</th>
<th>Adjusted R²</th>
<th>F</th>
<th>Beta</th>
<th>≤ p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever considered nursing</td>
<td>1</td>
<td>.4306</td>
<td>.1818</td>
<td>51.7</td>
<td>-.4306</td>
<td>.0005</td>
</tr>
<tr>
<td>High school grade point average</td>
<td>2</td>
<td>.4622</td>
<td>.2066</td>
<td>30.7</td>
<td>.1683</td>
<td>.0005</td>
</tr>
<tr>
<td>Factor 1</td>
<td>3</td>
<td>.4860</td>
<td>.2262</td>
<td>23.2</td>
<td>-.1513</td>
<td>.0005</td>
</tr>
<tr>
<td>Declared major</td>
<td>4</td>
<td>.5023</td>
<td>.2389</td>
<td>18.9</td>
<td>-.1524</td>
<td>.0005</td>
</tr>
</tbody>
</table>

relationships are not theoretically significant because the magnitude of the correlations is low. They do indicate a moderate negative relationship between ever considered nursing and the score, a very weakly positive relationship between high school grade point average and PNFCII score, and very weakly negative relationships between the primary factor desired in a career, declared major and the PNFCII score.

Reliability of the PNFCII Instrument

The internal reliability of the instrument to measure perceptions of professional nursing functions and characteristics (PNFCII) has been computed for the study sample. Coefficient alpha, a technique for measuring
internal consistency, is .97 for the pilot study sample. It remains .97 for the larger study sample. Alpha coefficients for the subscales are provided in Table 36.

Table 36.—Internal Relatives Alpha Coefficients for the PNFCII Subscales
(n = 309)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Alpha</th>
<th>Subscale</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.77</td>
<td>H</td>
<td>.87</td>
</tr>
<tr>
<td>B</td>
<td>.74</td>
<td>I</td>
<td>.77</td>
</tr>
<tr>
<td>C</td>
<td>.87</td>
<td>J</td>
<td>.80</td>
</tr>
<tr>
<td>D</td>
<td>.75</td>
<td>K</td>
<td>.83</td>
</tr>
<tr>
<td>E</td>
<td>.83</td>
<td>L</td>
<td>.75</td>
</tr>
<tr>
<td>F</td>
<td>.71</td>
<td>M</td>
<td>.78</td>
</tr>
<tr>
<td>G</td>
<td>.83</td>
<td>N</td>
<td>.78</td>
</tr>
</tbody>
</table>

Note: Overall coefficient alpha .97.

Chapter Summary

The purpose of this study is threefold: first, to determine the perceptions about selected professional nursing functions and characteristics among the three groups of freshmen students (undeclared majors, nursing majors, and non-nursing majors); second, to determine the occupational interests and predominant vocational personality types of the students; and third, to determine if there is a difference in the way the professional nursing functions and characteristics are perceived between the three groups.

Findings have been presented in this chapter. Perceptions about selected professional nursing functions
and characteristics have been examined and indicate that nursing is viewed positively, overall. The three groups do differ in their perceptions, and it is the nursing group that differs significantly from the other two groups in its more positive view of the profession. Additionally, the predominant personality type for the entire sample is Social, although the high point code for the SDS differs when the non-nursing majors are broken down into more specific groups of majors which exemplify the occupational choices of the students. A discussion of the findings will be presented in the next chapter.
NOTES


4 Norusis, 277.

5 Ibid., 263-264.

6 Ibid., 257.

7. Miller, 15-16.

8 Popham and Sirotnik, 205-207.


12 Jendrick, 144.
CHAPTER V
DISCUSSION OF FINDINGS,
CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents a discussion of the findings in relation to the research questions and hypotheses, implications for recruitment for professional nursing, conclusions, and recommendations for future research. The purpose of this study is threefold: first, to determine the perceptions about selected professional nursing functions and characteristics among three groups of freshmen students in a large, urban mid-Atlantic state university who (a) have selected nursing as their occupational choice (major), (b) have committed themselves to an occupational choice (major) other than nursing, or (c) have not committed themselves to an occupational choice (major); second, to determine the occupational interests and predominant vocational personality types of the students in the study; and third, to determine if there is a significant difference among the three groups in the way the professional nursing functions and characteristics are perceived.
Discussion of Findings Related to Research Questions

Research Question A

Research Question A: What are the occupational interests and predominant vocational personality types of the students in the study?

Hypothesis 1

Hypothesis 1: Freshmen students in the nursing major group will have a predominantly Social (S) vocational personality profile as measured by Holland’s Self-Directed Search (SDS) instrument.

As anticipated, the high point letter for most of the nursing majors is S, supporting the hypothesis. This finding agrees with prior research. Holland and Hecht found SIA to be the predominant code among registered nurses and professional nursing students in a baccalaureate program, respectively.\(^1\),\(^2\) Additionally, the association seen in the literature between female gender and Social vocational personality type is supported with 32 of 33 nursing majors being women. Women often choose occupations that fall into the Social category.\(^3\) Gender and SDS high point code letter are significantly associated in this study, and gender may be the primary factor associated with choice of nursing as a career. The literature shows that women tend to prefer careers in which the dominant sex is female.\(^4\) In this society, these careers are predominantly Social, Artistic, and Conventional.\(^5\)
Bem’s conclusions that women in our society tend to have feminine characteristics such as being nurturing and sensitive, may help to explain the choice of nursing as a career by women.\textsuperscript{6} Nursing, as an occupation that focuses on nurturance and use of sensitivity in interpersonal skills to maintain wellness, promote healing, and prevent illness, allows the individual nurse an opportunity to utilize feminine characteristics reinforced since childhood.

Of interest is the significant association between the SDS combined categories (SIA and ERC) and involvement in religion. This clearly shows that nursing majors regard themselves as more involved in their religions than the other groups or majors, when the non-nursing group is broken down. When the SDS categories are left in their single letter groupings, the Social students have a high to moderate involvement in religion, and are more involved in religion than other majors. The association of religious involvement and nursing major is congruent when factors, such as helping others and nurturing behaviors, which are characteristic to both religion and nursing, are considered. The historical heritage of nursing, including its religious origins, should not be overlooked in understanding this relationship.
Hypothesis 2

Hypothesis 2: There will be a difference in predominant vocational personality profile as measured by Holland's SDS between three groups of students:

1. students who have selected nursing as their occupational choice (major);
2. students who are uncommitted to an occupational choice (major); and
3. students who are committed to an occupational choice (major) other than nursing.

This hypothesis is supported. A significant difference in vocational personality profile as measured by the SDS high point code letter exists between the groups. Clearly, the fact that 69% of the nursing students are Social types makes the difference, as opposed to 26% Social in the undeclared majors group, and 28% Social in the declared non-nursing majors group. However, this finding is not surprising since the composition of the undeclared and non-nursing groups is so general, both groups being comprised of many more diverse occupationally-focused or unfocused people than the nursing group. Thus, a content validity issue is raised regarding the usefulness of this finding. There is a discrepancy in the fundamental composition of the three groups. Two of the groups (undeclared and non-nursing majors) are heterogeneous; the nursing
group is homogeneous. Thus, the validity of comparing findings using such diverse groups is in question.

More useful, perhaps, is the significant association between the SDS high point code letter and major, although there is room for content validity concerns using this variable, also. However, there is a significant difference in SDS between the more clear-cut majors, such as those students grouped into the Arts (art, music, theater, and related fields), Business (accounting, business administration, management information systems, public administration, and related fields), Health (non-nursing health fields), and Sciences (hard and psychosocial sciences). Decidedly, in each of these majors, the SDS high point code letter matches Holland's findings for occupations represented by the majors.7,8 This is in keeping with Smart's findings that statistically significant differences in majors according to the SDS codes exist.9

The groups which do not lend themselves to definitive alignment with a SDS code are the Humanities and, as expected, the undeclared majors. The Humanities group encompasses a varied composition so that conclusions cannot be drawn with any confidence from the sample. For this sample, the finding that the largest SDS category represented in the Humanities major is Social probably has little meaning. This occurrence is most likely a
reflection of the fact that over half of the subjects are female.

When the findings related to the associations between daydream high point code letter, the SDS high point code letter, and major are examined in light of the literature, the significant relationships become more meaningful. The SDS high point code letter is significantly associated with groups and majors, as is the daydream letter. Holland and Gottfredson found that people who had congruent vocational aspirations (daydream codes) and SDS codes were able to make decisions relative to vocations more soundly, and concluded that the most efficient predictor of vocational outcomes for women next to the SDS code, was the daydream code. The association between SDS and daydream highpoint code letters in this study is very significant, supporting the use of both data sources for predicting vocational outcome. In every instance, the largest percentage of students are represented in the same categories for both variables. Obviously, this represents a conceptual overlap of the two codes, but it indicates a significant usefulness for the daydream code, supporting other research by Touchton, Magoon, O’Neil, and Tracey.10 The association between SDS and daydream highpoint code letters in this study is very significant, supporting the use of both data sources for predicting vocational outcome. In every instance, the largest percentage of students are represented in the same categories for both variables. Obviously, this represents a conceptual overlap of the two codes, but it indicates a significant usefulness for the daydream code, supporting other research by Touchton, Magoon, O’Neil, and Tracey.11,12,13

Research Question B

Research Question B: In what ways, relative to demographic and biographic variables, are the three groups
Hypothesis 3

Hypothesis 3: There will be differences in the demographic and biographic data between groups.

Significant differences exist between the three groups in relation to gender, if nursing has ever been considered for a career, the SDS high point code letter, and the daydream high point code letter. As with the previous hypothesis, though supported, the information is less valuable than the data gained from examining major and demographic-biographic variables. When this is done, race becomes significant, also.

Blacks choose social occupations more readily. Thus, the finding that there is a proportionately larger number of blacks in the nursing group (24%) as compared to the undeclared (5%) and the non-nursing (19%) groups is congruent with the literature. However, there is an even larger number of blacks in the business major (31%) when the students are broken down into majors. This finding may indicate an increasing awareness by students regardless of vocational personality type of the economic advantages associated with business-related majors in today’s society.

Again, groups are significantly different based on gender, which has been discussed earlier in relation to Social vocational personality type. When all the majors
are examined more closely, every major, except undeclared, has a higher percentage of women than men. However, the distinct differences in the majors according to gender lies in the single male subject in the nursing major. Nursing has the lowest percentage of males (0.3%) of any major. Based on studies such as that of Shinar where nursing was seen as a highly female career, this finding is not unusual.16

If nursing has ever been considered for a career is significantly associated with groups and majors. Obviously, if a student is in nursing, she/he has considered it for a career, but the fact that 19% of the sample, in addition to the nursing students, have considered nursing for a career is important. This finding suggests, according to Super, that these students have self-concepts that allow them to see themselves as professional nurses.17 However, Super also said that people identify positively with role models to develop their self-concepts. Thus, one factor that may be influencing the students who did not choose nursing is that they may not have had role models who furthered their concepts of themselves as professional nurses.

Additionally, when gender and if nursing has ever been considered for a career are crosstabulated, there are 12 men (4%) who answered "yes," yet only one is a nursing major. Thus, some support for the suggestions of Johnson
et. al. is found. These authors stated that there are men with attitudes congruent with nursing that need to be identified and recruited to bring them into the profession.

Both the SDS and the daydream high point code letters are significant with the groups and majors, as has been described in previous sections. The usefulness of this information will be discussed in the section on recruitment implications.

Research Question C

Research Question C: How are selected professional nursing functions and characteristics perceived by the three groups of freshmen students?

Hypothesis 4

Hypothesis 4: There will be a difference in the perceptions of selected professional nursing functions and characteristics between the three groups.

There is a significant difference in the perceptions of selected professional nursing functions and characteristics between the three groups and the majors using the total score on the Professional Nursing Functions and Characteristics Interest Inventory (PNFCII). In every instance, statistically, the nursing group (major) is the differing group. However, 55% of all respondents have total scores indicating positive regard toward the selected nursing functions and characteristics presented in
the PNFCII instrument. This finding was not anticipated by the researcher. The subscale categories considered positive contain examples reflecting intellectual, interpersonal, and ethical concerns. Such concerns are important to every occupation, which may explain the high percentage of positive respondents. The categories which are seen more negatively are those which have examples of physical care of patients and situational aspects of nursing, such as working shifts. The perception of such activities as negative supports the Indiana survey which found nursing as less ideal because it required more and harder work, more manual skills, and greater use of technology.\textsuperscript{19} These are the same types of contextual characteristics associated with a poor national image of nursing identified by the Secretary's Commission on Nursing.\textsuperscript{20}

As expected, women view the PNFCII scale's functions and characteristics more positively than men. Thus, gender is an important variable. Women in all majors perceive nursing favorably, especially those in the nursing and non-nursing health majors.

**Hypothesis 5**

Hypothesis 5: Students in any of the three groups who have predominantly Social vocational personality profiles will view functions and characteristics of professional nursing similarly.
The Professional Nursing Functions and Characteristics Interest Inventory (PNFCII) appears to discriminate between those who perceive nursing positively and those who see it in a less positive light. Regardless of the statistical method employed to determine whether groups differ on the study variables (chi-square, analysis of variance, analysis of covariance), statistically significant differences in groups and group means exist for the three main groups (undeclared majors, nursing majors, and non-nursing majors) and for the majors. In each analysis of variance and analysis of covariance, the nursing group is the group that makes the difference. This finding supports the valid measurement of interest in professional nursing functions and characteristics. Additionally, the internal consistency of the PNFCII from both the pilot study and the larger study is very high.

The findings support the last hypothesis. Ninety-four to 95% of those liking the items on the PNFCII are Social by SDS or daydream high point code letters. Students with Social high point code letters, regardless of group, view the functions and characteristics of professional nursing similarly. All groups of Social students have positive total mean scores, but nursing has the highest. Nursing is a highly interpersonal and caring profession, requiring good communication skills. These types of characteristics are associated with the Social
vocational personality type and are reflected in the items on the PNFCII scale. Thus, the significant association in the study provides additional confirmation of the content validity of the scale. Except for the Humanities, all the Social students in other majors view nursing positively as measured by the PNFCII.

Implications for Recruitment

A profile of the "typical" nursing major based on data from the sample in this study is an eighteen year old, white, single female, from a family where the primary breadwinner is the father and the annual income is $25,000 or more. This student has attended a public high school, and graduated with a B grade point average. She scored between 800 and 999 on the SAT. She is moderately to very involved in her protestant religion, and has been influenced primarily by her own internal motivations, her mother, and people in the field of nursing in her decision to become a nurse. She views satisfaction in and helping others as the most important factors in her career. Salary-related factors are third. Her vocational personality high point code as measured by the SDS is Social. Her daydream high point code letter is congruent.

Recruitment efforts must continue to be directed towards this group, but, also, toward other groups with compatible career interests which are not being motivated to consider nursing for a career. These include the older
individual interested in a career change, those students with higher SAT scores, men, and those in some of the other SDS categories, as well as those Social students that nursing is failing to attract. The large percentages of Social and Investigative types in the non-nursing health group indicate a need to direct more aggressive recruitment toward junior and senior high school students who express an interest in a health career. Because a student has a primary vocational personality type other than Social should not negate active recruitment of the student for nursing.

The implication of gender-relatedness of the occupation of nursing (32 of 33 subjects) and the fact that so many women students are Social types strongly indicate a need to concentrate recruiting efforts heavily among high school and college freshmen females, possibly even reducing the age of recruitment to middle and junior high school grades. The implications are to continue strongly recruiting women, but a new focus is needed to identify males of all age groups, especially those with Social and Investigative interests, and to direct recruiting efforts toward them.

Since nursing tends to appeal more to Social types, the actual activities used in recruitment should take the characteristics of the Social person into consideration. For example, socially interactive strategies are indicated,
such as parties, interviews, or open houses. Some Investigative types of activities could be used for recruiting this type of individual. Making strategies congruent with the type of person supports Holland’s theory that people seek environments compatible with their personalities.

Since the SDS is expensive ($0.85-.90/student) to administer and since the daydream code can be as helpful in identifying potential applicants, a simple way to find such men, and women, too, would be to ask people in groups being approached for recruitment to list their first three aspirations for careers. Anyone with Social, Investigative, and Artistic high point code letters, as well as Conventional from the findings in this study, predominating could be targeted for special recruitment efforts; i.e. phone calls, times to visit the school, literature, open houses. Those with nursing, other health careers, or human service-oriented interests would be particularly important to target. In that Social students tend to be more internally motivated than influenced by any other person, efforts to bring the information directly to these people should be promoted. Since nursing students are influenced by people in the field, recruitment strategies utilizing dynamic nurse role models seem indicated.

Also, Minnigerode and her fellow researchers found that the ideal nurse has traits of both sexes, and suggested that nursing needs to change to embrace people with
masculine and feminine traits. Recruitment strategies should aim toward promoting public images of nurses that showcase traits of both sexes, such as examples of assertive, yet caring, behavior in planning appropriate care for a patient.

Although the majority of Social types come from families with incomes of $40,000 or more annually, when recruiting is planned, high schools in all income neighborhoods should be considered. Since education offers a chance to move to a higher socioeconomic level, and nursing today does offer job security and improved starting salaries, qualified students in lower socioeconomic groups should be recruited. Schools of nursing and universities must take the initiative in offering support academic services to help students who may be from disadvantaged backgrounds. Scholarships and stipends to help defray the expense of college would be a positive inducement to many potential applicants. Also, an enthusiastic alumni group can be a powerful marketing instrument. However, these three areas of remedial services, financial aid, and alumni support are beyond the scope of this paper. The career ladder programs offered in hospitals are another way to advance in nursing, and provide a positive recruitment strategy to present to the young qualified student from a poor family.
Social students tend to be highly to moderately involved in their religions. This finding is expected since service is a primary focus of religion and of the Social occupations, especially nursing. One implication is that recruiters from schools of nursing should become actively involved in providing nurse speakers on relevant topics to young people’s groups for churches and religious schools. Marketing strategies might best be indirect in this instance, based on role modeling, unless the group specifically asks for recruitment information.

Investigative types (19% of nurses are in this category) are influenced most by their mothers. Conventional types are influenced most by self-motivation and next by their mothers. Thus, one strategy could be for school of nursing faculty to offer to speak to women’s groups on nursing or on topics appropriate for nurses to address, such as issues relative to women’s health care. Again role modeling probably would be the best marketing strategy. It behooves the school to send its most impressive people to represent them.

That nursing attracts black students second only to business-related fields is significant. It means that concerted efforts must be made to continue to recruit qualified black students into nursing. The literature supports that black women favor Social occupations, so this is an important group to target. Although a small group (4.5%),
the non-black non-whites, primarily Asians, may be an additional group to target since many of them are undeclared majors, many of whom are Social (39%).

Of concern is the finding that nursing majors have high school grade point averages lower than students choosing non-nursing health careers. Both groups have the greatest percentages of students in the B average category (nursing 64%; non-nursing health 60%), but the remaining nursing students have C (27%) and A (12%) averages, while 13% and 27% of the health majors have C and A averages respectively, an almost reversed finding for the two groups. One conclusion is that brighter students interested in a health field are not choosing nursing. Thus, the implication is that the image of nursing must be changed to interest more of this group. On a fundamental level, such an image change would result from drastic alterations in current functions and characteristics of nursing, which is beyond the scope of this research. On an immediate recruitment level for the university where the study has been conducted, an image change would be promoted by utilizing examples from the PNFCII that are seen as most positive by the respondents in marketing strategies.

Further support for such concern about the qualifications of nursing students is reflected in the data on SAT scores. Not only are none of the nursing students’
scores above 1199, but 53% are below 900 as compared to 28% of the non-nursing health majors. No association statistically was found between race and SAT scores. In fact, nursing students have a greater percentage scoring below 900 than any other major group. The need to attract people with both verbal and math skills into nursing is essential considering the increasing complexity of the education required for quality health care today.

As mentioned earlier, nursing students are influenced by themselves or a higher force, such as their religious beliefs, their mothers, and people in the field of nursing. Non-nursing health majors are primarily internally motivated. Therefore, multifocal recruiting efforts are indicated through in-school programs, booths at recruitment days and fairs, attractive pamphlets to put in the schools, and church and civic church groups through speaking engagements. Short spots made for local television that promote the functions and characteristics deemed positive by the sample need to be considered.

Nursing students comprise the largest group of those selecting helping others as the most important characteristic of an occupation. Satisfaction is the single most important factor chosen by nursing majors with helping others second, and salary third. The total sample selected satisfaction and salary-related factors as most important. The implication is that the image of nursing must be
changed to promote those aspects relating to satisfaction and money-related benefits that are most positive within the profession, tying these into helping others.

Satisfaction in a career and salary-related benefits are the characteristics seen as most important by Social students also. This information may partially explain why so many Social women students are choosing fields other than nursing. Forty-eight of 89 (49%) students who have considered nursing for a career are Social types, but, obviously, some of these decided not to become nurses since only 33 actually are nursing majors and only 22 of these are Social types. So more than half of a potential nursing group (22 of 48) have been lost somewhere along the path to a career choice, perhaps, because the above two factors are not perceived positively by the public about nursing. This is borne out in the literature.

Thus, schools of nursing must use the positive aspects representing both of these factors in very open and attractive ways in recruiting strategies. Television advertisements depicting positive experiences of nurses using scenarios incorporating these factors might be of value. Concerted efforts of state and national professional nursing organizations to change the image of nursing in commercial programming are needed. For example, nurses are often in top management positions in health care
agencies and their salaries are generally competitive. A picture of an attractive, well-dressed woman, or man, meeting with other nurse leaders in an executive setting could be used. The caption would suggest that the person who is the main focus of the photograph is the nurse vice president for patient care services meeting with nurse managers to evaluate quality of care in X hospital. This might be appealing to the Social individual with Enterpriseing characteristics who is interested in business management, yet cares about people. Such an advertisement could be placed in school newspapers or in yearbooks.

Additionally, staff nurses’ salaries increased an average of 8.1 to 8.4 percent in 1989. The average 1989 salary for the staff nurse ranged from $26,000 to $37,000 in the United States, as compared to the 1988 figures of $22,000 to $34,000. The increase and a number of exciting benefits are due to the nursing shortage, and could be utilized to great advantage in recruitment advertising by schools.

The PNFCII could be used by guidance counselors in high schools to give advice to students based on their scores. Alternatively, knowing if someone has considered a career in nursing or not is moderately predictive of the PNFCII score. Thus, in lieu of using the PNFCII, a survey could be sent out to students in schools during the freshman or sophomore years asking if the student has considered
a career in a health field. Those with positive responses should be targeted early-on for special recruitment measures, such as periodic flyers, invitations to special programs at the school of nursing, and special day trips to agencies.

Conclusions

The following conclusions are submitted in consideration of the study results:

1. Nursing continues to attract the same kind of student as it has in the past: female, average academically, and Social vocational personality type as measured by Holland’s Self-Directed Search. Although the Social type predominates, Investigative type students are the next most frequent group attracted. These findings agree with previous research that has found the SIA code predominating for nursing, and provide further support for the validity of Holland’s SDS instrument as a means of identifying vocational personality types.

2. One quarter of the undeclared majors have Social high point letter SDS codes and are more likely to view the functions and characteristics the nursing profession currently offers in a career favorably. Additionally, undeclared majors and non-nursing health majors have considered nursing for a career more often than other non-nursing majors.
3. Although more women than men view the functions and characteristics of professional nursing positively, the fact that 44 men in this study perceive nursing favorably suggests that men are a reasonable target group for recruitment. Also, more than half of all students perceive nursing positively, suggesting that the image of nursing is less negative than the literature implies.

4. The two factors of satisfaction in the occupation and salary-related benefits are seen as most important in a career by the sample as a whole. Students in the nursing major view helping others second to satisfaction in the occupation as the most important factors in a career. Salary-related factors are third in importance.

5. Nursing majors perceive themselves to be more involved in their religions than any other group or major. Social vocational personality types tend to be highly to moderately involved in their religions.

6. Nursing majors are internally motivated, influenced by their mothers, or influenced by people in the field in their occupational choice. Majors in other health fields tend to be internally motivated in their occupational choices.

7. Blacks, especially women, tend to be Social vocational personality types, and nursing attracts black students second only to business and public administration majors.
8. Little support for nurses' own children to go into the field is evident. Few of the primary breadwinners in nursing have children choosing the profession.

9. Brighter students interested in a health-related field are choosing non-nursing majors. Nursing majors have high school grade point averages lower than students choosing other non-nursing health careers. The SAT scores of the nursing majors are below 900 almost twice as frequently as those of the non-nursing health majors.

10. The PNFCII instrument may be utilized for determining positive, neutral, or negative perceptions of professional nursing.

11. The categories of functions and characteristics of professional nursing considered positive by this sample are those concerned with the intellectual and interpersonal aspects of nursing. Those viewed more negatively are primarily situational or contextual (see table 25).

12. Positive PNFCII scores are associated with the Social types and may be valid indicators of this type.

13. The name, nursing, does not need to be changed to enhance interest in nursing. Most students think the name is appropriate and descriptive of the profession.

Recommendations

The results of this research point to several implications with recommendations as follows:
1. Social, Investigative, and Artistic students in high school and college represent a potential target group of applicants for nursing. They may be identified by administering the SDS instrument or by asking for career aspirations. The latter is more cost-effective and should yield equally helpful information to the inquiring school of nursing.

2. Other SDS types, especially Conventional, should be recruited vigorously. To be successful in attracting more bright students of other SDS categories, nursing needs to change its marketed image and use strategies that would promote aspects that appeal to a diverse potential applicant pool. At a more fundamental level, nursing may need to redefine what it is as a profession to the public before it can attract people other than the typical ones described in this sample.

3. Undeclared majors need to be recruited strongly. Recruitment efforts should be directed toward qualified women and men, with special efforts made toward students in junior and senior high school and college freshmen, who have expressed an interest in nursing, a health field other than nursing, or a human service-oriented field. If the student has ever considered nursing for a career is a strong indication for continuing to pursue the individual, even if she or he is not currently indicating a specific interest in nursing.
4. The finding that satisfaction and salary-related benefits are the most important factors in an occupation must be utilized in marketing and promoting professional nursing in positive ways in advertising and media productions. For example, in many photographs used to market nursing, the nursing student or nurse typically is seen doing something for, to, or with a patient. This study shows a somewhat negative association with these types of activities. Although nursing is highly people-oriented and advertisements depicting such interactions are needed to continue to attract those students who primarily want to help others, some representations of satisfaction in nursing by the nurse and/or material benefit or gain might also draw the attention of people not currently being attracted.

For example, a nurse could be consulting with a physician or some other member of the health care team about some aspect of care management that is the domain of the nurse. The nurse could be directing that particular activity, which would translate into some respect and control in the situation and satisfaction in the job.

As new people come into a field, they bring new approaches and ideas. If the vocational personality types of nursing students as a group could become more diversified, nursing itself would change over time as a result of input from these people, and the fundamental image of
nursing might move in a more positive direction. Such an image change from within will take years, but recruitment strategies aimed at appealing to a wide variety of people to complement the current type of student attracted, should begin now (Figure 2).

Recruitment strategies to attract diverse student applicants

Changes in fundamental New people with new ideas
image of nursing enter the profession

Changes in the profession

Fig. 2. Model of Change in Professional Nursing Initiated by Altered Marketing Strategies.

5. School of nursing faculty or designees should offer to speak on topics of interest to civic, school, college/university, and church youth and adult groups, in order to act as role models for professional nursing. Nursing must take an active and visible role in community affairs and in the public view. This role should be an important requirement for professional nurses, especially faculty. The more effective the nurse role model, the
better the chance of attracting people not ordinarily interested in nursing.

Most of this sample are influenced by their fathers in the choice of a career, but not the nursing majors. Unless the nursing profession makes a concerted effort to be known publicly to adult males in the community in ways other than being seen as patient caretakers in a hospital, an important group of influential people may never consider suggesting nursing as a career to their children.

6. Special efforts to target marketing toward young non-white men and women in high school and college, especially undeclared majors, should be made. That so many of this sample's black students are business majors suggests a desire for upward economic mobility among this group. Such mobility must be portrayed in nursing marketing strategies not only to attract non-white students, but to appeal to all students.

7. Nursing must continue recruitment strategies to attract the younger generic student it is now obtaining, but also the older, less typical individual must be targeted. From the literature, many women who have not worked in the past may need to work for a variety of reasons, economic being foremost. Many are or will become the heads of families. How nursing can offer security and satisfaction to this segment of the population must be marketed. Many people may need to go back to school due to
job loss or a desire for a career change. Again, marketing must be directed toward these particular kinds of needs.

8. Local, state, and national nursing organizations should lead the way to influence the presentation of nursing as a challenging profession requiring scientific, humanistic, and ethical abilities and qualities. Nursing must be marketed in such a way that the high level of intellectual functioning required in the role is highly visible, thereby attracting better qualified students.

Additionally, nursing must be promoted among members of the profession both formally and informally. That the profession is viewed positively by the public needs to be remembered by the professions' own members. They must enhance its growth with positive comments to potential applicants and act as ambassadors in their roles internally and externally.

9. The PNFCII instrument may be useful to schools of nursing, high school guidance counselors, or other groups in evaluating an individual's interest in nursing. Data from these uses could provide additional insights into functions and characteristics of nursing to promote in marketing, as well as determining interest levels of individuals.

10. More research to confirm the association of positive PNFCII scores with the Social SDS type of personality needs to be done with larger, randomly selected
groups in high schools and universities. Also, the daydream code's equal or better usefulness in identifying vocational personality types and association with the PNFCII score and nursing recruitment should be assessed.

11. Examples similar to those viewed as more positive (3.8 or higher) by the sample in the PNFCII should be developed and utilized in marketing and recruitment strategies to validate their effectiveness. Conversely, the lower rated items (3.0 and below) or similar examples should not be used.

12. The PNFCII instrument's reliability and validity need to be tested with other groups. Again, random sampling is recommended for future research. Instrument development, not a primary objective of this research, has evolved as an important focus in educational research. The value of the tool's use in a variety of settings needs to be determined. Thus, it is recommended that the instrument be administered to a large sample of high school students and that the students be followed until college major choices are made to see if the instrument is helpful in predicting applicants for nursing. Such a study should have four groups; one group with positive PNFCII scores in which routine information from the guidance counselor is provided, one with positive PNFCII scores in which special recruitment strategies are used promoting those functions and characteristics of nursing found to be
positive in this study, one with neutral or less PNFCII scores who receive routine information, and one with neutral or less PNFCII scores who receive the special promotional strategies.

13. Replication of the study with larger random samples of varying demographic and biographic backgrounds to provide further support for the same findings might be helpful. However, implementation of the suggested recruiting strategies would appear to be more beneficial to see if the number and quality of the study university’s applicant pool for nursing would increase. Considering the ongoing need for more and better qualified nurses, the sooner such strategies can be put into action, the better.

Therefore, development of marketing strategies with professional consultation based on the findings of the study, implementation, and evaluation of the effectiveness of such strategies in recruitment is the final recommendation. Such a research study could be conducted using a similar urban university school of nursing as the control.

Chapter Summary

In summary, this study has examined the perceptions of professional nursing functions and characteristics among three groups of freshmen college students (undeclared, nursing, and non-nursing majors) to determine positively viewed activities and characteristics of nursing that could be utilized in later research related to recruitment.
Instrument development has been a secondary contribution of the findings. Additional support for John L. Holland's theory of vocational personalities has been gained. Conclusions are based on the results from this convenience sample and relate to ways to increase applicants to the study university's school of nursing. The basic conclusion is that the type of student nursing has attracted in the past is still interested in the profession for a career, but ways to attract the atypical student, for example, larger numbers of Investigative and other SDS category types, men, older applicants, and brighter students, need to be explored. Recommendations are offered for future research to improve recruitment and marketing strategies for baccalaureate nursing programs.

As the results of this study are being presented, baccalaureate schools of nursing are announcing a 5.8 percent increase in enrollments after a five year continuous decline. However, the American Association of Colleges of Nursing warns that "...the road to reversing the nation's acute nursing shortage remains a long one." Thus, ongoing research in the realm of recruitment and marketing is a necessity.
NOTES


19 Frederick May, Joan Austin and Victoria Champion, Attitudes, Values and Beliefs of the Public in Indiana Toward Nursing as a Career: A Study to Enhance Recruitment into Nursing (Indianapolis: Sigma Theta Tau, International Honor Society of Nursing, Inc., 1988).

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"Nursing Enrollments, Applications Fall Again; Closures Seen, but Some Schools Hold their Own." American Journal of Nursing 86, no. 10 (October 1986), 1178, 1189.


Prediger, D. J., and G. R. Hanson. "Holland’s Theory of Careers Applied to Women and Men: Analysis of

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February 27, 1989

Dear VCU Freshman Student:

I am conducting a study with full-time VCU freshmen on their perceptions of selected functions and characteristics of professional nursing, and I need your help even if you are or are not interested in nursing as a career choice.

Nursing is in a crisis state with dwindling enrollments and ever increasing numbers of college-bound students choosing to pursue careers in fields other than nursing, especially fields that were once predominantly male. Yet the need for highly educated and intelligent people...men and women...to go into nursing is greater than ever.

Your input will be most helpful in determining those functions and characteristics of professional nursing at the baccalaureate level that may best be utilized in marketing and recruiting prospective students.

The study requires completion of four (4) components: 1) an informed consent release, (attached to this letter); 2) a questionnaire asking for biographic and demographic information, with a few open-ended questions; 3) a vocational assessment questionnaire, called "The Self-Directed Search," which helps to determine where your interests in a career may lie; and 4) a rating scale, "The Professional Nursing Functions and Characteristics Interest Inventory," which asks you to decide how well you like certain nursing activities given as examples of what graduate professional nurses do.

If you decide to participate, when you complete the Self-Directed Search (SDS), you will come up with a Summary Code of your vocational personality profile consisting of three letters. If you would like a brief explanation of your code, please check the "yes" blank on the informed consent section attached to the demographic questionnaire.

The total time estimated to fill out the three parts is 50-60 minutes. I realize this is a big request of you at a busy time in your life, however someday you may need a nurse, and your help with this study may assist us in knowing how to better recruit in this field.
Your participation is completely voluntary. There is no penalty or repercussion for not participating or for withdrawing at any time. Your identity and all information you provide will be kept completely confidential. Your name and identifying information for contacting you will be kept only long enough to clarify any questions I may have concerning your information, and to send you the SDS information, should you desire such. After this, your name will be removed from study forms and destroyed.

The benefits of participation include contributing additional knowledge to the nursing and vocational counseling fields which may help in the future recruitment of nurses. Such recruitment will aid society as a whole. Your participation will add strength to the research and to the findings. An individual benefit may be an increased awareness relating to your own vocational personality profile if you request the SDS code explanation.

Although no risks of participating have been identified, in the event of any physical and/or mental injury resulting from participation in this research project, Virginia Commonwealth University will not offer compensation.

By signing and returning the Informed Consent form on the next page, you agree to participate and will receive the packet of test materials in the mail within one to two weeks. Be sure your correct local mailing address is on the consent form.

A self-addressed stamped envelope is provided for return of the consent form. Another stamped envelope will be provided for the return of the questionnaires. Please return all of them.

If you have any questions concerning the study, please call me at 786-4572. Once the research is completed, you may request final results by contacting me.

I very much appreciate your time and effort in helping me with this research.

Sincerely,
Ellis Youngkin (Mrs.)
Principal Investigator
Assistant Professor
MCV-VCU School of Nursing
Box 567, MCV Station
Richmond, VA 23298
Professional Nursing Characteristics and Functions Study

INFORMED CONSENT

I have read the accompanying letter asking me to participate in this research to study perceptions of freshmen students about professional nursing functions and characteristics, and I agree to participate. I understand that all records will be kept confidential, that there is no cost to me, that no risks are anticipated associated with participation, and that I may withdraw without penalty at any time. I understand that in the event of any physical and/or mental injury resulting from my participation in this research project, Virginia Commonwealth University will not offer compensation.

Signature________________________________ Date________________

Please Print Full Name________________________________________

Local Mailing Address_______________________________________

___________________________________________________________

Home mailing address, if different from above:

___________________________________________________________

Phone where can be reached locally___________________________

Please return in the envelope provided to:

Mrs. Ellis Youngkin
Box 567, MCV Station
School of Nursing
Richmond, VA 23298

I would like an explanation of my SDS profile code:

Yes____ No____
APPENDIX B

DEMOGRAPHIC-BIOGRAPHIC INVENTORY

* Please fill this questionnaire out first. Code# _____

Directions: Please circle answer, check blank, or fill in blanks, as appropriate.

1. Age:_________
2. Race:
   1) _Caucasian_  2) _Black_  3) _Hispanic_
   4) _Oriental_  5) _American Indian_
   6) _Other(give please)_
3. Sex: 1) _Male_  2) _Female_
4. Marital status:
   1) _Single_  2) _Married_  3) _Divorced_
   4) _Separated_  5) _Widowed_
5. Number of dependents:
   1) _children_  2) _adults_  3) _none_
6. Family Income (estimated):
   1) _Less than $12,000_  2) _$12,000-$24,000_
   3) _$25,000-$39,000_  4) _$40,000 or more_
7. Employment status:
   1) _Working full-time outside home_
   2) _Working part-time outside home_
   3) _Not currently employed_
8. High school grade point average:
   1) _A_  2) _B_  3) _C_  4) _Other_
9. SAT score:
   1) _Overall_  2) _Math_  3) _Verbal_
   4) _Not taken_  5) _Other_
10. Type of high school attended:
   1) _Public_  2) _Private_  3) _Parochial_  4) _Other_
11. Major:
   1) _Declared (please write out)_; ________________
   2) _Undeclared, but seriously considering_; ________________
   3) _Haven't decided yet_; ________________
12. Primary breadwinner in your home when you were growing up:
   1) _Father_  2) _Mother_  3) _Both_
   4) _Other(who?)_; ________________
13. Occupation of primary breadwinner: ________________
14. Person who has influenced you the most in your career choice:
   1) _Father_  2) _Mother_  3) _Teacher_  4) _Other_
   Explain other, please ________________

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15. List two factors that are most important to you in an occupation:
   1) ___________________  2) ___________________

16. Are you actively involved in your religion or church?
   1) Very  2) Moderately  3) Minimally  4) Not at all

17. If you have a religious affiliation, what is it?

18. Have you ever considered nursing for a career?
   1) Yes  2) No

19. If yes, why? ____________________________________

20. If no, why? ____________________________________

21. If nursing had a different name, would you be interested in it as a career?
   1) Yes  2) No  3) Maybe  4) N/A

22. Please explain your answer to 21.
   __________________________________________________
   __________________________________________________

23. I would like an explanation of my SDS code.
   1) Yes  2) No

Extra comments you wish to make may go on the back. Thank you very much. Now please fill out the Professional Nursing Functions and Characteristics Inventory and the SELF DIRECTED SEARCH.
APPENDIX C

PROFESSIONAL NURSING FUNCTIONS
AND CHARACTERISTICS

Directions: Under each broad category of nursing functions and characteristics are examples of the kinds of activities or responsibilities the professional nurse might have. Please circle the one number that describes how you feel about each of the examples given under the broad categories. Would you like to do this kind of activity in a job?

Key: Greatly like = 5
Like = 4
Neutral = 3
Dislike = 2
Greatly dislike = 1

Category A: Application of theories and knowledge from other disciplines to nursing practice.

1. Uses knowledge about the heart and circulatory system in providing nursing care for a patient who has had a heart attack. 1 2 3 4 5

2. Uses psychological theories of stress and coping to help a family with a sick child in a pediatrician’s office. 1 2 3 4 5

3. Uses knowledge about microbiology to plan a program for vaccinations for a community during a measles outbreak. 1 2 3 4 5

4. Applies management principles in managing a health team giving care patients. 1 2 3 4 5
Category B: Assistance of clients, families, groups and communities in achieving maximum levels of development and health potential.

5. Assists the man who has returned from surgery with turning, coughing, and breathing exercises to prevent pneumonia. 1 2 3 4 5

6. Teaches a new mother and father how to feed their new infant safely and satisfyingly. 1 2 3 4 5

7. Counsels a group of adolescent drug abusers about ways to prevent AIDS. 1 2 3 4 5

8. Offers community wellness programs on fitness and exercises to business/industry. 1 2 3 4 5

Category C: Use of the problem-solving process or scientific method in providing care in a variety of health care settings.

9. Gathers information about the patient’s condition by performing a physical examination. 1 2 3 4 5

10. Prioritizes the nursing and medical problems the patient has in order to address the most important ones first. 1 2 3 4 5

11. Establishes realistic goals and plans for the care of the critically ill diabetic patient. 1 2 3 4 5

12. Provides incision care postoperatively for the surgical patient to promote healing and prevent infection. 1 2 3 4 5

13. Teaches the young teenage mother how to take her birth control pills before she is discharged from the hospital. 1 2 3 4 5
14. Visits the obese patient in his home to follow up on the nutrition and exercise counseling done in the hospital.

15. Analyzes illness rates among handicapped school age children from similar communities to plan for school health needs of his/her community.

Category D: Uses systematic problem-solving to gather data in new or unique situations.

16. Gathers all available data to determine factors relating to the patient’s rash and reports the findings to the doctor.

17. Chooses the person most in need of care when several accident victims are brought into the emergency room at once.

18. Compares quality and cost effectiveness of specific plans of care for elderly nursing home patients to justify the best plan.

Category E: Demonstrates interest in continuing professional growth and development after graduation.

19. Joins the national organization for her/his profession.

20. Subscribes to one or more professional journals in his/her specialty area.

21. Attends continuing education offerings in the field of interest even if has to pay for the tuition out of own pocket.
<table>
<thead>
<tr>
<th>Category F: Participates effectively in professional and community organizations.</th>
<th>Code# GD D N L GL</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Accepts the nomination to run for president or other office of the local professional organization.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>23. Volunteers in a local community organization such as the American Red Cross or the shelter for the homeless.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>24. Works as an advisor to the board of education to help implement Family Life Education in the public schools.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category G: Integrates professional values into practice and demonstrates knowledge of professional issues.</th>
<th>Code# GD D N L GL</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. Shows a respect for truth and ethical behavior by telling a colleague that he/she knows the colleague stole some of a patient’s morphine, and if the colleague does not report herself, then he/she will.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>26. Provides the patient and the family with all pertinent information about a new method of treatment so that better understanding and informed consent can occur.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>27. Is knowledgeable about current trends related to the nursing shortage and shares this information with others in efforts to improve the situation.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>28. Testifies at a state hearing on health needs of children with learning disabilities, advocating a new approach to home care.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Category H: Practices in a manner that reflects professional integrity.

29. Admits to a supervisor that she/he made an error in a medication given to a patient. 1 2 3 4 5

30. Calls the physician to question a treatment order when recognizes that the medication he has ordered is wrong for the particular disease process. 1 2 3 4 5

31. Intervenes when another health professional is treating a patient in a disrespectful way. 1 2 3 4 5

Category I: Applies nursing theory and nursing research findings in practice.

32. Suggests to the premature infant nursery head nurse and doctor that a certain method of care read about in a research journal should be tried. 1 2 3 4 5

33. Uses the theory that people will take better care of themselves if they believe it will do some good by relating a treatment to the client’s real home situation. 1 2 3 4 5

34. Sets up a small research study in the public health department to test which type of teaching method for young mothers gets the best results. 1 2 3 4 5

Category J: Performs technical and psychomotor skills consistent with the role.

35. Provides comprehensive newborn care and evaluation of the baby’s condition in the delivery room immediately after birth. 1 2 3 4 5
36. Assists an elderly patient in her home with oxygen therapy so she will not have to go to the hospital. 1 2 3 4 5

37. Uses group therapy with four psychiatric patients in an outpatient clinic to help them with depression. 1 2 3 4 5

38. Uses sterile surgical technique to change the dressings on a child’s wounds to prevent infection. 1 2 3 4 5

Category K: Communicates effectively with clients, health care providers, and the public.

39. Finds out if the patient can read and write before going over written instructions on insulin therapy with him. 1 2 3 4 5

40. Uses correct English grammar, spelling, and punctuation in written progress notes about patients that other health care workers have to read. 1 2 3 4 5

41. Presents information clearly and interestingly when asked to give a speech on contraception to college freshmen. 1 2 3 4 5

42. Offers support group sessions to staff working in the hospital emergency room where the stress level is high to decrease burnout. 1 2 3 4 5

Category L: Collaborates with members of the other health care disciplines.

43. Discusses and plans home care with the social worker and the public health nurse when learns that the patient has no one at home to care for him. 1 2 3 4 5
APPENDIX C (continued)

44. Works on a team with a doctor, a psychologist, and a hospital chaplain to help terminally ill cancer patients die with dignity and comfort.

45. Plans a series of group teaching sessions on "Labor and Delivery" for expectant mothers with labor and delivery room nurses and physical therapists.

Category M: Functions as a staff nurse and assumes a beginning leadership role in nursing practice.

46. Negotiates work hours with the hospital so can have three full days off a week by working four days of ten hour shifts as a staff nurse in the intensive care unit at a starting salary of $22,500.

47. Supervises two practical nurses and two nursing aids in planning and providing care for twenty moderately ill clients.

48. Visits six to ten families in a day in the assigned low income public health district to assess care needs, most of whom are young mothers, children and elderly people.

49. Cares for three critically ill infants in the intensive care nursery during a eight hour shift.

50. Works only weekends as an evening charge nurse because spouse can babysit then, which saves money; gets paid more for working these hours.
Category N: Participates in the change process to improve the delivery of nursing care and health care in specific health care systems.

51. Although not eager to change, tries out a new way to teach and evaluate discharge instructions for patients since the hospital believes it may work better.

52. Recognizes that change is difficult, so teaches staff the reasons, based on research findings, why a change in a medication delivery method is needed.

53. Accepts constructive criticism about his/her work performance and begins to try new ways to improve.

54. Lobbies for state monies to support a center for the homeless and research on the care of the mentally ill.

Thank you. Please take the Self Directed Search now.
APPENDIX D

The Self-Directed Search

By

John L. Holland
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

The Self-Directed Search
A Guide to Educational and Vocational Planning
LETTER OF EXPLANATION, SPRING 1989
March 6, 1989

Dear VCU Student:

Thank you very much for agreeing to participate in the study I am conducting with full-time VCU freshmen on their perceptions of selected functions and characteristics of professional nursing.

Your input will be most helpful in determining those functions and characteristics of professional nursing at the baccalaureate level that may best be utilized in marketing and recruiting perspective students.

The study requires completion of 1) a questionnaire asking for biographic and demographic information, with a few open-ended questions; 2) a vocational assessment questionnaire (The Self-Directed Search) which helps to determine where your interests in a career may lie; and 3) a rating scale (The Professional Nursing Functions and Characteristics Interest Inventory) where you are asked to decide how well you would like to do certain examples of nursing activities that graduate professional nurses do.

When you complete the Self-Directed Search (SDS), you will come up with a Summary Code of your vocational personality profile consisting of three letters. If you would like a brief explanation of your code, please check the "yes" blank on the demographic questionnaire. I've estimated that it will take you about an hour to fill out the three parts, probably less.

A self-addressed stamped envelope is provided for return of the questionnaires. Please return all three questionnaires. I will need each of them to complete the study. Write your SDS code down on a piece of paper for future reference.

If you have any questions concerning the study, please call me at 786-4572. If you have requested the explanation about your vocational code, you will receive that in the mail in 2 to 4 weeks.
Once again, I very much appreciate your time and effort in helping me with this research.

Sincerely,
Ellis Youngkin (Mrs.)
Principal Investigator
Assistant Professor
MCV-VCU School of Nursing
Box 567, MCV Station
Richmond, VA 23298
April 12, 1989

Dear VCU Freshman Student:

I am conducting a study with full-time VCU freshmen on their perceptions of selected functions and characteristics of professional nursing, and I need your help even if you are or are not interested in nursing as a career choice.

Nursing is in a crisis state with dwindling enrollments and ever increasing numbers of college-bound students choosing to pursue careers in fields other than nursing, especially fields that were once predominantly male. Yet the need for highly educated and intelligent people...men and women...to go into nursing is greater than ever.

Your input will be most helpful in determining those functions and characteristics of professional nursing at the baccalaureate level that may best be utilized in marketing and recruiting prospective students.

The study requires completion of four (4) components: 1) an informed consent release, (attached to this letter); 2) a questionnaire asking for biographic and demographic information, with a few open-ended questions; 3) a vocational assessment questionnaire, called "The Self-Directed Search," which helps to determine where your interests in a career may lie; and 4) a rating scale, "The Professional Nursing Functions and Characteristics Interest Inventory," which asks you to decide how well you like certain nursing activities given as examples of what graduate professional nurses do.

If you decide to participate, when you complete the Self-Directed Search (SDS), you will come up with a Summary Code of your vocational personality profile consisting of three letters. If you would like a brief explanation of your code, please check the "yes" blank on the informed consent section attached to the demographic questionnaire.

The total time estimated to fill out the three parts is 50-60 minutes. I realize this is a big request of you at a busy time in your life, however someday you may need a nurse, and your help with this study may assist us in knowing how to better recruit in this field.

Your participation is completely voluntary. There is
APPENDIX F (continued)

no penalty or repercussion for not participating or for withdrawing at any time. Your identity and all information you provide will be kept completely confidential. Your name and identifying information for contacting you will be kept only long enough to clarify any questions I may have concerning your information, and to send you the SDS information, should you desire such. After this, your name will be removed from study forms and destroyed.

The benefits of participation include contributing additional knowledge to the nursing and vocational counseling fields which may help in the future recruitment of nurses. Such recruitment will aid society as a whole. Your participation will add strength to the research and to the findings. An individual benefit may be an increased awareness relating to your own vocational personality profile if you request the SDS code explanation.

Although no risks of participating have been identified, in the event of any physical and/or mental injury resulting from participation in this research project, Virginia Commonwealth University will not offer compensation.

By signing and returning the Informed Consent form on the next page, you agree to participate. After this, please fill out the three questionnaires, and return them with the informed consent in the same envelope to your English professor at the next class. I need this information as soon as possible. Be sure your correct local mailing address is on the consent form so I can send you the explanation of your SDS summary code, should you wish this information. I will try to get this to you in the next three to four weeks.

If you have any questions concerning the study, please call me at 786-4572. Once the research is completed, you may request final results by contacting me. If you received a letter earlier asking you to participate and you were unable to do so at that time, please reconsider now.

I very much appreciate your time and effort in helping me with this research.

Sincerely,
Ellis Youngkin (Mrs.)
Principal Investigator
Assistant Professor
MCV-VCU School of Nursing
Box 567, MCV Station
Richmond, VA 23298

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APPENDIX F (continued)

Professional Nursing Characteristics
and Functions Study

INFORMED CONSENT

I have read the accompanying letter asking me to participate in this research to study perceptions of freshmen students about professional nursing functions and characteristics, and I agree to participate. I understand that all records will be kept confidential, that there is no cost to me, that no risks are anticipated associated with participation, and that I may withdraw without penalty at any time. I understand that in the event of any physical and/or mental injury resulting from my participation in this research project, Virginia Commonwealth University will not offer compensation.

Signature______________________________ Date________________

Please Print Full Name________________________________________

Local Mailing Address____________________________

______________________________________________________________

Home mailing address, if different from above:

______________________________________________________________

Phone where can be reached locally__________

Please return in the envelope provided to:

Mrs. Ellis Youngkin
Box 567, MCV Station
School of Nursing
Richmond, VA 23298
Code#_____

I would like an explanation of my SDS profile code:

Yes____  No____
APPENDIX G

LETTER AND INFORMED CONSENT, AUGUST 1989

August 25, 1989

Dear VCU Freshman Student:

I need your help! I am conducting a study with full-time VCU freshmen on their perceptions of selected functions and characteristics of professional nursing. Even if you are or are not interested in nursing as a career choice, your participation is greatly needed. If you are in a major or haven’t made up your mind yet, please agree to fill out the questionnaires. Someday you may need a nurse, and one will be there because you helped determine facts about the profession that can be used in recruiting.

Nursing is in a crisis state with dwindling enrollments and ever increasing numbers of college-bound students choosing to pursue careers in fields other than nursing, especially fields that were once predominantly male. Yet the need for highly educated and intelligent people...men and women...to go into nursing is greater than ever. Your input will be most helpful in determining those functions and characteristics of professional nursing that may best be utilized in marketing and recruiting prospective students.

The study requires completion of four (4) components: 1) an informed consent release; 2) a questionnaire asking for biographic and demographic information, with a few open-ended questions; 3) a vocational assessment questionnaire, called "The Self-Directed Search," which helps to determine where your interests in a career may lie; and 4) a rating scale, "The Professional Nursing Functions and Characteristics Interest Inventory," which asks you to decide how well you like certain nursing activities given as examples of what graduate professional nurses do.

If you decide to participate, when you complete the Self-Directed Search (SDS), you will come up with a Summary Code of your vocational personality profile consisting of three letters. If you would like a brief explanation of your code, please check the "yes" blank on the informed consent or on the demographic questionnaire.

The total time estimated to fill out the three parts is about 30-35 minutes. I realize this is a big request of you at a busy time in your life, but your help with this
study may assist us in knowing how to better recruit in this field.

Your participation is completely voluntary. There is no penalty or repercussion for not participating or for withdrawing at any time. Your identity and all information you provide will be kept completely confidential. Your name and identifying information for contacting you will be kept only long enough to clarify any questions I may have concerning your information, and to send you the SDS information, should you desire such. After this, your name will be removed from study forms and destroyed. I do need all the information asked for in the questionnaires for the study to be of benefit.

The benefits of participation include contributing additional knowledge to the nursing and vocational counseling fields which may help in the future recruitment of nurses. Such recruitment will aid society as a whole. Your participation will add strength to the research and to the findings. An individual benefit may be an increased awareness relating to your own vocational personality profile if you request the SDS code explanation. It may be helpful if you don't know what you want to major in, or if you do know and want verification of choice.

Although no risks of participating have been identified, in the event of any physical and/or mental injury resulting from participation in this research project, Virginia Commonwealth University will not offer compensation.

By signing the Informed Consent form, you agree to participate. After this, please fill out the three questionnaires and return them with the Informed Consent in the same envelope to your English professor at the next class. I need the information as soon as possible. Be sure your local mailing address is on the consent form if you wish an explanation of your SDS code and a list of occupations fitting your particular code. I will try to get this to you in the next three to four weeks.

If you have any questions concerning the study, please call me at 786-4572. Once the research is completed, you may request final results by contacting me. If you received a letter earlier asking you to participate and you were unable to do so at that time, please reconsider now. If you do not wish to participate, please return the packet to your professor so that it may be passed on to someone else.
I very much appreciate your time and effort in helping me with this research.

Sincerely,
Ellis Youngkin (Mrs.)
Principal Investigator
Assistant Professor
MCV-VCU School of Nursing
Box 567, MCV Station
Richmond, VA 23298
APPENDIX G (continued)

Professional Nursing Characteristics and Functions Study

INFORMED CONSENT

I have read the accompanying letter asking me to participate in this research to study perceptions of freshmen students about professional nursing functions and characteristics, and I agree to participate. I understand that all records will be kept confidential, that there is no cost to me, that no risks are anticipated associated with participation, and that I may withdraw without penalty at any time. I understand that in the event of any physical and/or mental injury resulting from my participation in this research project, Virginia Commonwealth University will not offer compensation.

Signature____________________________Date________________

Please Print Full Name___________________________________

Social Security Number____________________________________

Local Mailing Address____________________________________

Home mailing address, if different from above:

______________________________________________________

______________________________________________________

Phone where can be reached locally______________________

Please return in the envelope provided to:
Mrs. Ellis Youngkin
Box 567, MCV Station
School of Nursing
Richmond, VA 23298
Code#______

I would like an explanation of my SDS profile code:
Yes____     No____

If yes, please give the following:
English professor's name______________________________
Section number________________________________________

Thank you for your help.
APPENDIX H

CHANGES IN THE PNFCII
RECOMMENDED BY EXPERT FACULTY

Category A: Item 4: Add "to patients."

Category B: Item 8: Add "fitness" to the offerings.

Category C: Item 10: Shorten; too long.

Category C: Item 11: Clarify and take out "for the day."

Category C: Item 12: Use "incision" instead of "wound."

Category C: Add item showing that nurses use epidemiology principles or analysis of illness rates, birth rated, or handicapped children rates to provide a more global perspective in looking at illness/wellness in the United States. Item 15 was added.

Category D: Item 17: Change "care plans" to "plans of care."

Category G: Item 25: Two reviewers said that this item would be greatly disliked by all students and would not discriminate. The researcher decided to keep the item since this type of professional accountability and integrity is stressed in all the criteria for a professional nurse.

Category G: Item 27: Use "Is knowledgeable about" rather than "Stays up on."

Category G: Item 28: The reviewers recommended adding an item or so related to being politically active in the profession and in society, in which the nurse is an advocate.

Category H: Item 29: Awkward wording revised. Again, one reviewer said this item would not be liked by any student and would not discriminate. It was kept because it exemplifies a common occupational hazard in nursing which absolutely requires honesty and reporting to a higher authority.

Category I: Item 32: Add "infant" before "nursery."

Category I: Item 33: Shorten and clarify.

Category I: Item 34: Change "mini" to "small" and give a specific example of the research study.

Category J: Item 38: Change "burns" to "wounds." Add "to prevent infection."

Category K: Item 42: Add item on communication which shows that nurses may provide therapy to groups.

Category L: Item 40: Reword; awkward.

Category M: Item 46: The starting salary was increased based on newer figures obtained from the literature. One reviewer questioned the need for listing
a starting salary. The researcher decided that the participants needed the opportunity to react to a realistic figure since the media view of nursing is one of being underpaid.

Category M: Item 50: One reviewer questioned having more than one reason for working a weekend shift. The item was left as is to see what the general response would be to this type of work schedule, not the reaction to the reasons.

Category N: Item 52: Add phrase that indicates a stronger research component utilized in developing a new method of delivering medications.

Category N: Item 54: Added as recommended to provide evidence of nursing activities related to research, legislation, and mental health.

General: Add the Likert category codes directly over the numbers for greater assurance of accuracy in answers.
APPENDIX I

EXPLANATION OF THE SELF-DIRECTED SEARCH CODE

An Explanation of the Self-Directed Search Code

Thank you for participating in the study to assist in determining marketing information to better recruit students for nursing. As promised, here is a brief explanation of your SDS code.

Dr. John Holland developed a theory of how a person's vocational personality type greatly influences his or her choice of a career path. Dr. Holland found six (6) major personality types and proved that people tend to be predominantly one of the types in most occupations. He used a three (3) letter code to characterize vocational personality. You recently filled out his SDS questionnaire and came up with your own SDS code. Listed below are the six personality types, characteristics of these types, and some examples of the kinds of occupations most often chosen in each category. People are usually more likely to be interested in careers exemplified by the first letter of their codes, but the second and third letters are of influence, too. Holland has determined hundreds of examples for the codes, so all those that fit your personal code cannot be listed, but a few examples are written at the end of the second page. If you wish more information on this subject, please see Holland, John. (1985). Making Vocational Choices: A Theory of Vocational Personalities and Work Environments. 2nd Ed. Englewood Cliffs, N. J.: Prentice-Hall, Inc., or consult a career counselor.

Holland's Vocational Personality Types

R = Realistic: Characterized as conforming, frank, materialistic, persistent, practical, thrifty, inflexible, hard-headed, genuine, uninsightful, valuing concrete or tangible things, money, power, status, skilled, mechanically inclined. Likes to work with things rather than people, manipulating tools, physical objects.

Job examples: Drafting, auto mechanic, surveyor, x-ray machine operator, wildlife specialist.

I = Investigative: Values science, likes to investigate mathematical, physical, biological, and cultural phenomena; enjoys problem-solving; prefers to work independently; is intelligent, studious, analytical,
cautious, critical, complex, curious, introspective, pessimistic, scholarly, reserved, unpopular, unassuming, intellectual.

Job examples: Computer scientist, research physician, economist, experimental psychologist, nuclear physicist, oceanographer.

A = Artistic: Tends to be emotional, expressive, creative, idealistic, impulsive, impractical, non-conforming, sensitive, open, imaginative, complicated, independent, free; prefers unsystematized activities, to create art verbally, physically, or with human materials; values ethical qualities.

Job examples: Writer, public relations, fabric designer, architect, language interpreter.

S = Social: Characterized as cooperative, friendly, concerned about others welfare, generous, helpful, kind, persuasive, responsible, sociable, tactful, warm, understanding, idealistic, patient; preferring to work with groups to inform, teach, develop, and cure; to administrate services for others; dislikes ordered, systematic activities that require tools, machines, or tools; performs necessary and important work.

Job examples: Teacher, social worker, librarian, political discussion leader, physical therapist, nurse.

E = Enterprising: Likes to work with people as a manager, leader, influencer, persuader. Prefers activities that allow them to sell, lead, persuade, manipulate to gain organizational goals. Competent in expressing self, in management, economic goals. Dislikes systematic activities; has deficit in scientific competencies. Seen as political, ambitious, agreeable, shrewd, aggressive, popular, adventurous, extroverted, optimistic, sociable, self-confident, energetic.

Job examples: Politician, bank officer, lawyer, industrial leader, business manager.

C = Conventional: Is ordered, systematic, explicit, precise, mathematical, meticulous, methodical; likes to manipulate data such as numbers and records, to operate by prescribed plans, use business machines or computers to attain economic goals; dislikes free, exploring, ambiguous, unsystematized activities. Values economic achievement and business success. Said to be careful, conforming, rigid,
inhibited, obedient, orderly, defensive, prudish, thrifty, practical, unimaginative.

Job examples: Data processor, credit manager, accountant, book keeper, business report writer.

Examples of _____ Code:

Best wishes for success in all you do,

Mrs. Ellis Youngkin
Assistant Professor
MCV-VCU School of Nursing
Ellis Quinn Youngkin was born in Durham, North Carolina, on August 18, 1939. Ms. Youngkin received a Bachelor of Science in Nursing from Duke University, Durham, North Carolina, in 1961, a Master of Science in Maternal-Child Nursing from the University of Maryland, Baltimore, Maryland, in 1964, and certification as an Obstetric-Gynecologic Nurse Practitioner from the Medical College of Virginia-Virginia Commonwealth University (VCU) in Richmond, Virginia, in 1978.

Ms. Youngkin has held positions as staff nurse and research assistant at Duke Hospital; instructor at Church Home and Hospital School of Nursing, Baltimore, Maryland; instructor, assistant professor, associate professor, and co-director of the Obstetric-Gynecologic Nurse Practitioner Program, School of Nursing, VCU; assistant professor, associate professor, co-director of the Family Nurse Practitioner Program, and Assistant Chairman School of Nursing, Old Dominion University (ODU), Norfolk, Virginia; and practicing nurse practitioner in private practice, the state health department, the National Health Service, and two university student health services.

Ms. Youngkin is a member of Sigma Theta Tau, Phi Kappa Phi, and Pi Alpha Alpha, and several national nursing and research organizations. She was awarded a federal traineeship for masters study, and a fellowship from ODU
for doctoral study. She has received the Dean’s Research Incentive Award, an A. D. Williams research grant from VCU, and the first research grant awarded by the Virginia Nurses Association. She was awarded tenure at Virginia Commonwealth and Old Dominion Universities.

Some of Ms. Youngkin’s recent publications include:


