PHYSICIAN ASSISTANT HOLLAND CODES AS DETERMINED BY THE SELF-DIRECTED SEARCH FORM R AND VOCATIONAL SATISFACTION

by

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A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Capella University

December 2003

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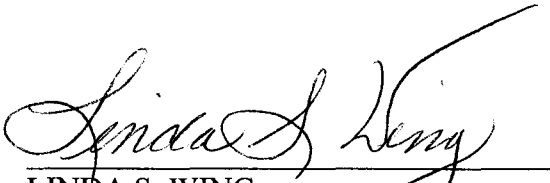

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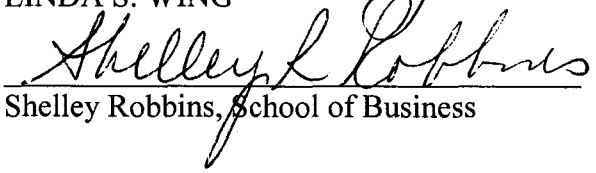

Shelley Robbins, School of Business

Dedication

This paper is dedicated to the members of my family, who have been supportive of this educational journey.

Acknowledgements

I would like to thank my mentor, Linda Wing, PhD, and committee members for their interest and support of this research, the American Academy of Physician Assistants for their assistance, my PA colleagues who participated in this project, the Finch University faculty and staff who aided in this project including the PA department, and RIASEC International for funding this dissertation. A special thanks to my family members who stuffed envelopes, validated data, and helped with other tasks as well as the PA students who reviewed the qualitative data entry and categorization.

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CHAPTER 1. INTRODUCTION

Physician Assistants (PAs) are medical professionals authorized to render medical care under the supervision of a licensed physician (AAPA, 2002a). These dependent practitioners are utilized in outpatient and hospital settings to obtain medical histories, perform physical examinations, order and interpret laboratory studies, diagnose and treat medical conditions, counsel patients, and assist in surgery. In these areas, the PA profession has many similarities to that of the more universally understood profession of the physician.

PA employment opportunities mirror that of physicians. In other words, in any discipline in which a physician works, a PA may be working alongside him. PAs practice in all areas of medicine including surgery and the subspecialties, although most PAs are involved in primary care medicine (AAPA, 2001). PAs are able to switch disciplines within their careers but do not require formal training to do so. This mobility is unlike any flexibility afforded to physicians, who must fulfill residency requirements before they can change disciplines.

This relatively young medical profession of about 35 years has undergone rapid expansion and change (AAPA, 2002b). Issues pertaining to PA job and career satisfaction are wide open for exploration. Factors that influence PA satisfaction and dissatisfaction have not been studied qualitatively, although several quantitative studies have been published (Bell, 2002; Lane, 2002; Marvelle & Kreditor, 1999) and limited dissertation work on PA vocational satisfaction is available (Muus, 1996). While research on PA

vocational satisfaction in the quantitative tradition has shown high levels of satisfaction linked to researcher chosen variables, the reasons behind this high degree of satisfaction are not known. As suggested by Marvelle and Kreditor (1999), they are important to know in order to maintain the professional practice characteristics that contribute to this high level of satisfaction. Qualitative studies to determine why PAs are so satisfied would further contribute to this body of knowledge.

Furthermore, as a result of the rapid changes in the PA profession and the lack of empirical evidence, a coding system used in career guidance needs verification or updating. This specifically refers to the three-letter Holland code assigned to the PA profession. Thus, this study aims to reach two main goals. The first is to determine the current Holland code for PAs. The second is to learn more about the factors that PAs consider important for vocational satisfaction.

Background of the Study

The PA Profession

As a relatively young medical profession, the details of PA education and scope of practice within the profession are not common knowledge. PAs graduate from PA educational programs that are accredited by the Accreditation Review Commission on Education for the PA Programs or ARC-PA (ARC-PA, 2002). Typical PA programs average 108 weeks of training over two years whereas physicians average 153 weeks over 4 years (AAPA, 1998). PA program curricula are based on the traditional medical school model to parallel physician training (Knott & LaBarbera, 2000).

When the formal training is completed and the students graduate, their title after their name is "PA." To become a physician assistant-certified (PA-C), graduate PAs must pass the national board examination given by the National Commission on Certification of Physician Assistants (NCCPA, 2002). The NCCPA is an independent organization represented by members of other medical profession's organizations such as The American College of Surgeons, American Academy of Pediatrics and the American College of Physicians. To maintain certification, PAs must log 100 hours of continuing medical education every two years and formally recertify with an examination every six years.

The ability to practice as a PA in the United States is through enabling legislation such as licensure, state certification, or registration (PA Foundation, 1993). Different states have different rules governing the scope of PA practice. For example, the permission for PAs to write prescriptions, known as prescription privileges, is unique to each state (AAPA, 2002c). PAs are dependent practitioners by definition. That definition means that PAs must be teamed with a licensed physician supervisor. The degree of supervision mandated varies by state. Some states require direct supervision, while others allow indirect supervision such as via telephone contact for various amounts of PA practice autonomy. Generally speaking, the PA scope of practice reflects that of the supervising physician.

During the initial formation of the PA and physician (MD) team, the physician may wish to have the PA report on each patient and the physician may also want to see each patient. Eventually, the physician may not even need to hear a report on or see all of the patients treated by the PA. At this level of team functioning and PA autonomy, the

PA has the responsibility for seeking the advice of the physician when necessary. With the development of autonomy within the practice's scope, PAs practice medicine much like that of the supervising physician (Knott & LaBarbera, 2000).

PAs are sometimes referred to as midlevel providers or physician extenders along with a slightly similar discipline of nurse practitioner. These advance practice nurses have received graduate degrees (Masters) to provide primary care health services for specific patient populations. NPs can be found in many disciplines such as family practice, geriatrics, pediatrics, and obstetrics and gynecology (AANP, 2002). The main difference between the professions is that NPs are not dependent practitioners as are PAs by definition, meaning that a PA must work under the supervision of a physician whereas, theoretically, an NP does not have this supervision requirement.

PA Profession's Growth

The Physician Assistant profession has rapidly expanded in the past decade with a proliferation of PA programs and existing programs increasing their class sizes. The creation of 69 additional PA programs from 1993 to 2000 more than doubled the number of PA programs to a total of 126. Not only did the number of PA programs increase but the class sizes did as well. From 1989 until 2000, the average enrollment rose 64% to 82.5 students per program (Simon, 2001). As a result of this expansion, there are more than 40,000 practicing PAs (AAPA, 2001). This is projected to increase by an additional 53% by 2010 (USBLS, 2001). As a result, the job market is changing for PAs.

PA Vocational Guidance

The growth of the PA profession should provide for better access to and quality of health care for patients, particularly with a successful PA and MD team. Just as any

organization makes an investment when it employs a professional, hiring a PA is no different. The development of the PA and MD team requires an investment in time and training so the employed PA should be a good fit to the practice. If these critical issues are not addressed, it is possible that a PA may leave a practice after a short time. If this happens, disruptions of several kinds occur. First, the practice may not have received a return on its training investment and suffers financial loss. As a result, the practice may be reluctant to hire a replacement PA, fearing a similar situation. The practice may also become skeptical of the PA profession in general. Also, there can be negative repercussions relating to patient care. The PA is also personally impacted. The PA's resume will show a short-term position and therefore she may not be hired as readily.

These concerns and potential problems and the many similarities of the PA discipline to that of physicians suggest that new PA graduates and those PAs considering job changes may benefit from vocational guidance to help them make solid employment decisions. With a well-thought out decision, a PA would be more likely to remain at a chosen medical practice. Retaining a PA could benefit the financial situation of the medical practice and of the employed PA, as well as benefit patient care and the PA profession's image. In this respect, there is a need for a PA career-counseling program.

The American Medical Association (AMA) and the Association of American Medical Colleges (AAMC) have recognized this need for formalized career counseling for physicians in training. Initially, medical school career counseling was driven primarily by performance on certain clinical rotations. For example, if a student performed well in a pediatric rotation, then pediatrics was suggested for a career path. This approach was inadequate (AAMC, 1999a). In response to the recognized need for

more extensive career counseling for medical students, the MedCAREERS and Pathway Evaluation Programs (PEP) were developed to aid in the choice of medical residency (AAMC, 1999b; AAMC & AMA, 1999a, 1999b; Glaxo Welcome, 1999). Currently, PA students enter disciplines in the same haphazard fashion as medical students did before these career-counseling programs emerged. Thus, with career choices similar to that of physicians, PAs may likewise benefit from career-counseling programs like MedCAREERS and PEP.

The MedCAREERS and PEP comprehensive career-counseling programs have many areas for medical students to explore in working toward their residency matches. Many of the components of these programs are those utilized in typical career counseling. These components include the use of personality inventories, value identification tools, and skills assessments, as well as reflection on environmental factors and reasons for pursuing the medical profession. The plan is to match students' interests, values, and goals with those of physicians in certain specialties (AAMC & AMA, 1999a, 1999b; Glaxo Welcome, 1999).

One well-known inventory used in these and other vocational guidance programs is the *Self-Directed Search (SDS)* (Holland, 1994, 1999b). The *SDS* is a vocational interest inventory, a type of personality inventory in which participants identify their three-letter vocational personality code. The three-letter code is based upon Holland's theory in which certain personalities fit best into certain types of environments. Matching of vocational personalities to congruent environments can lead to predictions of vocational choice, stability, and achievement (Holland, 1997). In a fashion similar to

physicians in training, PAs may benefit from exploring their interests with the *SDS* as part of a formal career-counseling program.

The published PA Holland code, ISA, was developed with a convenience sample of John Hopkin's PA students (Richards, 1977). This code has not been subject to rigid empirical verification. Additionally, the PA profession has evolved dramatically since the code was identified. There are more women than men entering the once male dominated PA profession. The previous primary care practice focus has switched to specialty practice. Before incorporating the *SDS* into a PA career-counseling program, the code needs verification or redefinition.

Statement of the Problem

The PA profession is relatively new and is undergoing rapid expansion and change. There is much to be investigated in terms of PA vocational satisfaction. One area for further study is the validation of the PA Holland code used in career planning and development. Secondly, factors for PA career satisfaction are not known. These features need to be identified to guide career decision and management techniques to help ensure vocational satisfaction, which influences employee retention, and thereby provides for better patient care. Thus, the information gained from the validation of the Holland code and the identification of variables for PA vocational satisfaction can be used to inform individuals considering entry into the PA profession, PAs considering a job change, and new graduates into wise employment choices to increase vocational satisfaction.

Purpose of the Study

This study will examine PA vocational satisfaction and the Holland vocational codes of practicing PAs who are satisfied with their career and specialty choices. The results may prove useful for career considerations as part of a formalized PA career-counseling program.

Rationale

Jobs can be fulfilling for an employee and contribute to life satisfaction or can be a source of aggravation. Those satisfied with their vocations are likely to be more committed to an organization and have an increased quality of work (Mathieu & Zajac, 1990). This is particularly important in the medical profession, as the quality of patient care may be compromised if job satisfaction is not achieved.

There are many theories of job and career satisfaction, particularly with respect to the fit between a person and his work environment. The basic concepts and practical application behind them is that when an individual's personality matches the work environment, then there is greater satisfaction for the individual and less turnover for the employer. One such personality and work environment fit theory is by Holland (1997) in which he types personalities and work environments. Holland's theory espouses that those individuals with a Holland code congruent with a particular work environment will be better satisfied than those without a matching code.

As an individual ages, he or she has had more of an opportunity to make career moves and may be more likely to have found an occupation congruent with his or her

vocational personality. This statement is supported by the theories of Holland (1997) and Schein (1993).

Holland developed several instruments to measure various personality types and characterized different occupations in an attempt to predict work personality congruence and, thus, satisfaction. The predictive purpose is to aid individuals in vocational placement (Holland, 1997). The published Holland code for PAs may be antiquated due to vast changes in the PA profession, including the demographic change from a profession dominated by male providers to a discipline now dominated by female providers. The code needs to be verified before it would be implemented with confidence in a formal career-counseling program. This study will validate or revise the Holland code for PAs. It will also attempt to identify the factors important to PAs for vocational satisfaction, as these factors are currently unknown.

Research Questions

There are two main lines of questioning in this dissertation study which guided the research methodology. The first line of questioning pertains to the PA three-letter vocational personality code. The second line of questioning pertains to vocational satisfaction issues for PAs. More specifically, for the first line of questioning:

Q1a. What is the current three-letter vocational personality code for PAs as identified by the *Self-Directed Search Form R* (Appendix A)? Does it match the published code?

Q1b. Does the code for PAs differ between PAs employed full time and part-time (< 32 hours per week)?

Q2. Is there a statistically significant difference in the PA code by gender?

Q3. Do PAs with varying levels of satisfaction with their career choice have statistically significant more congruent codes?

Q4a: Do older PAs (with age as a reflection of life experiences) have more congruent codes than younger PAs?

Q4b: Do PAs with varying levels of satisfaction with their career choice have statistically significant different ages?

Q4c: Do PAs with varying levels of satisfaction with their specialty choice have statistically significant different ages?

The second line of questioning is asked to learn more about PA vocational satisfaction in general. This part of the dissertation study attempts to identify the factors for satisfaction and dissatisfaction of the PA profession as a vocational choice with the open-ended questions as seen in the survey (Appendix A). The overriding question for this second line is: What factors are important to PAs in terms of career satisfaction?

The two specific questions are:

As you reflect about your career as a PA, what aspects of your career choice bring you career satisfaction?

What aspects of your career choice do not satisfy you?

Significance of the Study

Because of the lack of PA career decision making material and the unknown of why PAs are so satisfied with their profession, many avenues can be explored. Helping PAs assess their vocational personalities and comparing these with those of practicing

PAs satisfied with their choices could be an invaluable career-counseling aid. Identification of the factors important for PA job and career satisfaction and dissatisfaction will not only contribute to the body of knowledge but can be incorporated into an individual assessment in a career-counseling program. This is particularly important with the changing PA job market and affects those considering entry into the PA profession, new PA graduates, and PAs considering a job change. Solid career choices by PAs could improve their personal and professional satisfaction as well as positively impact patient care and the PA profession's reputation. Employers also benefit with decreased workforce turnover. The profession can benefit from the identification of the factors that foster PA career satisfaction so that, as the profession further evolves, these factors are not lost.

Definition of Terms

Autonomy- freedom of the PA to provide services to a patient with little or no direct physician supervision.

Brown-Gore Index- one of several methods of measuring Holland's construct of congruence (Brown & Gore, 1994); it is the approach for this study

Career- a series of jobs a PA has held within the PA profession

Career satisfaction- the satisfaction a PA has in terms of the PA profession. For purposes of this study, it will be responses of 3, 4, or 5 on survey item 9.

Clinical practice-working as a traditional PA delivering health care services directly to patients

Congruence- the degree of matching of an individual's Holland code with the code of the working environment. It will be measured with the Brown-Gore Index (Brown & Gore, 1994).

Full-time PA work- 32 or more hours per week

Holland code-the three-letter Holland typology as determined with Holland's tools. In this study, the three-letter code will be derived from the *Self-Directed Search (SDS) Form R* (Holland, 1994).

Job satisfaction- the satisfaction a PA has in terms of his or her current job. For purposes of this study, it will be responses of 3, 4, or 5 on survey item 11.

Part-time PA work- less than 32 hours per week.

Physician Assistant- an individual trained to provide traditionally physician delivered medical services under the supervision of a physician.

Prescriptive authority- the ability of PAs to independently prescribe medications for patients.

Primary care- care rendered by health care providers in the fields of family medicine, pediatrics, obstetrics and gynecology, and general internal medicine.

Satisfaction- a subjective feeling of gratification or fulfillment. For the purposes of this study, it will be in terms of one's vocation (see career satisfaction, job satisfaction, specialty satisfaction).

Self-Directed Search (SDS) Form R- a self administered vocational personality inventory developed by J. Holland, PhD (1994) which is self-scored and can be self-interpreted to aid individuals in exploring careers.

Specialty care- health care provided in nonprimary care disciplines such as in general surgery, urology, and rheumatology.

Specialty satisfaction- the satisfaction a PA has in terms of his specialty care choice within the PA profession. For purposes of this study, it will be responses of 3, 4, or 5 on survey item 10.

Vocation- profession or occupation

Assumptions and Limitations

This study is based upon several assumptions.

1. Holland's typology is valid.
2. The *SDS Form R* is the most appropriate of Holland's tools to measure PA vocational personality types.
3. The typical assumptions of survey research. These include that the participants understand the cover letters and survey items and that they answer them honestly. In addition to formulating objective answers, it is also assumed that the participants physically marked the answers as intended. The descriptive survey, also known as the normative survey, assumes that the observations are normal and that these same observations would be seen again later.
4. The data transfer from the surveys to the electronic spreadsheet is correct.
5. The data analysis techniques are appropriate. The underlying justification for applying statistical tests assumes that a sample is random. A tenant of parametric statistics is that a population and its representative sample are

normally distributed as should be the dependent variable. The groups under study are mutually exclusive and should have similar variances. Data must be of interval or ratio types (Munro & Page, 1993). The underlying assumption of nonparametric statistical tests is that the samples compared are similarly shaped, although they may be of any shape although the population and its resultant sample may be skewed (Glantz, 2001; Hodges, Drech, & Crutchfield, 1975; Munro & Page).

6. The respondents represent the characteristics of the PA population under study.

This dissertation study has the limitations inherent within the assumptions. In addition, there are several other limitations. The sample size will ultimately be limited by budget. The demographic survey is a new tool utilized in this study. There is the limitation that the satisfaction scales are inherently constricted. The AAPA mailing list, while the most exhaustive list of PAs, may not have all PAs in their database. Respondents could be biased in their views of satisfaction or dissatisfaction, and those feeling strongly might be more likely to respond to the survey materials thus biasing the sample. If statistical relationships are discovered, the relationships do not infer cause and effect.

Delimitations

This study is limited to PAs as defined by the AAPA and as identified by the AAPA's database. Results cannot be generalized to other midlevel providers.

Nature of the Study

A blend of qualitative and quantitative research methods can be utilized to learn about Physician Assistant vocational satisfaction and to identify the PA occupational code (as defined by Holland). A written survey approach facilitates the collection of demographic data (characteristics of the population), qualitative satisfaction information (another characteristic of the population under study), and the completion of the *SDS*. This survey methodology is also useful to identify a pool of PAs for further study with the *SDS* and to aid the generalization of the results of the study to the PA population.

First, demographic data is necessary to collect in order to describe the sample and to give reference as to how the demographics compare to the population of PAs from which the sample was taken. Likert-type scales are built into this same survey for vocational satisfaction assessment. Furthermore, this same instrument can be used to identify a pool of PAs to participate in the second part of the study. The responses for demographics and satisfaction can be collated across groups for statistical data analysis.

This collection of demographic data and satisfaction assessment is facilitated with structured questions, which typically are answered quickly and more honestly than unstructured ones (Leedy, 1997). While limitations of structured questions include the misinterpretation of questions, nonidentification of relevant issues, and that answers may or may not reflect the researcher's desired responses (Leedy), the researcher piloted the materials for improving validity of the questionnaire.

The major goal of the study is to identify the Holland code of PAs. The code can be identified through Holland's *Self-Directed Search (SDS) Form R*. The *SDS* is a well-

researched vocational personality inventory that has withstood the test of time. Formal studies have been conducted with the *SDS* to verify its reliability and validity and results are reported in the *SDS* technical manual (Holland, Fritzche, & Powell, 1997). The instrument utilized in this study to measure the Holland codes was the *SDS Form R* (Holland, 1994). Briefly, in terms of construct validity for the measurement of vocational personality, the *SDS* is considered to be able to make certain inferences with at least "a moderate degree of confidence" (Holland et al., 1997, p. 27). Criterion validity does not appear to be an issue for the *SDS*, as the completion of a survey should not affect the performance on the demographic survey and visa versa.

Another goal of this study was to collect qualitative vocational satisfaction information from PAs as there is not much known about PA vocational satisfaction, and satisfaction appears to be a complex issue with potentially many variables. This may identify tangible and intangible rewards and incentives associated with the PA profession. As suggested by Dawis and Lofquist (1984), knowledge of these rewards and incentives is necessary to be included in the vocational decision making process.

This initial inquiry into PA vocational satisfaction can be appropriately accomplished with open-ended or unstructured survey questions (DePoy & Gitlin, 1998). An advantage of using unstructured questions in terms of the identification of satisfaction factors is that they can identify issues important to the participants instead of being forced a choice from a structured list, which does not capture the true phenomenon. While open-ended questions require more time to complete than closed-ended questions, they are a more appropriate choice for this study. Participants were asked for a simple listing of factors, not an extensive answer, in order to facilitate collection of this qualitative data.

There are four stages in the completion of a survey in which a participant may report erroneously and thus compromise internal validity. These are comprehension, retrieval, estimation and judgment, and response (Leedy, 1997). To decrease comprehension errors, there must be careful attention given to the development of the survey items and questionnaires should be piloted by at least six subjects (Leedy). The researcher has the most control over this stage. If survey items request information from long-term memory, then retrieval can be a significant problem, due to inaccurate recall. This will not be an issue in this study. In the stage of estimation and judgment, respondents may do one of two things to erroneously report. They may figure that the recalled information is not adequate and use that information as a starting point for an estimate or they could appraise the recalled information in light of its relevance and then formulate a response based upon this judgment. The response stage can be corrupted if respondents consider issues such as the social acceptance of the answer and the sensitivity of the topic and then determine how to respond (Leedy). The topic matter of the dissertation study is not one known for controversy, so hopefully the corruption from the last two steps is minimized. An underlying assumption in survey research is that the respondents answered honestly and in good faith.

To gather the data with the survey tools just explained, this researcher utilized a traditional mailed survey approach over an electronic or personal approach. First, there was an available sampling frame of addresses but not of e-mail addresses for a probability sample of PAs from the American Academy of Physician Assistant's (AAPA) mailing list. The AAPA holds the most complete up-to-date listing of PAs available. The AAPA can provide a random sampling of addresses to researchers after their approval of

a research study. Secondly, a mailed approach was preferred over personal data collection as this approach would be time consuming and would also involve time and expense of travel to arrive at a large enough sample size that would not even be probability based. Furthermore, mailed surveys can reach relatively many subjects. As care must be taken to achieve high return rates as low response rates compromise the external validity of the results, a follow-up mailing to attempt to capture the attributes of the initial non-responders was conducted. It is preferred to have a smaller sample with a high response rate than a very large sample with a poorer response rate as the high response rate improves external validity (APOR, 1999). The actual target number was limited to the financial constraints of the study.

In summary, a mailed survey approach utilizing a hybrid of qualitative and quantitative research approaches can be utilized to gain information about PA vocational satisfaction and the PA occupational code. The development of survey questions or items requires much thought to minimize comprehension problems and to have face, content, construct, and internal validity. The advantage of the richness of the data from open-ended questions can be captured for the unknown of PAs vocational satisfaction. The use of the *SDS Form R* (with optional daydream section) can identify the PA occupational code. With a properly developed survey and already tested tool (*SDS*), the design should have good internal validity. With a random sampling methodology and follow-up mailings to improve the response rate, the design will also have good external validity.

Organization of the Dissertation Study

The dissertation is organized into the typical five chapters: an introduction, a review of the literature, the methodology, the results, and the discussion and conclusions. The review of literature defines PAs, discuss Holland's theory, and career and job satisfaction. The methodology describes the protection of human subjects, the research instruments, subject selection and sample size, the data gathering approach, and justifies the statistical analysis utilized. The results section reports the descriptive and inferential statistical findings as well as reporting the qualitative information from the open-ended questions. The discussion interprets the findings including as they relate to what has been presented in the literature review. The conclusions section makes recommendations for further research, and summarizes how the findings can be applied to a formal PA career-counseling program.

CHAPTER 2. LITERATURE REVIEW

There are many published theories on career choice and development. The majority of these theories advocates, in one way or another, that it is essential that one's personality and preferences be understood and subsequently fitted into a vocation that will be rewarding. Weinrach (1996) explains that "the theories of career development and choice attempt to explain, describe, and predict career-related values and behaviors" (p. 75). Scharf (1997) describes a career as a series of jobs.

Jobs can be viewed as a source of personal fulfillment or a source of frustration for employees. An employee's commitment to an organization has financial implications for the hiring organization, which, in turn, has training and other costs invested in the employee. With an understanding of job satisfaction, organizations may be able to adjust policies regarding pay, promotion, and other issues and thereby increase retention of their workforces. Job satisfaction and organizational commitment (OC) are particularly important in the medical field because as the quality of patient care—a variable that should never be compromised—can be affected. Per Mathieu and Zajac (1990), organizational commitment may even benefit society as a result of increased work quality, higher productivity, and lower job turnover.

Job satisfaction theories span many concepts and approaches, as do theories on career choice and development. There are fulfillments or needs-based theories in which gratifying consequences can provide for employee satisfaction. The discrepancy theory, on the other hand, focuses on workers' perceptions of what they acquire compared to what they believe is fair. These theories are important, as administrators may be able to

control some variables to improve their employees' satisfaction levels. The theories are also important to job applicants and to those exploring careers because these potential employees may or may not be able to control some of the variables for their own job and career satisfaction.

This review of literature provides a theoretical framework for career choice and development as well as job satisfaction and motivation. It covers the infancy of vocational guidance and the beginning of job satisfaction studies. Then it covers some major theorists and theories, including Holland and offers a discussion on the measurement of job satisfaction. Finally, it reviews the literature on medical professionals' vocational satisfaction, with particular attention to the PA profession.

Theories of Vocational Choice and Satisfaction

Frank Parsons is considered the Father of Vocational Guidance. He saw vocational guidance as a way to aid an individual to study potential vocational choices and one's self and then to decide upon a trade-off between interests, abilities and opportunities (Parsons, 1909, as cited in Brown & Brooks, 1990, and Super, 1953). This idea was presented at the beginning of the American industrial revolution. Parsons felt that in proper vocational choice, a person's success and satisfaction would increase while an employer's inefficiency and cost would decrease (Parsons, 1909, as cited in Brown & Brooks). The study of occupations themselves, as only one component of Parson's schema, was the early focus of vocational guidance (Brown & Brooks).

In the infancy of vocational guidance, four techniques were used to assess interests. One technique, estimation, involved an individual indicating his or her feeling

towards questions asked about an activity. These estimates had limitations, so individuals were often asked to try out different activities. Since try-outs were found to be costly and time consuming, checklists and rating scales were tested to systematically identify an individual's interest. These checklists and rating scales were the precursors to the formal interest surveys (Hansen, 1995).

Formal career counseling began with the first published inventory in 1927: the Strong Vocational Interest Blank (SVIB) (Hansen, 1995). From 1930 to 1950, Parsons' concept of the individual and his traits was addressed. This emphasis on traits was likely due to the influence of the depression and then World War II (Brown & Brooks, 1990). In addition to Strong, others, including the U.S. Army (Brown & Brooks) and Kuder (Zytowski, 1992), began work on different interest inventories in the mid-1930s. In the late 1940s and early part of the 1950s, several pioneers in vocational psychology performed their initial work: John Darley, Ralph Berdie, and Donald G. Patterson (Weinrach & Srebalus, 1990). The trait and factor theory is associated with their work performed in Minnesota.

Not all investigators saw merit in the study of vocational choices and interests. A 1931 review by Fryer (as cited in Super, 1947, p. 375) was "rather discouraging." Nonetheless, the work continued. The U.S. Employment Service published the *Dictionary of Occupational Titles* in 1939, which merged information on occupations with traits and factors of individuals in an effort to guide the selection of a vocation (Brown & Brooks, 1990).

Over time, Strong's work and his SVIB proved to be a great force in career counseling. The work of Strong and his former graduate student, Campbell, is well

recognized in this field, particularly with the evolution of the SVIB (Strong, 1943) into the Strong-Campbell Interest Inventory (SCII) (Campbell, 1974).

Paralleling the study of vocational choice, systematic job satisfaction studies began in the 1930s and 1940s. Elton Mayo studied the relationship of people working together and contributed, with colleagues F. J. Roethlisberger and William Dickson, to the Hawthorne studies (Roethlisberger & Dickson, 1939, as cited in Lau & Jelinek, 1984; Mayo, 1945, as cited in Lau & Jelinek). The Hawthorne studies are well-known analyses of worker behavior-personalities, job nature, and "formal measurement and reward practices of the organization" (Lau & Jelinek, p. 75). The studies showed that workers behaved in a way that is meaningful and satisfactory in order to cope with "work situations" (p. 75). The employees do not purposely act in a way that is not intended by management. The main significance seen in the Hawthorne studies was

> the universal importance of effective interpersonal communication between supervisors and workers or the so-called Hawthorne Effect. The latter is the notion that any change in practice will *always* lead to positive results in the short run simply because of the novelty of the new practice. (p. 75)

The work of the Hawthorne studies revealed the need to explore the humanistic side of employees (Hersey, Blanchard, & Johnson, 1996).

Vocational Choice and Satisfaction: Major Theorists and Theories

Even with the great contributions of Strong and Campbell, Donald E. Super and John L. Holland are considered "the two most prominent theorists in the field of career development and choice" (Weinrach, 1996, p. 5). There are many other theorists on vocational satisfaction, as summarized in Table 1.

Table 1.

Selected Contributors to Vocational Satisfaction and Motivation

Contributors	Name of Work or Key Words	Key Concepts	Sources
Mayo, Roethisberger & Dickson	Hawthorne Studies	First systematic job motivation studies Spawned studies of the humanistic side of employees	Mayo, 1944 and Roethisberger & Dickson, 1939 (as cited in Lau and Jelinek, 1984)
Herzberg, Mausner & Snyderman	Herzberg's Two-Factor Theory or Hygeine Motivators	Intrinsic work factors as motivators Extrinsic job factors as dissatisfiers·	Herzberg, Mausner & Snyderman (1959)
McClelland	Learned Needs Theory	Motivation associated with learning	As cited in McClelland & Boyatzis (1982); Ivancevich & Matteson (1993)
Adams	Equity Theory	Fairness at work	As cited in Ivancevich & Matteson (1993)
Vroom	Motivation Expectancy Theory	Individual differences affect outcomes	As cited in Dessler (1998) and Ivancevich & Matteson (1993)
Locke	Goal Setting Theory	Employee's goals explain performance and motivation	Locke (1969)
Schein	Career Anchors	Organizational approach to careers. Typology of 8 anchors identified with the *Career Orientations Inventory.*	Schein (1971, 1978, 1993, 1999)
Staw & Ross	Dispositional Job Theory	Attitudes influence job satisfaction and must be considered in job enrichment strategies	As cited in Staw, Bell, & Clausen (1986) and Gerhart, (1987)
Salancik & Pfeffer	Social-information-processing	Individuals' attitudes influence their responses to tasks situations Attitudes are derived from how people socially construct their world	Salancik & Pfeffer, 1977 (as cited in Staw, Bell, & Clausen, 1986)
Simon	Organizational Equilibrium Theory	Belonging helps goals directly or indirectly	Simon (1973)
Hackman & Oldham	Job Characteristics Theory	Self-generated motivation is greatest when job characteristics provide meaningfulness, responsibility, and knowledge of results	Hackman & Oldham (1975, 1976)
Dawis & Lofquist	Theory of Work Adjustment	Individuals seek to realize and sustain correspondence with the environment utilizing adjustment style dimensions of their personalities	Dawis & Lofquist (1984)

Super

Super's work on vocations and satisfaction began in the late 1930s (Super, 1939). He postulated that choosing an occupation is a process that develops over an extended time period (Super, 1942). He furthered his work with other publications that clarified terms to distinguish career choice methods as either inventoried interests or expressed choice or manifest choice. He synthesized information from others' research findings to suggest next steps for research (Super, 1947) and covered the use of psychometrics as applied to vocational counseling (Super, 1949). He published a more formal theory of vocational development after he found a rather progressive and yet fairly comprehensive theory by Ginzberg, Ginsburg, Axelrod, and Herma (1951) to be lacking in several areas (Super, 1953). The radical thinking of Ginzberg, an economist, Ginsburg, a psychiatrist, Axelrod, a sociologist, and Herma, a psychologist, went against the fixed trait and factor theory of the pioneers Darley, Berdie, Patterson, and Campbell (Brown & Brooks, 1990). To compose his theory, Super looked at the philosophical and research contributions in the field from the previous twenty years, including the contributions of Ginzberg et al.

Super (1953) noted that the elements necessary in a comprehensive theory of vocational development must address twelve concepts: individual differences, multipotentiality, ability patterns in occupations, identification of and the role of models, continuity of adjustment, life stages, career patterns, the guidance of development, the affect of interaction on development, career pattern dynamics, job satisfaction, and vocation as a manner of life. In terms of vocational theories, Super noted that the word "development" was more proper than "choice." Development encompasses the concept

of not only choice of vocation but also preference of vocations, entry into a profession, and adjustment to it.

Different individuals bring different values, aptitudes, and interests into any arena, including vocations (Super, 1953). The concept of multipotentiality explains that individuals have the potential for satisfaction and success in a number of vocations. The concept of ability patterns in occupations is that different occupations have patterns of interests and abilities that distinguish occupations from one another. In the fourth concept of identification of and the role of models, Super (1953) explains that parents and other adults influence self-concept and vocational interests. The fifth concept of continuity of adjustment considers the situation in which an individual compromises between the reality of a situation and his or her self-concept. For example, an individual may have the skills, knowledge, and abilities for a vocation but there is no opportunity to find a job in that area. To obtain employment, a compromise is made. Super notes in his sixth concept that different life stages present certain problems and, thereby, certain compromise decisions have to be made including those regarding vocations. Again, adjustments between what was envisioned and what reality presents are made.

In the seventh concept of career patterns, an individual has certain educational, social, and occupational mobility boundaries. The knowledge of these can aid a career counselor to anticipate problems an individual may have when trying to establish a vocation (Super, 1953). In the guidance of development, the eighth concept, there is the ability to guide an individual through the life stages. Guidance can be by parents, mentors, teachers, and others. While it is noted that there are some inherited abilities, the

environment to which one is exposed presents some distinct opportunities and limitations (Super, 1953).

In the ninth concept, the affect of interaction on development, Super notes that the interplay of a person and her environment is very complex with contributions of home situations, educational opportunities, the availability of occupational information, the level of self-understanding and other factors contributing to vocational development (Super, 1953). Exposures can be guided, even purposefully, to bring opportunities to an individual so that he can use his aptitudes and develop personality traits and interests.

The tenth concept is career pattern dynamics. Super speculates that an individual may have a career pattern affected by his parental socioeconomic status (Super, 1953). In other words, parents of higher socioeconomic status tend to give rise to children with similar socioeconomic occupations. Likewise, low socioeconomic status is often multigenerational.

The eleventh concept of job satisfaction is summarized in the statement: "satisfaction in one's work and on one's job depends on the extent to which the work, the job, and the way of life that goes with them, enable one to play the kind of role that one wants to play" (Super, 1953, p. 189).

The final concept for inclusion into a comprehensive theory of vocational development is that of vocation as a manner of life. When the work itself in a particular vocation and the way of life that accompanies it (home, community, friends, recreational activities, and other lifestyle factors) are agreeable with the individual's interests, values and aptitudes, then there is the best resultant personal and vocational adjustment. This final element is considered basic to any vocational development theory (Super, 1953).

Super furthered his work and introduced the concept of vocational maturity "to denote the degree of development, [which is] the place reached on the continuum of vocational development from exploration to decline" (1957, p. 186). He discussed the idea of a vocational maturity quotient and of measuring vocational maturity with different indices. He explored factorial theories, aptitudes, interests, personality, family, economic factors, and even disabilities. He even redefined vocational guidance.

This theory evolved over time into 14 points (Super & Bachrach, 1957; Super, 1980). Building upon Super's vocational maturity concept, career maturity is introduced as a construct. Career maturity is a person's aptitude for dealing with "developmental tasks with which he or she is confronted because of his or her biological and social developments and because of society's expectations of people who have reached that stage of development" (Super, 1990, p. 213). One's coping success in an environment depends upon career maturity. The original 10th point of satisfaction in work and life is subdivided into two points. Super (1990) explained that both work satisfaction and life satisfaction depend upon matching and that satisfaction level is proportional to the degree of matching the self-concept. The fourth additional point is the new idea that work may provide the main focus for satisfaction but satisfaction may be found in leisure or other activities instead of or, in addition to, work.

Holland

The pioneers of the trait and factor theory were the mentors for Holland (Weinrach & Srebalus, 1990). Holland's theory, first published in 1959, has greatly influenced interest assessment and career counseling; many interest tools measure

components of Holland's six divisions (Hansen, 1995). Holland's theory even formally merged into the work of Strong and Campbell (Campbell & Holland, 1972).

Holland's theory espouses that matching people to environments can lead to predictions of outcomes, including vocational choice, stability, and achievement (Holland, 1997). Because people in a vocational group have similar personalities, they will respond to many situations and problems in similar ways, and will create characteristic interpersonal environments. Therefore, certain personalities fit best into certain types of environments (Holland, 1997).

There are four main working assumptions in Holland's theory. First, in the American culture at least, most persons can be categorized as one of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional. The realistic personality (outdoors, mechanical) is also known as "R"; the investigative (science, math), "I"; artistic (art, language, music), "A"; social (helping, teaching), "S"; enterprising (selling, business), "E"; and conventional (details, clerical), "C" (Holland, 1997, pp. 2-3). These six types are summarized as RIASEC.

More specifically, "R"s demonstrate preference for "systematic manipulation of objects, tools, machines, and animals" and have "an aversion to educational or therapeutic activities" (Holland, 1997, p. 21). "I"s prefer "symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena" and have "an aversion to persuasive, social, and repetitive activities" (p. 22). "A"s prefer "ambiguous, free, unsystematized activities that entail the manipulation of physical, verbal, or human materials to create art forms or products" and have "an aversion to explicit, systematic, and ordered activities" (p. 23). "S"s prefer "activities that entail the manipulation of

others to inform, train, develop, cure, or enlighten" with "an aversion to explicit, ordered, systematic activities involving materials, tools, or machines" (p. 24). "E"s prefer "activities that entail the manipulation of others to attain organizational goals or economic gain" and have "an aversion to observational, symbolic, and systematic activities" (p. 25). "C"s prefer "activities that entail the explicit, ordered, systematic manipulation of data" (p. 26) with an "aversion to ambiguous, free, exploratory, or unsystematized activities" (p. 27).

The RIASEC types are assumed to reflect common outcomes of growth and development in the American culture. A person's RIASEC results are influenced by many factors, such as age, sex, ethnic and social groups, as well as by the occupations held by people influential to the subject in question (Holland, 1997). Holland's theory, unlike Super's, uses a specific typological approach to personalities, although both acknowledge personality traits and factors.

The second assumption in Holland's theory is that there are six model environments named in the same manner as the personality types: RIASEC (Holland, 1997, p.3). Each environment has a majority of a certain type of personality. Each environment also has certain opportunities and challenges. The idea that people seek environments that will let them use their abilities and skills, express their values and attitudes, and take on agreeable roles and problems is the third assumption in Holland's theory (Holland, 1997, p. 4). The fourth assumption in Holland's theory is that behavior is influenced by an interaction between the environment and personality (Holland, 1997, p. 4). With the knowledge of a person's personality profile and of an environment (such as work), the outcomes of these matches can be potentially predicted in terms of

vocational choice, job stability, achievement, personal competence, social behavior, and educational factors (Holland, 1997).

Holland (1997) described the six types of personalities and environments in a hexagonal model (Figure 1). This hexagonal model is Holland's great contribution to the theoretical framework of vocational development. The hexagonal model defines the degree of consistency in a person's personality pattern or that of an environment (p. 4). The types adjacent to each other on the hexagon are the most consistent. For example, an RIC personality is more consistent than an RES personality. The types opposite each other on the hexagon are the least consistent and the types with one letter between them have an intermediate consistency level.

The hexagonal model also delineates the degrees of congruence between a person and environment in the same fashion as the personality pattern (Holland, 1997, p. 4). Congruence is the match between the personality type and the environment in which that personality participates be it work or leisure. Incongruence is when a personality type functions in an unrelated environment. For example, the R personality type functioning in an S environment is incongruent because R and S are as far apart on the hexagonal model as can be. Other researchers have developed ways to quantitatively measure congruence on Holland's hexagon (Zener & Schnuelle, 1976; Iachan, 1984; Kwak & Pulvino, 1982; Wiggins & Moody, 1981, as cited in Weinrach & Srebalus, 1990; Brown & Gore, 1994).

The Brown-Gore Index (Brown & Gore, 1994) of congruence is the method currently preferred by Holland (Holland, personal communication, November 21, 2002). This method, with its calculated range of scores from 0 to 18 and in which a higher score

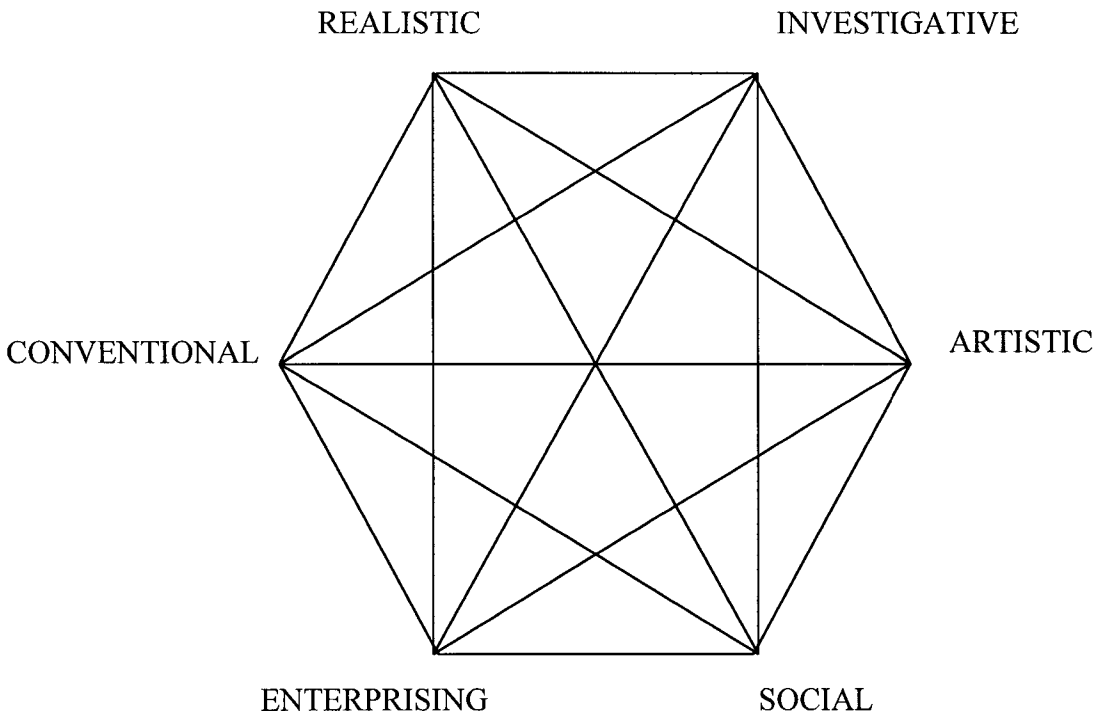

Figure 1. Holland's hexagonal model of personalities and work environments (Holland, 1997, p. 35).

is indicative of a greater level of congruence, is a more sensitive indicator of congruence than methods with more constricted ranges. It is easier to calculate than some of the other indicies. The congruence level, C, is calculated from a sequential comparison of an individual's three-letter personality code (P) to that of an environment (E) by the formula (Brown & Gore, p. 322):

$$C = 3\ (Xi) + 2\ (Xi) + (Xi)$$

where Xi are scores (3, 2, 1, and 0) assigned to each comparison on the basis of hexagonal distance between letters (3 = identical P and E letters, 2 = adjacent hexagonal positions, 1 = alternate hexagonal positions, 0 = opposite hexagonal positions).

There are many studies to support Holland's concept of congruence although nonuniform measures of congruence have been used. Mount and Muchinsky (1978) studied 362 employees from five of the six Holland typologies. Artistic employees were not included due to the infrequency of this type available for this study. Mount and Muchinsky found, in general, that work personality congruence related positively to job satisfaction measures (from the Job Descriptive Index, *JDI*, of Smith, Kendall, & Hulin, 1969) of pay, work, promotions, coworkers, supervision, and overall satisfaction. Only the Social environment did not show a statistical difference between congruent and incongruent subjects. This congruency was measured with the highest code letter, rather than the three-letter code. Of note, Mount and Muchinsky state that certain personality types may actually prefer what are typically considered negative measures of job satisfaction. For example, Conventional types may prefer routine activities that are indicative of dissatisfaction on some job satisfaction measures.

In another study of congruence, Smart, Elton and McLaughlin (1986), in a MANCOVA study design, found that person to work environment congruence is related positively to job satisfaction. The subjects were selected with a stratified random sampling procedure according to undergraduate major, gender, and congruence between current job and major from the Cooperative Institutional Research Program database. Congruence of major to job was defined by the subjects' answers to a survey items asking for the degree of match between the major and the most recent or current job. Closely related were assigned 3 points; somewhat related, 2 points; and not related, 1 point. The goal was to have the six Holland personality types, two genders, and three congruence levels represented with at least 30 subjects in each resultant cell of the MANCOVA design. There were not enough Realistic female participants, so that cell was deleted from the study.

In addition to consistency and congruence, there are three other concepts in Holland's theory, although none are as widely supported as congruence: differentiation, identity, and calculus. In differentiation, a person or environment may have a strong similarity to a type and, thus, a lesser likeness to another type (Holland, 1997, p. 4). Other people or environments may be similar to several types. Poorly defined or poorly differentiated people or environments will show the same degree of resemblance to all types.

In identity, a newer concept of Holland's introduced in the 1980s, the stability of one's goals, talents, and interests defines a person, and the stability, clarity, and goal integration of an organization defines an environment (Holland, 1977, p.5). The Vocational Identity scale of *My Vocational Situation (MVS)* (Holland, Daiger, & Power,

1980, 1985) evaluates identity. A low score for an individual implies that the subject has many vocational goals. The identity of an environment deals with the number of varying occupations within an employment setting. For example, a school may have five different occupations. The identity score is inversely related so that the school has a score of 20 (1/5) (Weinrach & Srebalus, 1990).

Calculus refers to the spatial relationships "within and between personality types or environments" on the hexagonal model (Holland, 1997, p. 5). "Internal relationships of the theory are defined and organized" by the hexagonal model (p. 5).

Holland's theory, even in its beginning stages, was put into practical use for vocational guidance. Identifying personality types began with his *Vocational Preference Inventory (VPI)* (Holland, 1958). The RIASEC personality types can also be determined with other tools of his, including the *Self-Directed Search (SDS)* (Holland, 1994, 1999b). The *SDS* is currently one of the most widely used interest assessment tools.

Like all of Holland's personality inventories, the *SDS* relies on self-appraisal (Holland, 1994, 1999b). To complete the *SDS*, participants mark information in a booklet. After marking the information, participants count the number of affirmative responses of the RIASEC categories for the various inventory items. The Holland Code is derived from the top three scores, in descending order, from the RIASEC areas; the top three scores form the three-letter code. If the letters are tied, they may be put in any order. The first letter shows the type that the participant most resembles. The second letter shows the next most resemblance and the third, the next, and so on in descending rank order (Holland, 1999b). To identify an index of differentiation, the lowest score is subtracted from the highest score of the six values. Holland (1999b) notes that the *SDS*

assessment measures interests and does not determine if a participant has the education, ability, or experience needed for a particular career.

The Holland three-letter vocational personality code can be compared to careers under the matching three-letter heading from Holland's (1999a) *Career Options Finder* or from the *Dictionary of Holland Occupational* Codes (DHOC) (Gottfredsen & Holland, 1996). These codes were developed from a multiple discriminate analysis of job descriptions from the U.S. Employment Service's *Dictionary of Occupational Titles (DOT)* (Gottfredsen & Holland). The *DHOC* also provides a description of the occupations and other information as an extension of the U.S. Employment Service's original *DOT* of 1939. The three-letter occupational code may be viewed in any order to maximize the potential career search. The range of careers a person will consider is affected by the variables of age, gender, social class and effort required. It is noted is that men obtain more I, R, and E codes than women, whereas women show more S, A, and C codes. However, men or women can perform any of the coded careers successfully (Holland, 1999b).

Tables 2 through 7 illustrate some selected examples of Realistic, Investigative, Artistic, Social, Enterprising, and Conventional occupations, respectively, with an emphasis on many health care related disciplines due to this author's interest in this arena (Holland, 1997). Table 8 shows codes of PAs and physicians. The PA code was defined as ISA in 1977 with a convenience sample of 74 (29 male and 45 female) John Hopkin's PA students (Richards, 1977). The PA profile (the means of the RIASEC levels) was

Table 2.

Examples of Realistic Occupations (Holland, 1997)

Realistic Occupations	Holland Code
Nuclear Medicine Technologist	RIS
Engineer: Computer systems hardware	RIE
Ultrasound Technologist	RSI

Table 3.

Examples of Investigative Occupations (Holland, 1997)

ISE	ISR	ISA	IRS	IAR
General Practitioner (Family Practice)	Dermatologist	Nurse Practitioner	Neurologist	Biologist
Allergist	Osteopathic physician	Physician Assistant	Obstetrician	
Cardiologist	Surgical technician	Medical Technologist	Radiologist	
Endocrinologist		Psychiatrist	Writer-technological publications	
Pediatrician			Scientific helper	
Chief Radiologic Technologist			Pathologist	
Research Assistant			Statistician, applied	
			Medical laboratory assistant	

Table 4.

Examples of Artistic Occupations (Holland, 1997)

Artistic Occupations	Holland Code
Writer- medical and scientific	AIE
Editor- technical and scientific publications	ASE
Musician- instrument	ASC

Table 5.

Examples of Social Occupations (Holland, 1997)

SRI	SIR	SIE	SEI	SEA	SAE	SCR	SER
Phlebotomist	Nurse midwife	Chief technologist, Nuclear Medicine	Faculty, university or college	Dean of students	Career counselor	Recreation aid	Athletic director
Radiologic technologist	Naturopathic doctor	Dietician, clinical or teaching	Psychologist, school	Research director	Music therapist	Medical assistant	Health care facility director
	Respiratory therapist	Physical therapist	Nurse, head or supervisor	Social worker, psychiatric		Physical therapy assistant	Orientation therapist for the blind
	Nurse		Dietetic technician				Physical education instructor
							Teacher, adult education
							Dental laboratory supervisor
							Home health aid
							Nurse assistant

SIA	SRC	SRE	SAC	SCA	SEC	SCE	SCI
Psychologist, clinical or counseling	Audiometrist	Athletic trainer	Nurse, licensed practical	Sign writer, hand	Casework supervisor	Consultant, education	Optometric assistant
Nurse, general duty (RN)	Respiratory therapy aide	Orderly			Child development specialist	Interpreter, deaf	
		Occupational therapist			Recreation therapist	Occupational therapy assistant	

Table 6.

Examples of Enterprising Occupations (Holland, 1997)

Enterprising Occupations	Holland Code
Education and training manager	EIS
Laboratory supervisor	EIS
Director of vital statistics	EAI
Business manager (college or university)	ESR
Department head (college or university)	ESI
Director student affairs	ESC
Educational program director	ESC
Social director	ESC
Host, hostess, head	ESC

Table 7.

Examples of Conventional Occupations (Holland, 1997)

Conventional Occupations	Holland Code
Note-reader	CRI
Desktop publisher	CRA
Office clerk	CRS
Medical record technician	CSI
Editorial Assistant	CIA
Accountant	CIE
Accounting clerk	CSR
Computer operator	CSR
Complaint clerk	CSR
Proofreader	SCI
Data entry clerk	CSE
Secretary	CSE
Receptionist	CSE
Medical secretary	CES

Table 8.

Physician Extender and Physician Codes (Holland, 1997)

Discipline	Holland Code
Surgeon	IRA
Anesthesiologist	IRS
Neurologist	
Obstetrician	
Radiologist	
Pathologist	
Physiatrist	
Dermatologist	ISR
Ophthalmologist	
Psychiatrist	ISA
Nurse Practitioner	
Physician Assistant	
Pediatrician	ISE
Allergist-Immunologist	
Cardiologist	
General Practitioner	
Physician, Occupational	ISC
Immunohematologist	ICS

reported: R = 4.04, SD = 2.88; I = 7.52, SD = 3.58; A = 7.28, SD = 4.28; S = 7.40, SD = 3.41; E = 3.15, SD = 2.62; C = 1.30, SD = 2.12.

The question of how people develop these RIASEC personalities and preferences had been asked. This constituent of a vocational development theory is fairly standard in psychological literature and Holland does not make a specific contribution here per se. Because of the lack of a specific contribution in this area, his theory is often criticized (Brown, 1990).

Holland (1977) expanded his theory in an effort to address some of these concerns. In general, there are individual differences in genetic, physical and

psychological potentials, although one can be suited for more than one occupation. People learn to prefer some activities to others. Parents create environments that include certain attitudes and environmental experiences. Children make their own environments by demands on parents and by virtue of how parents react. Parent-children relationships may be driven by personality; a child most like one parent may have a better relationship to that parent and, therefore, be more influenced by that role model. Furthermore, the parents' occupational preferences for both themselves and their children shape the environment, so that parents and other role models can guide the vocational development (pp. 17-20[JB9]).

Over one's life span, different coping mechanisms and styles, perceptions of the environment, beliefs and values, achievement and performance, and differential reaction to environmental rewards and stress all influence preferences for occupations and occupational roles. Throughout the development of these personal traits, different repertoires of skills are formed by the above-listed items and are tested (Holland, 1997).

With all of these contributions of role models, environmental factors and opportunities over life stages, these preferences eventually become strong interests. Finally, these cause a person to think, perceive, and then act in certain ways (Holland, 1997). Personality types are well defined between the ages of 18 and 30 years old. While a person may change jobs and jobs may change a person, most things are stable. A person who tries to change a personality or a job will be influenced by many outside factors favoring the norm of stability (pp. 17-20).

The origins of Holland's theory are from work done by others in the field of vocational guidance and interest assessment. Holland used six background principles to

create the personality and environmental types. First, the choice of a vocation was thought to be an expression of personality (Holland, 1977, p. 7). The second background principle is that interest inventories are personality inventories. If vocational interests are an expression of personality, then interest inventories are personality inventories (pp. 7-8). Kuder's Preference Record led to Holland's Vocational Preference Inventory (Holland, 1958, 1985, 1997).

The third background principle is that vocational stereotypes have reliable and important psychological and sociological meanings (Holland, 1997, pp. 9-10). People of different ages and backgrounds have characteristic perceptions of an occupation such as its appropriateness for men and women, its level of prestige, and the personal traits of the typical incumbent. It has been shown that people perceive common occupations and activities accurately and that perceptions remain unchanged over long time periods. This accuracy and stability give interest inventories validity.

The fourth background principle is that the members of a vocation have similar personalities and similar histories of personal development (Holland, 1977, p. 10). The fifth background principle is that because people in a vocational group have similar personalities, they will respond to many situations and problems in similar ways, and they will create characteristic interpersonal environments (p. 11). Finally, the sixth background principle is that vocational satisfaction, stability, and achievement depend upon the congruence between one's personality and the environment in which she works (p. 11).

Part of the success and longevity of Holland's theory and interest inventory is due to its relative simplicity. Mohr (1982, as cited in Holland, 1997) noted that inventories

with longer lists and more elaboration will be less likely to bear fruitful information. The *SDS* can be completed without the aid of a vocational guidance counselor and does not need computerized scoring or professional interpretation. Studies also have shown its reliability and validity across cultures (Holland, 1997). Many of the underling assumptions and principles of Holland's theory are supported by research. Super (1985) reviewed Holland's revised theory favorably. Brown (1987) hailed Holland's vocational choice theory as the best at that time.

In summary, Holland's typological theory assumes that people seek enjoyment and the chance to actualize their skills, interest, and talents to reach goals. Holland characterizes people into six types. These types are generated from people's prior learning, genes, physiological conditions, environmental stimuli, developmental processes, and additional factors, which exert their influence by making some responses more probable than others. These variables translate into an interest inventory that classifies personality types for practical use to identify congruent career possibilities from six similar work environments. In a work environment that is congruent with their personalities, people will thrive and have career satisfaction.

Schein

A founder in the field of organizational psychology, Edgar H. Schein has contributed much to the business world on the topics of organizational development and culture and careers (Schein, 1971, 1978, 1985, 1993, 1999). Instead of the more traditional vocational psychology approach to careers pursued by Super and Holland, Schein additionally utilizes an organizational approach to careers. One of the main differences in the early work of the organizational approach versus the vocational

psychology approach is the span of time investigated. The organizational approach looks at adults during their working lives as opposed to looking at those initially entering a field (Hall, 1990). Schein's approach is seen as more sociological than psychological because it focuses on how an individual is changed due to the influence of an organization. Schein hypothesizes on innovation and socialization in a career. Innovation is when an individual has an effect upon an organization and socialization is when an organization has an effect upon the individual. He states that early on in a career, socialization is more likely while innovation is seen more often later in a career.

Schein's (1993) description of careers includes 10 stages (Table 9). These stages vary in length according to occupation and the individual. These stages incorporate life span concepts, as does Super's theory.

Table 9.

Schein's 10 Career Stages

Stage Number	Task of Stage
1	Growth, fantasy and exploration
2	Training and education
3	Work world entry
4	Socialization and basic training
5	Gaining membership
6	Gaining tenure and permanent membership
7	Midcareer crisis and reassessment
8	Maintaining or regaining momentum, or leveling off
9	Disengagement
10	Retirement

Schein (1993) describes career anchors as the occupational self-concept akin to Super's self-concept and additionally identifies eight anchors (Table 10). Detailed descriptions of the anchor types and their motivators are provided next.

Table 10.

Schein's Eight Career Anchors

Career Anchor
Autonomy
Creativity
Technical or functional competence
Security
General management
Pure challenge
Service or dedication to a cause
Lifestyle

The first anchor listed in Table 10 is autonomy. The individuals with the autonomy or independence anchor "have an overriding need to do things their own way, at their own pace, and according to their own standards" (Schein, 1993, p. 38). The roots of this need may be in childhood where they were taught to be self-reliant or from higher education. If they work for an organization, it is in areas where autonomy is possible such as field sales offices or research or development. They enjoy work in which the goals are well defined but the way to reach them can be decided for themselves. This independence anchor type prefers merit pay and bonuses with portable benefits packages and recognition such as medals, prizes, or letters of recommendation rather than title changes. They do not want long-term obligations. They prefer promotions that signify more autonomy. They often do well with part-time or contract work within part of an

organization because most organizations do not have systems in place that meet the autonomous anchor types' needs.

The second anchor is creativity. Those with creativity or entrepreneurial creativity as an anchor have a desire to make new services, new products, or new organizations that are "identified closely with the entrepreneur's own efforts, that will survive on their own, and that will be economically successful" (Schein, 1993, p. 43). The creativity anchor type typically shows an entrepreneurial need early in life as opposed to those with the autonomy anchor who typically later in life set out in their own businesses. The entrepreneurial type wants to create the business and will sacrifice autonomy to do so. Often they work in conventional jobs to make a living while they pursue the enterprise on the side. The entrepreneurial anchor type tends to bore easily, usually making new products or services or selling a previous business to start up a new one. In terms of pay and benefits, ownership is critical. They may not take much in pay but rather compensation in stock. They will retain patents on new products. For them, wealth merely shows that something they have created is successful. They enjoy public recognition and visibility. Benefit packages are not of much interest. Their interest in career promotion systems is one that lets "them to be wherever they need to be at any given point in their careers" (p. 44). A person with the creativity or entrepreneurial anchor may be found as a chairman of the board of an organization or as a head of research or development.

The third anchor is technical or functional competence. Individuals with the technical or functional competence anchor are motivated by utilizing their abilities and knowing that they have expertise (Schein, 1993). They identify with the content of their

work and it needs to be challenging. While some nontechnical individuals are found in positions compatible with this anchor, it may be because it is a method of entry into another venue such as moving up a corporate ladder or to develop skills necessary to set out on their own. In terms of the organization, the technical anchor type may or may not have the interpersonal manner necessary for management. The lack of interpersonal manner can be problematic if a promoted technical type does not succeed managerially particularly because his previous technical job has likely already been filled making a return move unlikely. The technical anchor type is "oriented toward external equity, meaning that they will compare their salaries to what others of the same skill level earn in other organizations" (p. 29). They prefer base pay instead of an incentive program. When receiving recognition, it means more from a knowledgeable peer than from management. Offerings from management that this anchor type values are opportunities for further education or budgets for equipment. Technical anchor types also prefer promotional paths that do not equate pay with promotion with general management, although functional management may be attractive. However, Schein notes that many organizations do not afford a functional management type of promotional program for their technically anchored employees.

The fourth anchor is security. While all individuals have the need for security at certain times and levels in their careers, those with the security or stability anchor evaluate this factor heavily. In their career decision making, their needs can constrain choices (Schein, 1993). Individuals with the security anchor look for retirement benefits and stable organizations with an image of reliability. Those with the security anchor may reach management levels but in jobs that are more predictable. They prefer stable work

over the nature of it. If their talents are not utilized in an employment setting, then they may use them elsewhere such as in leisure activities. Motivational forces include benefits and improved working conditions or pay instead of intrinsic motivators. Predictable, incremental raises for length of service are valued by this anchor type. Promotion based upon seniority and formal tenure is also valued. The grade and rank system of the federal government exemplifies this favored promotional system well. Recognition for loyalty with the comfort of continued employment is preferred over other venues. Many organizational jobs and personnel systems are available that fit this anchor type except that there is not usually a promise of tenure.

The fifth anchor is general management. With general managerial competence as a career anchor, an individual values advancement, responsibility, and income. This type sees "specialization as a trap" (Schein, 1993, p. 31). They typically start in an organization in jobs similar to other anchor types. They need skills and abilities in three areas: analytical, interpersonal, and emotional. These competencies are typically learned over the work experience. The analytical competency aids problem identification and solving so decisions can be made. The interpersonal competency at the individual and group levels aids the information gathering as others (particularly technical anchor types) supply the details needed. The emotional competency is the ability to be stimulated, not debilitated, by crises and issues. This component is often lacking in the technically anchored individuals. The general management anchor type like work and responsibility, variety, and challenges that contribute to the organization's success. In terms of pay and benefits, they expect to be well paid and have an internal equity orientation; they expect to be paid more than those below them in the same organization, regardless of what other

organizations' rates are. They are also motivated by bonuses, stock options, titles, and status symbols. Promotions that are outcomes based are desirable to managerial anchored types with recognition in the form of positions with higher responsibility. They appreciate approval of their supervisors. Furthermore, they appreciate good retirement benefits like those who are anchored in security. If people do not succeed in management, usually autonomy, entrepreneurial, or technical areas are their anchors. Schein suggests that organizations should have systems to move unsuccessful managers out into other areas.

The sixth anchor is pure challenge. Individuals with the pure challenge anchor type have a "perception that they can conquer anything and anybody" (Schein, 1993, p. 46). For them, the topic area does not matter as it would to one who is technically anchored. Salespeople and athletes often fit this type. While many people enjoy levels of challenge in their work, to this anchor, the challenge itself is the most important. The pay, promotion and benefits package, and the like are secondary. This anchor type is highly motivated and can be single-minded.

The seventh anchor is service or dedication to a cause. Those individuals with service or dedication to a cause as their career anchors "are oriented more toward these values than toward the actual talents or areas of competence involved" (Schein, 1993, p. 45). Those in helping professions such as teaching, nursing, social work, the ministry, and medicine are typically thought to have this anchor. Other less typical examples include a labor lawyer who is working to better management-labor relations or those in human resources who are developing and implementing affirmative action programs. Also, not all members of service vocations are of the service anchor. Knowing the anchor

type can reveal what the vocational incumbent desires with a service field position. When an individual is service anchored, he or she desires work that influences the employing organization's policies toward his or her personal values. This anchor type wants fair pay and portable benefits. For a promotional system, this anchor type desires mobility into positions with more autonomy and influence. Recognition by peers and supervisors are valued when it brings a sense that the values are mutual.

The eighth and final anchor is lifestyle. Lifestyle as a career anchor may seem contradictory. These people "who organize their existence around lifestyle are, in a sense, saying that their careers are less important to them and therefore, that they do not have a career anchor" (Schein, 1993, p. 47-48). Schein notes that this is beyond the typical balancing of professional and personal lives. It is more of an integration of family, career, and the individual. Flexibility is integral for this anchor type. Of concern are issues such as part-time work availability, maternity and paternity leave, daycare options, and work at home options. What is important to them is the organizational attitude. These anchor types are less willing to move, not for security reasons but for family needs.

By definition, a person has only one career anchor. There are career circumstances, however, that enable individuals to meet "several sets of talents, motives, and values, making a choice unnecessary and thus preventing a person from finding out what is really at the top of his or her hierarchy" of needs (Schein, 1993, p. 51). A person may not actualize a certain anchor if there has not been an exposure to it yet in his or her career. While it appears that an individual's career anchor does not change, Schein (1993) acknowledges that further longitudinal studies need to be conducted. Schein feels that some people making midlife changes are trying to actualize their anchors; they have not

yet had the opportunity to do so. While many people can be found in situations that do not match their anchors, when a better match comes along, they will opt for it.

There are three parts of the career anchor. First, work successes generate self-perceived abilities and talents. Second, from feedback and self-diagnosis, there are self-perceived needs and motives. Third, based upon interactions between a person and the organizational culture, there are self-perceived values and attitudes. From this work experience over some years, career anchors can be identified. These anchors "guide, constrain, stabilize and integrate the person's career" (Schein, 1978, p. 127). When an individual changes jobs or careers, it is to better match his or her career anchors.

The *Career Orientations Inventory* (COI) is Schein's tool to measure these anchors (Schein, 1993). Schein believes that when managers gain insight into careers including their own, they can "better manage the careers of others" (p. 54). The ultimate matching is between the organization's needs and that of the individuals. This matching process is difficult given the dynamic nature of needs from both perspectives. People must direct their own vocations but employing organizations can aid the process. Schein gives three suggestions to start. First, organizations can fabricate "more flexible career paths, incentive systems, and reward systems" (p. 55). Second, organizations can incite "more self-insight and self-management" (p. 55). Third, organizations can elucidate "what the organization needs from the individual career occupant" (p. 55).

In summary, Super, Holland, Schein and other theorists on vocational satisfaction see a vocation as an occupational self-concept or vocational personality. When matched to an appropriate environment, this personality to work environment congruence leads to vocational and life satisfaction. To test their theories, the constructs of vocational

satisfaction must be measured. The next section discusses the measurement of job satisfaction.

Measuring Job Satisfaction

Job satisfaction can be viewed in many ways. Some researchers define it as a positive emotional affect derived from work. Others see it as the absence of mental disturbances, melancholy, or uneasiness. Many job satisfaction scales have been developed to measure this construct. Some have an overall job satisfaction measure while others try to measure specific job characteristics in order to break down the components of overall job satisfaction. Others have tried indirect measures. Some of these include calculating a discrepancy score between what a job should be and what it currently is. There is debate as to the best way to measure job satisfaction although most agree that the indirect measure is not as useful (Wall & Payne, 1973, as cited in Wanous, Reichers, & Hudy, 1997).

Scarpello and Campbell (1983) found that a single-item global measure is not unreliable as it is inclusive for all factors affecting job satisfaction, whereas the evaluation of discrete elements may neglect areas of importance. They studied job satisfaction for 185 highly educated, high-performing employees utilizing two single-item questions of global job satisfaction (one yes-no for job satisfaction, the other ranking from 1 to 5), the short-form *Minnesota Satisfaction Questionnaire (MSQ)* (including the sum of its facets), and ¾ hour semi-structured interviews. The *MSQ* was selected for the facet measurements due to its broad content area and wide use in research.

Scarpello and Campbell (1983) specifically found that the interviews revealed more facets of job satisfaction than that of the *MSQ* and that the interviews were more highly correlated with overall job satisfaction than the sum of the *MSQ*. Five facets brought up in the interviews that were neglected by the *MSQ* included flexibility of working hours, equipment and tools, work space, coworker "facilitators of work," and pleasantness of interactions with people at work" (p. 593). The results also suggested that the overall job satisfaction 1 to 5 ranking was significantly correlated with satisfaction of "occupational choice, career progress, and life off-the-job" (p. 539). The total *MSQ* did not show this significance and the yes-no global job satisfaction measure did not correlate to the life off-the-job aspect. Thus, the most inclusive measure of overall job satisfaction is the ranking system. The satisfaction ranking system's correlation with life on the job is consistent with Super's (1953) notion of job and career satisfaction and life satisfaction.

Sackett and Larson (1990, as cited in Wanous & Reichers, 1996) pointed out that a single-item measure may be appropriate if the construct is not ambiguous or narrow. Wanous and Reichers studied this problem with 506 employees from a manufacturing company located in the Midwest. The researchers surveyed the subjects at a baseline time and again after 21 months for job satisfaction using an 11-facet system and a single-item overall satisfaction Likert-type scale with five choices ranging from "very dissatisfied" to "very satisfied." The response rate of those participating in both points of data collection was 26%. Minimum reliability estimates of the single scale measure were found to be 0.57 with a realistic estimate of 0.70, thus making the single-item a valid measurement of overall job satisfaction.

During the time between the study of Scarpello and Campbell (1983) to a 1997 article by Wanous, Reichers and Hudy, the use of single-item measures had not increased in its legitimacy. Wanous et al. (1997) reasoned that some researchers believed that single-item measures cannot be used because of the lack of the ability to estimate internal consistency. Another reason could have been that structural models with equations needed an estimation of the reliable variance. Furthermore, some may have believed that the low correlations found by Scarpello and Campbell might be due to low reliability of the single-item measures as opposed to construct definitions.

Thus, Wanous et al. (1997) conducted an extensive literature search for research studies for inclusion in a meta-analysis to determine correlations between single and summed multi-item measures of job satisfaction. For each study, the type and reliability of job satisfaction measure, the correlation between single-item and scale, and sample size, were noted. Meta-analysis calculations were performed for 28 correlations from 17 studies for a total of 7,682 subjects. The correlation between single-item and the scale measures was 0.63 and, when corrected, 0.67. These correlations were greater than the ones shown by Scarpello and Campbell (1983) and, thus, supported the conclusion of the appropriateness of a single-item measure of satisfaction.

Medical Professionals' Employment Satisfaction

Vocational satisfaction in medical professionals has been studied around the same theoretical framework as in the general literature. The outcomes can arguably be even more important for medical professionals because not only are typical cost factors

relevant, but medicolegal ones are increasingly important. The bottom line is patient care— lives can be at stake.

The nursing profession has studied its job satisfaction issues very thoroughly. Their positions put them in direct contact with patients and they also have to answer to physicians. In these regards, they are similar to PAs. Studies on physicians are important to this paper due to the similarity of their work to PAs. As a relatively new profession, PAs studies are rather limited but those available share common findings to suggest trends for this profession. Radiologic Technologists, as one other example of allied health professionals, perform a much different function on the healthcare team than do nurses, physicians, or PAs.

Nursing Job Satisfaction

Nursing turnover is an important cost issue to hospitals. Associated costs include that of recruitment, hiring, processing, orientation, and training. Some earlier nursing turnover studies show that about 75% of resignations are related to job dissatisfaction (Seybolt, Pavette, & Walker, 1978, as cited in Weisman, Alexander, & Chase, 1981a).

Hospital administrators focus on nursing job satisfaction so patients can receive quality care. The changes occurring in health care require intense nursing care and increased expectations on hospital staff nurses. Many of these changes have created a more negative work environment due to increased responsibilities, lack of appropriate monetary compensation, and a high nurse turnover (Butler & Parsons, 1989).

Many studies on nursing turnover are from self-report of resigning nurses or bivariate relationship data. Weisman, Alexander, and Chase (1981b) described the limitations of many of these studies due to their retrospective nature, reliance on exit

interviews (not as reliable when the departing employee is still dependent upon the employing institution for any reason), and lack of comparison groups. For example, many nursing studies look at personal attributes of the nurses that leave but what is usually missing from these studies is the comparison of the same personal attributes of those nurses that stay.

In the early literature on job satisfaction for the nursing profession, the often-cited work of Cleland, Smith and McHugh (1970) found several important preferences of nursing stuff. Nurses preferred more vacation time over a salary increase. Evening nurses preferred part-time scheduling and full-time administrative nurses preferred day shifts. The younger nonadministrative nurses wanted six-hour shifts. Nurses also preferred assigned shifts versus floating shifts.

In another early, well-cited nursing study, McClosky (1974) asked 94 nurses in a hospital to rate work incentives in a questionnaire reflecting Maslow's theory. The findings showed that psychological rewards, such as career advancement, recognition, and participation in research, were more important than social rewards such as child-care and social contact with doctors, peers, and supervisors. The study showed that internal rewards are important to retention while external rewards are important for recruitment.

A prospective study by Weisman et al. (1981a) used a panel of full-time registered nurses (RNs) in two metropolitan hospitals and analyzed multivariate relationship data with a goal to identify organizational factors that may be adjusted to decrease turnover and improve satisfaction. This often-cited study is an important contribution to the nursing literature for its prospective panel design and its multivariate analysis.

These nurses were interviewed at a baseline and then followed for 12 months (Weisman et al., 1981a). Of the total nurses in the hospitals, 97.7% of nurses participated. The baseline interview identified demographics, background information, job perceptions, work perceptions (of their unit), and job satisfaction. Head nurses identified the type of nursing care provided for each of the nurses from an administrative point of view. Hospital records were used to calculate the unit size, staffing patterns, and workload. The study measured perceived autonomy, job satisfaction, intent to leave, and turnover. Autonomy for nurses is seen as perceived control over work. Autonomy was measured in this study by a four-item scale from a tool known as the *Quality of Employment Surveys.* The *Job Descriptive Index (JDI)* (by Smith, Kendall & Hulin, 1969, as cited in Weisman et al., 1981a), a 72-item adjective checklist, measured job satisfaction.

The *JDI* provided weighted subscores of work content, promotional opportunities, pay, coworkers, and supervision for the participating nurses (Weisman et al., 1981a). Intent to leave was measured by the number of times a nurse actively looked for another job while employed at the hospital. Turnover was defined as the number of resignations from the hospital. It did not include those nurses dismissed, or who took leaves of absences or moved out of staff nurse positions (Weisman et al., 1981a).

Weisman et al. (1981a) showed the same patterns at both hospitals in a causal chain model. Neither job satisfaction nor autonomy was associated with turnover but each can predict other variables in the causal chain. Poor job satisfaction had a direct effect on the intent to leave. Autonomy was the greatest predictor of satisfaction. As

expected, the more job hunts a nurse had, the greater chance there was for her to leave. Those nurses with less tenure were also more likely to leave (Weisman et al., 1981a).

In hospital A, turnover was related to incumbency in first position (lower level), high work load, inappropriate task delegation, and not enough time for professional development. Rotating shifts were related to poor satisfaction. There was better job satisfaction when there was high internal control, low work load, more bachelor-level trained nurses, and a high head nurse scale (Weisman et al., 1981a).

In hospital B, a negative effect was seen with job level (like in hospital A), and the amount of communication with the head nurse. Decreased turnover was associated with an increased level of internal control, head nurse scale, proper task delegation, and professional time. The absence of overtime increased autonomy, as did higher position level and a primary nursing concept in which the nurses remain primarily responsible for their own panel of patients (Weisman et al., 1981a).

The study did not address gender, as the subjects were mostly women (Weisman et al., 1981a). It also did not address age, as age was related to the position level and length of employment. Organizational suggestions to improve nursing job satisfaction and turnover were many. Examples include increasing the responsibility and control for nurses including scheduling and work content, to improve their autonomy. Weisman et al. note that the findings are not generalizable and there are also concerns that outside factors, like the job market, could influence the findings. In spite of some of the limitations, a combination of approaches to improve satisfaction is needed to decrease nursing turnover.

Weisman et al. (1981b) looked at the difference between reasons for turnover from exit interviews and from the previous panel study. They found that the nurses' personal factors had little to do with the turnover. The data from the panel nurses suggested a large number of job-related characteristics for turnover. These researchers suggest that while panel approaches are more costly to conduct as compared to exit-interview approaches, they enable a multifaceted approach to solutions and may be cost saving in the long term.

Froebe, Deets, and Knox (1983) studied RNs and nursing administrators in three Midwestern teaching hospitals in a Herzberg-theory based study. The survey study was to learn of the degree of agreement of the perception of important hygiene factors between RNs and nursing administrators. Nurses were asked to report demographics, to select and grade by importance hygiene motivators that they felt were important when they made their present job choice, and to evaluate how these factors were met once they were employed. The administrators were given the same questionnaire but were to mark the items as to how their nurses would respond.

Of the 928 questionnaires circulated, 768 were to nurses with 42% return rate and160 were to administrators with a 57% return rate (Froebe et al., 1983). Using chi-square analysis at the 0.05 level, there was a statistically significant agreement between administrators and nurses on many of the items. The largest discrepancy was in terms of the availability of advancement. Location and distance to hospital (not controllable by administration) were not so important as other factors in selecting the job. Salary and fringe benefits were important but very important were accomplishments, recognition, working in clinical areas, accountability, and RN to patient ratio.

With a different goal and design from the other nursing literature studies cited thus far, Packard and Motowidlo (1987) studied nurses from five eastern state hospitals to develop a model of stress, job satisfaction, and job performance from an analysis of 366 nurses who provided self-reports of job stress and job satisfaction. Job satisfaction was measured with a tool by Price and Mueller, which employs a 7-item scale with a 5-point Likert-type response for each item. In addition to self-reports of job satisfaction, performance ratings on many of these 366 nurses were provided from 165 supervisors. In addition, 139 coworkers nominated by the respondents gave performance ratings. Packard and Motowidlo found that stress and job satisfaction are not related directly and that job satisfaction is not related to job performance. Instead job satisfaction is based on the level of hostility and depression as consequences from job stress. For nurses, work-related events associated with stress include uncooperative patients, work overload, negligent coworkers, poor supervisory support, criticism, and challenges with physicians.

Blegen and Mueller (1987) tested a multivariate causal model of nursing job satisfaction with an eight-month longitudinal study of nurses from five acute care hospitals in the Rocky Mountain geographic area. The longitudinal design, a break from many nursing satisfaction study designs, was to decrease the "causal ambiguity associated with cross-sectional designs" (p. 228). To avoid the influence of change in this longitudinal study, nurses moving to a new unit or having a new supervisor were not included in the analysis.

Thirteen theoretical causal determinants were measured at time 1:

> opportunity for alternative jobs outside of the employing hospital, routinized work, autonomy in job-related decisions, job-related communication, social integration with other nurses in the work unit, pay, fairness in distribution of pay and fringe benefits, opportunity for promotions, work load, motivation to produce

> high levels of job performance, level of general training, level of kinship responsibility, and unit size. (Blegen & Mueller, 1987, p. 228)

The opportunity for alternative jobs was hypothesized to raise the expectation to change or improve the current working condition thereby decreasing satisfaction. Routine work was expected to decrease satisfaction, as would larger unit size. It was hypothesized that nurses with baccalaureate degrees would be less satisfied than their hospital based trained nurses (diploma) due to the lack of ability to apply their more general skills. Increased autonomy was expected to increase satisfaction as was favorable job-related communication, social integration, pay, fairness of pay and fringe benefits, and promotions. Workloads that were not too light or too heavy would be related positively to job satisfaction. Blegen and Mueller also hypothesized that increased family responsibility would be related to increased satisfaction because family ties can bring about greater life satisfaction.

Five correlates that were hypothesized to raise job satisfaction levels were also measured at timepoint 1: age, length of employment in the organization, shift assignment, employment status (full-time or part-time) and position (Blegen & Mueller, 1987). Job satisfaction was collected each time.

The data was collected from anonymous mailed surveys with a 63% response rate (Blegen & Mueller, 1987). Results revealed that nurses, in general, were more satisfied than dissatisfied and ranked more satisfied than the typical full-time American worker. Statistically significant higher satisfaction was seen with lower outside employment opportunities, lower routinization, greater autonomy, increased communication, higher pay, increased distribution fairness, proper workloads, greater kinship, less general education, increased opportunity for promotion, and increased social integration.

Satisfaction correlates were statistically significantly related to older age, longer tenure, day shift, and higher job position. While in the direction hypothesized, motivation, full-time work, and unit size correlations were not significant.

Job satisfaction correlation was 0.748 between the two times it was measured (Blegen & Mueller, 1987). Day shift had "the most stable effect on satisfaction across these models" (p. 234). Other conclusions were that routine work leads to decreased satisfaction. The finding that job-related communication was negatively correlated with satisfaction could be that nurses think increased communication means they are less independent nurses needing more direction. The findings of Blegen and Mueller support much of what was known about nursing job satisfaction.

Butler and Parsons (1989) surveyed a Salt Lake City hospital's decision makers (medical staff, board of trustees, nursing management, and hospital management) and nursing staff with the goal to use the survey results to guide improving the work environment to decrease nurse turnover. This study expanded upon types of subjects as compared to that used by Froebe et al. (1983) (RNs and nursing administrators) but with a similar type of goal (to improve the workplace).

Participants were asked to rank seven factors important to nurse job satisfaction: control, professional development, free expression, recognition, physician consideration, monetary compensation, and supervisory support for nurses' decisions (Butler & Parsons, 1989).

Staff nurses and the decision makers ranked similarly the three most important factors: monetary compensation, control, and managerial support of nurse's decisions. The greatest ranking discrepancy was on professional development. The decision makers

placed it fourth, while the nurses placed it sixth (Butler & Parsons, 1989). The finding of the discrepancy of the availability of advancement, an aspect of professional development, is similar to the findings of Froebe et al. (1983) as is the general agreement between management and nurses on other factors.

Cavanagh (1990) compared nursing turnover of both managers and staff nurses at medium-sized private and public hospitals using a convenience sample from the greater Los Angeles area. Subjects were full-time women nurses from all shifts who had histories of job turnover. An instrument devised by Price and Mueller (1981, as cited in Cavanagh) was used to assess the variables of integration (number of close friends in the work environment), professionalism, education and training, routine and autonomy, peer relations, instrumental communication, kinship responsibilities, opportunity (outside the institution), pay and promotion, job satisfaction, and intent to stay.

A demographic questionnaire was also used in order to assess voluntary termination of employment. If a nurse was promoted to a manager, only the time of management service was included in the turnover calculations to avoid an artifact from the promotion. Cavanagh (1990) noted the difficulty in assessing turnover. While previous employment record would provide the most accurate data over self-reports, this was not a feasible approach due to confidentiality.

Cavanagh (1990) distributed 154 questionnaires to nurses of nonprofit hospitals and 448 to nurses of for-profit. Of the 154, 124 were returned (45 managers and 79 staff nurses) for a return rate of 80.5%. Of the 448, 108 were returned (38 managers and 70 staff nurses) for a return rate of 24.1%. The overall return rate was 38.5% of the 602 distributed.

An analysis with a forward stepwise multiple regression was used for predictive values of the variables (Cavanagh, 1990). Turnover for nonprofit nurses could be postulated from the following statistically significant variables listed in their predictive ability order: kinship, promotion, salary, and instrumental communication. Manager turnover in nonprofit hospitals was predicted from kinship and intent to stay. Nursing turnover in for-profit hospitals was different than for the nonprofit as there was no statistical significance found for any of the variables in the for-profit setting.

Cavanagh (1992) furthered his study on nursing job satisfaction with another modeling technique. The Price and Meuller (1981, as cited in Cavanagh) survey was distributed with the nurses' paychecks to a convenience sample of 221 full-time staff and manager nurses from Los Angeles. The majority of nurses were satisfied with their jobs. In order of their size of statistically significant influence, benefits, decision making, level of training, routine, promotion, and outside opportunity were important to the model. Salary was not statistically significant.

Physician Employment Satisfaction

In general, physician dissatisfaction correlates include female gender, increased age, time pressures, exorbitant amounts of paperwork, lack of leisure time or time for continuing medical education (CME), financial costs of practices, low decision-making freedom, providing treatment beyond training, repetitive tasks, paucity of professional autonomy, group practice as compared to solo practice, poor access to peers, and dissatisfaction with the community (Muus, 1996). Most of these variables have some commonality with the nursing profession variables but CME, practice finances, and practice type are more unique to physicians. Additionally, health care reform, managed

care, medicolegal issues and residency training are other variables that are of importance to physicians and not nurses. Several current physician satisfaction studies are presented next.

A random sample of family practice physicians selected from the American Academy of Family Practitioners' mailing list were sent a survey on their attitudes on residency training, career satisfaction, health care reform, corporate managed care, personal life satisfaction, workload stress, compensation, and personal well-being (Shearer & Toedt, 2001). Of 800 surveys sent, 361 were returned for a 46% response rate. In terms of career satisfaction, 66% would choose the same specialty again as compared to 75% in 1996. Job satisfaction was correlated with a positive attitude on managed care. Burnout was reported by 33% of respondents.

A study of 12,500 physicians from 33 various specialties with a response rate of 65% reported that 70% of physicians are satisfied or very satisfied with their careers while about one in five are dissatisfied (Leigh, Kravitz, Schembri, Samuels, & Mobley, 2002). This satisfaction rate lies in the middle of the ones reported by Shearer and Toedt (2001) for 1996 and 2001.

More specifically, high career satisfaction levels were seen for neonatal-perinatal medicine, geriatrics, pediatrics, and dermatology. Dermatology is considered an attractive specialty due to its focus and lifestyle issues (Leigh et al., 2002). Less satisfied were physicians in otolaryngology (ENT), obstetrics or gynecology, orthopedics, internal medicine, and ophthalmology. It is suspected that poor satisfaction for physicians in obstetrics or gynecology is due to the public's expectations for flawless birth outcomes as well as the intolerable medicolegal risks. The states with the most satisfaction were MN,

IA, MO, ND, SD, KS and the New England states. Older physicians and the younger physicians were the most satisfied age wise. Physicians with incomes above $250,000 per year were very satisfied with their careers. Also, those working many hours were less likely to be satisfied.

A 2001 editorial by Richard Smith in the *British Medical Journal* (as cited in Edwards, Kornacki, & Silversin, 2002) about unhappiness in the medical profession stirred much interest in the medical community, prompting Edwards et al. to discover the reasons behind this unhappiness. As a result, workshops and conferences for physicians were held in the United States and the United Kingdom. This work is notable in the literature for its unique qualitative approach to physician career satisfaction and its intent for action.

Managers and medical executives from various healthcare systems including Kaiser Permanente, participated in the evidence gathering in the US workshops. The UK workshops consisted of senior members of the medical profession, educators, officers of the British Medical Association, medical managers, and representatives of junior doctors, medical students, and even a patient group (Edwards et al., 2002).

While pay and workload were obvious causes of work unhappiness, many other causes were identified:

> The job is difficult and emotionally demanding, and doctors are more likely to be self critical and have other personality traits associated with work related stress. The poor record of the profession in giving mutual support or giving and receiving feedback aggravates this. Working in teams is also associated with being better able to cope with stress, but skills in teamworking are not universal in the profession. (Edwards et al., 2002, p. 836)

In addition, the general public is now more educated medically. Thus, their expectations and demands have increased, translating into the necessity for enhanced

services, including extended hours and rapid access, and has also resulted in a decreased overall patience for medical professionals (Edwards et al., 2002). Furthermore, doctors have not been trained to deal with organizations, but with individuals. The professional values and training based on patient orientation do not prepare doctors to function successfully as members of large, complex organizations. Doctors have also been taught to take personal responsibility rather than to delegate. They now attempt to do their best for each patient in today's environment of resource containment. As a result, there are high workloads and high levels of workplace stress and frustration (Edwards et al.). Many of these findings are unique variables to physicians and probably not just because of their chance to be discovered in the appropriate qualitative approach to this problem.

In an effort to increase physician career satisfaction and thereby enhance patient care, a career-counseling project cosponsored by American Medical Association (AMA) and Association of American Medial Colleges (AAMC) (AAMC & AMA, 1999a; AAMC & AMA, 1999b) was developed. There are no published outcome studies of MedCAREERS, however.

Physician Assistant Employment Satisfaction

Physician Assistants have an intermediary role on the healthcare team often compared to that of nurse practitioners (NPs) who also are considered midlevel health care providers. These advance practice nurses have received Masters degrees to provide primary care health services for specific patient populations. NPs can be found in many disciplines such as family practice, geriatrics, pediatrics, and obstetrics and gynecology (AANP, 2002). The main difference is that an NP is not a dependent practitioner, as is a PA by definition, meaning that a PA must work under the supervision of a physician

whereas, theoretically, an NP does not have this supervision requirement. Thus, variables that may affect vocational satisfaction for PAs have overlap with those of RNs and physicians as well as NPs. Thus, some studies of PAs include NPs.

Rural NP and PA job dissatisfaction seems to be related to inadequate scope of practice, coming from an urban background, unreasonable on-call schedules, inadequate schools for their children, unavailable job opportunities for their spouses, low income and poor benefits, poor reimbursement for their services from Medicaid and Medicare, unavailable continuing medical education, lack of respect for their roles, incompatibility with supervising physician or administrator, and social isolation (Muus, 1996).

Muus (1996) studied rural PA job satisfaction for his doctoral dissertation. He surveyed a random sample of 2,500 rural PAs from the American Academy of Physician Assistants (AAPA) mailing list. Muus devised his own tool on the basis of factors in the literature known to be relevant to MDs, RNs, NPs and PAs. His survey included many items such as: pre-PA health care experience; practice variables including patient load and range of services; job responsibilities; a five-point scale on community satisfaction; work satisfaction items including the PA's relationship with the supervising physician; quality of care provided by supervising MD; MD availability; autonomy level; time off for CME; and professional acknowledgement from supervising MD, other doctors, nurses, patients, and community members.

The response rate from two mailings was 62.5% for 1,560 respondents. With factor analysis and multiple linear regressions, Muus (1996) found that rural PAs tended to be satisfied with their positions. Rural PAs were satisfied with their supervising MDs, workloads, autonomy, and their acknowledgement from community members. The most

satisfied rural PAs had more autonomy and less on-call hours. The strongest significant positive predictors of overall satisfaction in this study were autonomy and MD satisfaction. Rural PAs desired responsibility and a wide variety of duties. PAs satisfied in their communities were satisfied in their jobs. Muus' study did not include variables of role ambiguity, task repetition, distributive justice, instrumental communication, and positive and negative affectivity like some other studies on job satisfaction have.

Marvelle and Kreditor (1999) published the 1998 AAPA member survey distributed on the backside of the annual AAPA membership renewal forms. Responses were received from 12,766 PAs out of 17,336 forms sent for a 73.6% response rate. In terms of PA satisfaction with their work environment, 88% reported excellent (56%) or good (32%) support from their supervising physicians on a scale choice of poor, fair, good, and excellent (Marvelle & Kreditor, 1999). As for level of respect from physician coworkers, 89% reported excellent (49%) or good (40%). The results also showed that level of respect increased with the length of time since PA program graduation and with national certification. In terms of level of respect from patients, 96% reported excellent (54%) or good (42%). In a similar fashion, increased age, length in practice, and years since certification correlated positively with the respect from patients. For level of respect from nonphysician medical coworkers, 93% reported excellent (52%) or good (41%).

In terms of PA satisfaction with their patient practice, a majority was satisfied with each of the separate components of responsibility level for patient care (52% excellent, 40% good), prescriptive authority (46% excellent, 36% good), and challenge by the medical conditions they treated (41% excellent, 47% good) (Marvelle & Kreditor, 1999).

In terms of job satisfaction, a majority was satisfied with each of the separate components of job security (28% excellent, 49% good), benefit package (about 23% excellent, about 50% good), and earnings (20% excellent, 50% good) (Marvelle & Kreditor, 1999). For the hours PAs were expected to work, 44% reported excellent and 43%, good. Regarding the amount of work expected, 34% rated it excellent. Clinical care activities were reported to compose 88% of the time PAs spent at work while they showed preference for spending 86% of their time on clinical activities. They also averaged 8% of their time on administrative functions but indicated a preference for spending 7% on administrative duties.

With respect to the outlook on the PA profession, 78% of PAs indicated that they planned to practice clinically for more than 10 years (Marvelle & Kreditor, 1999). Younger PAs and more recent graduates made up a larger proportion of these PAs. Seventy-nine percent of PAs that were 8 to 12 years post graduation and 63% of PAs over 60 years old, also planned to practice for more than 10 years. More women (81%) planned to practice for more than 10 years as compared to men (75%).

The opinions of the PAs in terms of the job market for their geographic regions and specialties showed 14% believed the market to be excellent; 40%, good; and 14% poor (Marvelle & Kreditor, 1999). PAs more likely to view the market as poor were under 31 years of age (16%), or were more recently graduated or certified (19%).

If beginning a career today, 90% would (47%) or probably would (43%) become a PA while only 2% would definitely not (Marvelle & Kreditor, 1999). In spite of the newer PAs' perceptions of a tighter job market, they were the group most definite on their PA career choice.

Marvelle and Kreditor (1999) speculated on why there is such a high satisfaction level in the PA profession. One suggestion is that because students are typically adults, they may have better preparation for their chosen profession. Another speculation is if the satisfaction could be due to the selection process for entry into PA programs. Satisfaction also could be explained by the flexibility of the profession to "tailor their clinical situation" (p. 50) as compared with other medical disciplines.

Bell, Davison, and Sefcik (2002) surveyed PAs working in emergency medicine to assess burnout using a modified *Maslach Burnout Inventory—Human Services Survey (MBI-HSS)*. This tool is particularly geared toward educational, social, and health care professionals. Questions cover the topics of emotional exhaustion, depersonalization, and personal accomplishment addressed in a Likert-like scale for scores in each of these topics. Bell et al. aimed to calculate the burnout rate for emergency medicine PAs (EMPAs), to identify demographic and other characteristics of EMPAs, and to discover what factors may be related to burnout in these EMPAs.

Statistically significant correlations were shown for the 18 correlations (Bell et al., 2002). The EMPAs' plans for leaving emergency medicine, the use of alcohol, and the use of recreational drugs were correlated positively with the emotional exhaustion scale and depersonalization scale. Administrative responsibilities were negatively correlated with depersonalization. Teaching responsibilities were negatively correlated with emotional exhaustion. Self-assessed burnout was correlated positively with emotional exhaustion and depersonalization and negatively with personal accomplishment. Increasing sense of autonomy was correlated positively with personal accomplishment. Increasing satisfaction with supervising physicians was negatively

correlated with emotional exhaustion and depersonalization and positively with personal accomplishment. Finally, the factor of problems with insomnia was positively correlated with emotional exhaustion and depersonalization and negatively with personal accomplishment (Bell et al.).

In their discussion, Bell et al. (2002) noted that the depersonalization subscale was scored the highest for both emergency medicine physicians and EMPAs. This finding could be attributed seeing patients (usually only one time) as diseases or cases rather than as human beings.

The increased level of personal accomplishment may be explained by the nature of the PA profession (Bell et al, 2002). New graduate PAs often began their careers in lower status, more labor-intensive positions in their previous health care experience. When they advance in the health care hierarchy as a PA, this advancement may contribute to a sense of personal accomplishment. In conclusion, the EMPAs fared better in terms of burnout than what the literature reports for emergency medicine physicians.

A convenience sample of more than 2,700 PAs who attended the 2002 annual PA conference and chose to participate in a market research survey reported their satisfaction with the profession for their careers. Fifty percent of participating PAs reported that they would definitely choose the PA profession again; 36% probably would; 10%, probably not; and 5%, undecided (Doscher, 2002). The survey revealed that 38% of PAs were holding newly created positions, while 45% had a position that was previously filled by another PA regardless of years of experience or year of graduation. Most of the newly created positions were in subspecialty areas.

Lane (2002) reported that three researchers, Schneller, Singh, and Weiner, have been tracking a cohort of PAs from the class of 1977. These PAs were surveyed at matriculation in 1975 (1,126 of 1,312 responded), at graduation in 1977, in 1989, and again in 2000 (322 responded). The original study was not planned to be longitudinal so the participants were not bound to the study as would be normally done if planned long term.

Seventy-five percent of the respondents in 2000 stayed in clinical practice (Lane, 2002). Of the respondents in 2000 who were practicing clinicians, 92% were happy with the PA profession as compared to 69% of those who left clinical practice. The PAs who left clinical practice included those working in nonclinical PA jobs such as in administration or teaching. Of the clinical PAs, 90% would recommend the PA profession to people seeking careers. Of the PAs who left clinical practice, 86% said they would recommend the PA profession as well.

Of interest is the change of the perceptions of the PAs on their autonomy and competence as their careers evolved (Lane, 2002). After one year of clinical practice, 25% of the PAs saw themselves as able to make a differential diagnosis as well as physicians. In 2000, 77% saw this capability. The PAs in 2000 also reported much less supervision necessary as compared to when they started in clinical practice, except for PAs in emergency medicine. The stability of supervision required in emergency medicine may reflect the role delimitation of the PAs due to the complex care of these patients. PAs also felt they had better acceptance by patients, nurses, supervising and other physicians than a year after graduation. PAs have not had much of a problem with patient acceptance with 8% of PAs noting a problem in 1978 and 7% in 2000.

In a survey study by Freeborn, Hooker, and Pope (2002), physicians, PAs and NPs, all functioning as primary care providers in a large group-model HMO, were asked about their perceptions and attitudes of job satisfaction with the same survey instrument. Of the surveyed providers, approximately 650 providers responded for a 79% response rate to an 80-question survey about their perceptions and experiences at their work place, Kaiser Permanente (Freeborn et al., 2002). The survey also asked questions about working conditions, their stresses, and well being as medical practitioners.

PAs, NPs, and primary care physicians reported that professional autonomy was not a problem (Freeborn et al., 2002). They were satisfied with most aspects of their practice. Dissatisfaction sources were patient load and amount of time spent with patients. PAs and NPs were more likely to indicate daily stress than the physicians and were less likely than physicians to report that they would choose the practice setting again. Lastly, with respect to income and fringe benefits, PAs and NPs were significantly less satisfied than the physicians. The findings suggest that more attention should be given to practice conditions and compensation of PAs and NPs in managed care.

Radiologic Technologists

Radiologic Technologists (RTs) perform diagnostic imaging procedures including standard X-rays but also may perform fluoroscopy, magnetic resonance imaging (MRI), and computerized axial tomography (CAT) scans (ASRT, 2002a). These radiology professionals take orders from the physicians, NPs, and PAs. Some RTs carry the credentials as Nuclear Medicine Technologists. Others perform radiation therapy. These selected articles on RTs focus on the general RT unless otherwise indicated.

There is a great shortage of Radiologic Technologists (RTs) (Sanchez, 2002). As a result, RTs have unreasonable workloads during their normal shifts and are also asked to work extra shifts. Sign-on bonuses are attracting technologists to jobs but these technologists stay long enough to collect the bonuses and then move on. As a result, there is a high level of occupational burnout. RT levels of burnout are comparable with burnout found in nurses (Sanchez). The only worse situation was burnout of nurses in a nursing home setting. Within the RT discipline, the worst burnout rates are for those technologists working as radiation therapists.

RTs that are satisfied with their positions report five main satisfiers (Sanchez, 2002). The level of respect they receive and their professional image is very important to them. This includes feeling like they are an integral part of the health care team. Of the RT disciplines, radiation therapists have the highest professional image yet have the highest burnout. RTs next cite trustworthiness in that they can take some initiative for patient care. Salary, not one of the top two issues, was also important. This relative importance is similar to that found in nursing and PA job satisfaction studies earlier presented in this paper. While important, salary is not the most important factor for satisfaction.

Next, many satisfied RTs report working as temporaries to earn a better salary while having the opportunity to travel (Sanchez, 2002). Dissatisfaction on these temporary jobs was typically attributed to poor support of oncologists and chief therapists. The fifth important item was insurance coverage.

In another study of RT employment issues that surveyed 3,200 RTs, the top findings for satisfaction included autonomy (the capacity to control their careers), and to

work in a setting that is well known, safe, well kept, and that has good equipment and proper support staff (Anderson, Olmstead, & McElveny, 2002). The return rate was 31% from RT administrators and 25% from staff RTs. Of the total respondents, 54% reported that they would definitely or probably choose the same career. Similarly, autonomy has been found to be important in the NP, RN, and PA studies. These other disciplines do not focus on equipment, however, like the RT studies do.

RTs also noted high satisfaction with job security, on the job safety, and pride that the job provides at 89.6%, 89.4%, and 83.6%, respectively (Anderson et al., 2002). On the other hand, RTs were not satisfied with dental and vision insurance benefits, employee break room or lounge accommodations, uniform assistance, and off-site training. In terms of satisfaction of level of respect, 80% were satisfied with coworker respect, 69.5% with physician respect, and 56.3% with nurse respect. In terms of external job attributes, only 64.5% were satisfied with time to spend with patients, 69.5% for the quality of the time spent with patients, and 61% with the patient load.

The ASRT has created a new web based service for RTs in an effort to aid their careers in response to their changing market demand (ASRT, 2002b). The Job Coach service includes some assessment tools like the MedCAREERS program.

Conclusion

The literature on medical professionals suggests that the most satisfying jobs seem to have these elements: autonomy, good wages and benefits, job security, opportunity for promotion, use of abilities and skills, variety, interesting work, occupational prestige, and a positive work setting. Physicians, having the ultimate

responsibility for patient care, face elements of dissatisfaction due to unrealistic patient expectations. This is not recognized as an issue for the other healthcare workers at this time. While a PA may have this same issue, the final burden is with the physician resulting in increased malpractice costs and fear of lawsuits in today's litigious society. On the other hand, PAs, nurses, and particularly the RTs, struggle to be recognized for their areas of expertise as part of the health care team and ask for respect and appreciation, particularly from physicians.

PAs are particularly satisfied with their careers as compared to the other allied health care professionals discussed. Researcher-identified PA job satisfaction variables show high levels of satisfaction as well. Researchers on the PA profession suggest that PAs are satisfied due to the nature of the PA profession but these variables for career satisfaction are not identified or pursued in any of the studies. There are no recent studies on PA personality types or work-environment fit. Vocational satisfaction for PAs remains an area open for exploration.

CHAPTER 3. METHODOLOGY

A blend of quantitative and qualitative research methods was used to identify factors for PA vocational satisfaction and facilitate the validation of the PA occupational code. In order to explore the two main research questions, a written mailed survey research methodology was developed to provide this blend. This encompassed the approval of the use of human subjects, the development of hypotheses, the selection of research instruments and subjects, the determination of sample size and sampling methodology, the identification of the variables, the data gathering procedures, and the evaluation of the data.

Protection of Human Subjects and Research Ethics

This researcher has ensured compliance with the conditions of use of the AAPA mailing list. Compliance to adherence to the study was also pledged via the Finch University Institutional Review Board (IRB) process and the Capella University Human Subjects Committee. Of note, survey research may not need formal written consent of the participant (Patten, 1998); this was not required of this dissertation study.

Participation in this research study was voluntary, with the completion of the surveys implying consent. The surveys were coded for purposes of follow-up mailings. Participants were offered the results upon the study's completion or directed toward its publication.

Hypotheses

Hypothesis 1:

This researcher hypothesized that the Investigative and Social (IS) components of the published PA code were probably correct within Holland's Realistic-Investigative-Artistic, Social-Enterprising-Conventional (RIASEC) typology, although not necessarily in the correct order. The third component was uncertain. This hypothesis is partially in congruence with the published PA code of ISA. Furthermore, it was hypothesized that full time PAs have the same code as part time PAs.

Ho: There is no statistically significant difference between the mean RIASEC profiles of full time and part time PAs.

Ho: Full time PA (R=I=A=S=E=C) = Part time PA (R=I=A=S=E=C)

Ha: There is a statistically significant difference between the mean RIASEC profiles of full time and part time PAs.

Ha: Full time PA (R does not equal (=/) I =/A =/S=/E=/C) =/ Part time PA (R=/I =/A =/S=/E=/C)

Hypothesis 2:

Ho: There is no statistically significant gender difference in the PA codes.

Ho: Male (R=I=A=S=E=C) = Female (R=I=A=S=E=C)

Ha: There is a statistically significant gender difference in the PA code.

Ha: Male (R=/I =/A =/S=/E=/C) =/ Female (R =/I =/A =/S=/E=/C)

Hypothesis 3:

Ho: PAs with increasing levels of satisfaction (Likert scale responses of 3, 4, or 5) with their choice of the PA profession will not have statistically significant greater congruent codes as measured with the Brown-Gore Index (BGI).

Ho: Level 3 BGI = Level 4 BGI = Level 5 BGI

Ha: PAs with increasing levels of satisfaction with their choice of the PA profession will have statistically significant greater congruent codes.

Ha: Level 3 BGI < Level 4 BGI < Level 5 BGI

Hypothesis 4a:

Ho: Older PAs will not have more congruent codes than younger PAs.

Ho: BGI (younger) = BGI (older)

Ha: Older PAs will have more congruent codes than younger PAs.

Hypothesis 4b:

Ho: PAs with varying levels of satisfaction with their choice of the PA profession will not have statistically significant different ages.

Ho: Level 0 age = Level 1 age = Level...= Level 5 age

Ha: PAs with varying levels of satisfaction with their choice of the PA profession will have statistically significant different ages.

Hypothesis 4c:

Ho: PAs with varying levels of satisfaction with their specialty choice will not have statistically significant different ages.

Ha: PAs with varying levels of satisfaction with their specialty choice will have statistically significant different ages.

Hypothesis 4d:

Ho: PAs with varying levels of satisfaction with their jobs will not have statistically significant different ages.

Ha: PAs with varying levels of satisfaction with their jobs will have statistically significant different ages.

Research Instruments

This study utilizes two survey instruments. The first is an original survey referred to as the original survey and the second is Holland's *SDS Form R* (1994).

Original Survey

A survey instrument was developed by this researcher to capture demographic data and ascertain career and specialty choice satisfaction information (Appendix B). The survey consisted of structured items, Likert-type scale items, and open-ended questions. Demographic variables include employment status, gender, age, years in PA practice, current work setting, and current specialty, queried in the first six items. The employment status variable (item 1) was also used for inclusion criteria. The specialty choice list for items 6 and 7 was developed to coincide with the most common areas of PA practice to reflect yet simplify that used in the AAPA's annual census survey.

The most preferred specialty, length in preferred specialty, and PA profession and specialty satisfaction were the specific variables under study (items 7 through 10). The addition of the measure of job satisfaction was to make the distinction between the

different constructs of career, specialty, and job satisfaction as clear as possible. The Likert-type scale items (items 9-11) were specifically designed to force a choice between satisfaction and dissatisfaction. The item on a young person searching careers serves as a control for career satisfaction as measured in item 9. Career satisfaction (item 9) was used as the second part (along with item 1) of the inclusion criteria to identify a pool of PAs for further study with the *SDS*.

The original survey closed with two open-ended questions to enable PAs to speak for themselves as to factors they considered important for their career satisfaction as opposed to limiting responses to researcher chosen variables.

Validity testing of the survey was performed utilizing several focus groups. Six individuals reviewed the initial drafts of the demographic survey and cover letters. Five of the initial reviewers were practicing PAs and the sixth was a different allied health professional. The revisions were incorporated into a second draft reviewed by six PA faculty members of this researcher's PA department and by the AAPA's vice president of data systems and analysis. Further suggestions were incorporated into the materials. The further revised materials were reviewed again by the AAPA representative and by other PAs and PA faculty members before the materials were finalized.

The construct under measurement in the demographic survey was vocational satisfaction. Construct validity for job satisfaction is fairly well-understood and single-item measures are reliable (Scarpello & Campbell, 1983; Wanous et al., 1997). It is felt that these single-item measures of satisfaction do not necessarily need internal controls (Scarpello & Campbell; Wanous et al.). Thus, the only internal control built into the survey was item 12 (Appendix A).

Self-Directed Search Form R

The second research instrument in this study was the *Self-Directed Search (SDS) Form R* to identify the Holland code of practicing PAs satisfied with their career choices. The Holland code can be measured with the *SDS* or the *Vocational Preference Inventory (VPI)* (Holland, 1985). There are several forms of the *SDS* available: *Form R* (regular), *Form CP* (career planner), and *Form E* (easy). The *SDS Form R* is intended for "high school students, college students, and adults" (PAR, 2002, p. 192). The *SDS Form R* includes a section on occupational daydreams. It takes about 35 to 45 minutes to complete. This form could be an appropriate one to measure the Holland code for PAs.

The *SDS Form CP* "is designed for adults in career transition and those seeking occupations at upper levels of educational requirements" (PAR, 2002, p. 198). It takes 15 to 25 minutes to complete. This form eliminates sections on occupational daydreams and self-estimates included in *Form R* (PAR). Eighty-eight scale items are changed in this form to be oriented to adult workers (Prince& Heiser, 2000). This form is also appropriate to measure the Holland code for PAs.

The *SDS Form E* (easy) is not appropriate to measure the Holland code for PAs as it is intended for adolescents and adults with lower levels of education (PAR, 2002). PA education is noted to be the equivalent of graduate school (AAPA, 2002b).

The *VPI* (Holland, 1985) could also be used to measure the Holland codes of PAs. The *VPI* is for a general audience and is considered a psychological inventory, however, whereas the *SDS* is vocationally oriented (PAR). The *SDS* is more career oriented, whereas the *VPI* "provides less comprehensive career assessment" (p. 203). The *VPI* takes 15 to 30 minutes to complete (PAR). The *SDS* is more concise than the *VPI* as the

VPI has five extra areas as compared to the *SDS*. The relative brevity of the *SDS* may facilitate an improved response rate over the more labor-intensive effort necessary to complete *VPI*, and, thus, is more appropriate.

After comparing and contrasting the available *SDS* instruments to measure the Holland code of PAs, the choice of the *SDS Form CP* could be made over the *SDS Form R* for the relative brevity of the *SDS Form CP*. This brevity could increase the response rate. Furthermore, the *SDS Form CP* is intended for professionals whereas the *Form R* is for a wider audience, thus making *Form CP* an attractive choice for this study.

According to Holland (personal communication, October 12, 2003), *SDS Form R* is the most useful form of the *SDS* because it has been tested and revised to increase its reliability and validity four times (1970-1994). In addition, *Form R* is embedded in more than 500 studies that typically support its reliability and validity (Holland, personal communication, November 21, 2002). The *SDS* validity and reliability studies are reported in its technical manual (Holland, Fritzche, & Powell, 1997). These studies of the *SDS* reliability and validity show that the internal consistency coefficients of the short scales and subscales (occupations, competencies, and activities) range from 0.72 to 0.92. Internal consistency coefficients of the summary scales, also known as long scales, range from 0.90 to 0.94. Test-retest reliability ranges from 0.76 to 0.89. Studies of predictive and concurrent validity show hit rates of 40 to 55%. The hit rate is the number of correct predictions of the six categories of Holland's classification system. Rates increase with increasing age and education level (Holland et al., 1997). The technical differences in the various forms suggest that the *SDS Form R* is the most reliable and valid form (Holland, personal communication, November 21, 2002).

The well-documented reliability and validity of the *SDS* is embedded within this dissertation study design using the summary (long) scales. Criterion validity does not appear to be an issue for the *SDS*, as the completion of the original survey should not affect the performance on the *SDS*.

The *SDS Form R* has an occupational daydreams section, scales of activities, competencies, and occupations, and a section on self-estimates (PAR, 1994). In the occupational daydreams section, respondents are asked to list eight occupations that are of interest and look up their environmental codes. For the activities scales sections, users of the *SDS* are asked to mark likes or dislikes for the inventory items that they enjoy or think they might enjoy. In a similar fashion, for the competencies scales, users are asked to mark yes or no for competencies in activities. In the occupations portion, users are to mark yes or no for occupations of interest or disinterest, respectively. The activities and competencies scales each have 11 items within each of the six RIASEC categories. The occupations scale has 14 items within each of the RIASEC categories. The 12 item self-estimates section asks the users to self-rate their abilities on a scale of 1 to 7 where 1 is low and 7 is high in abilities corresponding to RIASEC types (PAR, 1994).

After completion of the scales, users calculate their Holland codes from a summary sheet of the like, yes, and ability scale score responses for each of the RIASEC levels. The top three scoring RIASEC areas compose the Holland code (PAR, 1994).

Thus, the best study design was to use the *SDS Form R* with the occupational daydreams and calculation sections optional to abbreviate the instrument, thereby facilitating the response rate. There can be more confidence in the resultant codes due to its increased reliability and validity over *SDS Form CP*.

To facilitate the abbreviated instructions for this study, specific instructions were noted by placing stickers in the booklets. Participants were asked to "PLEASE START HERE" at the beginning of the booklet on page 3, where they are asked to list the occupational daydreams. They were asked to "GO TO PAGE 4" after listing the occupational daydreams so as to not have to look up the codes. Page 10, organizing the answers and calculating the codes, was noted as "OPTIONAL," potentially leaving the scoring to the researcher in an effort to improve the response rate.

Subject Selection

A random sample of 4000 PAs was generated for participation in this study. PAs were identified by the AAPA through their mailing list. PAs who were either retired PAs, or currently active in PA clinical practice or PA related work, either full time or part time, were eligible for inclusion in the first part of the study as determined by item number 1 of the demographic survey. Excluded were those respondents who did not follow through with careers as PAs. All participants who meet the inclusion criteria and chose to return the completed materials were included as long as the responses supplied were usable.

For inclusion into the second part of the study, those PAs meeting the inclusion criteria of item 1 (working in a PA related discipline) and who noted satisfaction with their choice of the PA profession for their career (scoring 3, 4, or 5 on item 9) were identified. These qualifying PAs were sent a cover letter (Appendix B) and the *SDS Form R* for potential participation in the second phase of the study. All respondents of the second phase were included as long as the responses supplied were useable.

Sample Size

The sample size was determined as guided by the size of the PA population, the number of *SDS* booklets needed, and the projected response rates for each step of the study. There are about 40,000 PAs (AAPA, 2001). Gay (1996, as cited in Leedy, 1997) suggests that if a population is approximating 1,500 members, then 20% should be used (N = 300). If the size is greater than 50,000, then 400 subjects are suggested. A table designed by Krejcie and Morgan (1970) also guides suggested sample sizes. From this table, if a population is composed of 40,000 members, then 380 subjects are to be included in the study. If the population has 50,000 members, then 381 subjects are needed. This closely parallels the 400 suggested by Gay. Guided by these suggestions, the target number of subjects for completing the *SDS* was determined to be 400.

Survey research on PAs has shown varying response rates, so an estimate of the number of mailings needed to generate a final sample size of 400 subjects completing the *SDS* was necessary. When the AAPA conducted their annual survey, AAPA members responded with a response rate of 53%, while nonAAPA members only responded with a 20% rate; the overall response rate was 38% (AAPA, 2001). For purposes of planning this dissertation study, a response rate of at least 30% was estimated. A duplicate mailing was budgeted to further improve the response rate.

Of those PAs that responded to the initial mailing, most would likely meet the inclusion criteria for the second part of the study. Thus, for every 100 PAs contacted, 30 may respond. Of the 30 responses, 28 would qualify for the second part of the study.

The PAs meeting the inclusion criteria would be sent the *SDS*. It was thought that since the PAs have indicated their willingness to fill out the form due to their initial

response, a response rate higher than typical would be reasonable for the return of the *SDS*. For this phase, a response rate of 50% was estimated, so that for every 28 qualifying PAs, 14 would return the *SDS*. Again, a second mailing was planned to encourage a higher response rate. Thus for 750 initial contacts, the yield was projected to be about 100 to 400 completed *SDS*s depending upon the response rate. Thus a mailing list of 4000 PAs was requested from the AAPA through their research assistance program.

A pilot of this methodology was conducted to further guide the size of the initial original survey mailing and follow-up mailing of the *SDS* and to further define the associated expenses (see "Pilot Study"). As a result, a total of 2325 of the 4000 members of the AAPA mailing list were used to keep within budget while attempting to meet the *SDS* target.

Sampling Methodology

A random sample of 4000 names from the AAPA's mailing list was acquired as part of the AAPA's research sample assistance program. The first 100 names on this random list were solicited for the pilot study. Based upon the pilot study response rate, a sampling of the next 2000 names was done for the initial mailing of the actual study. One additional group of 225 surveys was sent about a month after the principal mailing in an effort to reach the target of 400 *SDS* participants. Only 225 additional surveys were sent in an effort to avoid over sampling of the 4000 names to reach the accrual target and to keep within budget.

PAs qualifying for the second part of the study were mailed the *SDS* booklet. Eligible subjects had the opportunity to decline participation in the *SDS* by returning the booklets unused. Completed *SDS* booklets implied consent for the study.

Variables

Dependent

The dependent variables in this study are the RAISEC levels of the respondents as reported from the *SDS* and the calculated congruence scores (Brown-Gore Index).

Independent

The independent variables in this study are those reported by the participants on the demographic survey (Appendix B). They are: employment status (full time clinical PA, part-time clinical PA, retired, non PA related job, not employed, other PA related discipline with a blank to complete), gender (male or female), age (in years), total number of years in PA practice, current work setting (hospital, group physician office practice, HMO, community health center, solo physician office practice, other with a blank to complete), current specialty (not applicable, family or general medicine, emergency medicine, ob or gyne for examples), most preferred specialty (similar list to current specialty), total length in preferred specialty, career satisfaction (scaled from 0 to 5, forced choice from extremely unsatisfied to extremely satisfied), specialty satisfaction (scaled as in career satisfaction), job satisfaction (also scaled as in career satisfaction), and the likelihood of suggesting PA as a career. Finally, other variables of career satisfaction and dissatisfaction were elicited from open-ended questions.

Data Gathering

In order to update or verify the PA vocational personality (Holland code), a two-phased collection of data was used. The first phase consisted of the original survey and the second phase, the *SDS*. The data was collected over approximately a 3 month period from June 2003 to the end of August 2003 and pooled with that gathered from the pilot study (March 2003 to the end of April 2003).

The random sample was sent a cover letter and brief questionnaire asking specific questions as to demographics and satisfaction (Appendix B). Each survey was coded with an identifying number for follow-up purposes. A self-addressed stamped envelope (SASE) was included in the mailing to facilitate the return of the original survey. A follow-up letter with a duplicate original survey and SASE envelope was sent about three weeks after the initial mailing to non-responders to increase the response rate. The survey responses were tabulated in an electronic data collection sheet. To preserve confidentiality in this first step, the respondents were asked not to put any other identifying information on the materials.

Eligible PAs (meeting the inclusion criteria of survey items 1 and 9) qualified for the next phase of the study. These were respondents who indicated employment as a PA (full-time, part-time, or in a PA related discipline) and who were satisfied with their career choice (Likert scale response of 3, 4, or 5 on item 9). The second phase of the data collection was from a second mailing, which consisted of a cover letter (Appendix C), the *SDS Form R*, and a SASE to facilitate the return of the *SDS*. To ensure confidentiality, the respondents were asked not to put any identifying information on the *SDS* booklet. Instead, the researcher placed the identifying code on the booklet in the spaces marked

for "Name" to link the *SDS* results with the initial survey responses. The participants were asked to return the completed booklet in the self-addressed stamped envelope within three to four weeks of their receipt. A follow-up mailing (Appendix C) encouraged the nonrespondents to complete the *SDS* within the next three weeks. This included a cover letter and postage paid post card in which the participants could indicate their intent to participate in the study including the need for a second *SDS* to be mailed.

The researcher checked the *SDS* booklets for accuracy of the transfer of the workbook data onto the summary sheet and of the calculations and three-letter codes. If respondents chose not to complete the optional calculations, the researcher completed this portion and rechecked the data transfer, calculations, and codes. The RIASEC levels were recorded along with the corresponding survey information into the electronic spreadsheet.

Pilot Study

An initial mailing of 100 original surveys was conducted at the end of March 2003 with the *SDS* sent to qualifying PAs as a second step to determine the response rate and to work through any processing difficulties including coding, data collection, and data entry. Of the 100 surveys, 54 were returned. The *SDS* was sent to 47 qualifying PAs with 2 resends. Twenty-nine *SDS* were received (61.7%). One *SDS* was lost in the return mail and another was returned to sender.

It was noted that page 3 of the *SDS* (occupational daydreams) was left blank on occasion, so during the pilot study, the directions "PLEASE START HERE" were added into the booklet. Furthermore, the follow-up for the nonreturned *SDS* booklets yielded very few respondents. As a consequence, for the actual study, if a subject declined further

participation in the second step (the completion of the *SDS*), the directions to please return the unused *SDS* was added into the cover letter. There were no other changes based upon the pilot study.

Evaluation of Data

The evaluation of the data included the reporting of descriptive statistics, the qualitative data, and inferential statistical hypothesis testing. This was conducted with SPSS 11.5 for Windows. Descriptive statistics were used for aspects of demographic information. Selected demographics were compared to AAPA's published demographics from their 2002 census survey (employment status, gender, age, years in PA practice, work setting, and specialty).

For the open-ended questions, the qualitative data was coded into categories. The accuracy of coding and entry was checked by two PA students for inter-coder reliability. Frequencies of coded responses were calculated. A more detailed qualitative approach was not planned for these items due to the large sample size. The *SDS* booklets were checked for accuracy of the calculations and codes.

All inferential statistical hypothesis testing was conducted at the 0.05 level.

Hypothesis 1 was to identify the PA code and profile and to test whether or not full-time (FT) clinically practicing PAs had the same profiles as part-time (PT) clinically practicing PAs. To address hypothesis 1, the mean and standard deviation (SD) of each of the RIASEC levels was calculated for the participating PAs who were satisfied with the profession (as indicated by a score of 3 or higher on the Likert scale item for career satisfaction). The top three of these RIASEC codes were identified as the PA code and

the six mean values were reported as the PA profile. To explore if there was a statistically significant difference between any of the six RIASEC levels, a one-way repeated measures ANOVA was planned. The one-way repeated measures ANOVA was chosen because the data was interval, multiple mean scores were to be compared, and the source is one group (all PAs). This fits the criteria for the parametric test ANOVA (Munro & Page, 1993). Each of the RIASEC scores is independent of each other but since each subject is repeatedly measured for a contribution in each one of the six categories, the repeated measures component is needed. In other words, a single subject completing the *SDS* booklet will have six scores generated, one for each of the RIASEC levels. There are repeated measures generated on each *SDS* participant, warranting the repeated measures component.

The ANOVA results only tell of a difference; it does not tell where the difference lies (Munro & Page, 1993). A post-hoc test would identify where the means are different (Portney & Watkins, 2000). Post-hoc testing was conducted with paired *t* tests, in which equal variances are assumed as an underlying tenant of the statistical test. The use of 15 paired *t* tests was needed to test the multiple combinations of the two letter combinations. The Bonferonni correction was applied to the *p* value to decrease the chance of a Type I error (Portney & Watkins, 2000). Since there are 15 paired *t* tests and the *p* level is 0.05, the applied correction created a *p* value of 0.003 for statistical significance with the formula suggested by Munro and Page (1993, p. 94):

$$\text{Corrected } p \text{ value (Bonferroni)} = \frac{\text{Initial } p \text{ value}}{\text{Number of paired } t \text{ tests}} = \frac{0.05}{15} = 0.003$$

The same strategy (determining and rank ordering the means, conducting the repeated measures ANOVA and post-hoc paired *t* tests) was utilized to identify the FT and PT PA codes and profiles. Then, independent samples *t* tests were conducted to compare each of the RIASEC levels of FT versus PT PAs. The Levine's test of equality was reported in the appendices to show whether or not the variances were equal.

For hypothesis 2, the top three RIASEC codes and profiles were identified by gender in the same fashion as in question 1 with repeated measures ANOVA testing and post-hoc multiple paired *t* tests. Then, the six RIASEC levels were compared for statistically significant gender differences. This was conducted with independent samples *t* tests for each of the 6 RIASEC levels. The Levine's test of equality was reported in the appendices to show whether or not the variances were equal.

For hypothesis 3, the various satisfaction levels were compared in terms of congruence. First the subjects' codes were assigned the Brown-Gore Index scores (Brown & Gore, 1994) in relation to the PA code identified in hypothesis 1. The BGI created an ordinal scale. The BGI does not accommodate for tied components, however. Thus, for three-letter codes with tied components (e.g., I/S-A, S/I- A), the average BGI from each combination of the letters was developed to be used as the congruence measure. For hypothesis testing, nonparametric testing was needed to test for a difference in the median Brown-Gore Index scores between PAs of the varying satisfaction levels. The Kruskal-Wallis one-way ANOVA (KW-ANOVA) by ranks test is the nonparametric equivalent of the ANOVA test for parametric data and appropriate for this hypothesis testing due to the ordinal scale data.

If significant, the Mann-Whitney *U* Test was to be used for post-hoc testing. The Mann-Whitney *U* Test is the nonparametric equivalent of the *t* test (Munro & Page, 1993). This post-hoc comparison was to be aided with a correction factor, the Bonferroni correction to decrease the risk of a Type I error (Portney & Watkins, 2000).

For hypothesis 4a, age and code congruence were analyzed. First the ages were grouped into 35 years and over and under 35 years. This value was chosen because at about 35 to 40 years of age, individuals should have moved in and out of jobs to meet their career anchors per Schein's (1993) theory. For the two age groupings, the Mann-Whitney U test was used.

For 4b-d, the various satisfaction levels (of PA for a career, specialty choice and job satisfaction) were compared to see if there was a statistically significant difference for the mean age using one-way ANOVA testing. Post-hoc testing was conducted with the Scheffe test.

CHAPTER 4. RESULTS

The data for analysis was gained from the two research instruments, the original survey and the *SDS*, using a mailed survey methodology. The original survey instrument provided a means to gather descriptive data of the participants, to identify a pool of PAs satisfied with their choice of the PA profession for further study with the Self-Directed Search (*SDS*), and to enable the respondents to speak for themselves regarding the factors that they considered important for their career satisfaction as Physician Assistants.

The *SDS Form R* provided a reliable and valid way to generate the Holland RIASEC profiles and the Holland codes of the satisfied PAs meeting the inclusion criteria for further study. The RIASEC profiles were the means of *SDS* survey items for each of the six scales of Realistic, Investigative, Artistic, Social, Enterprising, and Conventional components. The Holland codes were the highest scoring, in rank order, of the top three letters of the profiles.

The evaluation of the results included the reporting of descriptive statistics and the comparison of some of these to AAPA's 2002 census survey, as well as documenting the variables identified and their frequencies of the qualitative data, and the calculation of inferential statistics. This was conducted with SPSS 11.5 for Windows (Appendix D to K). Calculations were conducted two times for a quality check.

Original Survey Response Rate

The initial mailing of 2325 original surveys (pilot and study combined) yielded 795 surveys for a response rate of 34.19%. A follow-up mailing to the non-responders

yielded an additional 14.75% (n = 343) surveys for a response rate of 49.03% (N = 1140), including 3 blank surveys. Two explanations were received from family members explaining that one potential subject was out of the country on a medical mission and another was deceased. This reduced the mailing to 2323 potential subjects. In addition, there were 0.03% (n = 68) surveys returned to sender, reducing the mailing to 2255 potential contacts. With the adjustments, the overall response rate was 50.55%. The resultant sample consisted of 1137 respondents.

Sample Demographics

The sample demographics included employment status, gender, total years in PA practice, current work settings, and current specialty. Employment status is summarized in Table 11 (N = 1137) (SPSS output in Table 36, Appendix D). Some respondents held multiple PA jobs and were considered as full-time (FT) PAs. Part-time (PT) as a clinical PA was defined as working less than 32 hours per week as a PA; these subjects may also have been working PT in another discipline in addition to their PA duties. Other PA related disciplines included PA leadership and PA education. The sample proportion of clinically practicing PAs (FT and PT status) was 86.6%.

Female respondents represented 57.3% (n = 651) of the sample and males, 42.3% (n = 481) (SPSS output in Table 37, Appendix D). The mean age of all respondents in years was 41.5, ($SD \pm 10.3$), with a range of 61 years (N = 1131) (SPSS output in Table 38, Appendix D). The mean of the total years in PA practice of those noting a FT or PT clinical practice status was 9.74 ($SD \pm 8.45$) (N = 981), with a minimum of less than 1 year to a maximum of 35 years (SPSS output in Table 39, Appendix D).

Table 11.

Employment Status of Original Survey Respondents

Employment Status	Percent	Number (*N*=1134)
Full-time Clinical PA	76.6%	872
Part-time Clinical PA	9.9%	112
Unemployed	4.4%	50
Non-PA Job	4.3%	49
Retired	2.4%	29
Other PA Related Area	2.1%	24

The current work settings of clinically practicing PAs were divided into eleven main settings as shown in Table 12. Other work settings included urgent care centers, occupational medicine settings, other outpatient clinics and owning one's practice. The SPSS outputs for employment setting are shown in Table 40 of Appendix D.

Table 12.

Current Work Settings of Clinically Practicing PAs

Work Setting	Percent	Number (*N*=982)
Group Physician Office Practice	33.3%	328
Hospital	22.9%	225
Solo Physician Office Practice	13.2%	130
Multiple Settings or Multiple Jobs	10.7%	105
Community Health Centers	4.4%	43
Rural Health Centers	2.2%	22
Military	1.9%	19
Correctional Medicine	1.6%	17
Health Maintenance Organization (HMO)	1.5%	16
Department of Veterans Affairs	1.1%	11
Other	6.7%	66

The clinical specialties for those PAs currently practicing ($N = 973$) were divided into eight main areas as shown in Table 13. Of the 191 surgical PAs, the subspecialty of orthopedic surgery was mostly represented with 91 respondents. The SPSS outputs for clinical specialties are shown in Tables 41 and 42 of Appendix D.

Table 13.

Clinical Specialties of Practicing PA Respondents

Specialty	Percent	Number (N=973)
Family Practice or General Medicine (FP)	31.9%	314
Surgery (all types)	19.4%	191
Internal Medicine (IM) or IM Subspecialty	18.8%	185
Emergency Medicine (EM) or Urgent Care (UC)	9.0%	89
Multiple Specialties	8.4%	83
Pediatrics	3.6%	35
Obstetrics or Gynecology	1.7%	17
Other	6.0%	59

Comparison of Research Sample Demographics to AAPA's Census Statistics

The respondents of this study were compared to the AAPA's published demographics from their 2002 database for gender, age, employment status, years in PA practice, work setting, and specialty in an effort to show how well the study respondents reflected the PA population at large for external validity of the study. The summary of the statistical hypothesis testing for the comparisons of gender, age, percent of PAs in clinical practice, and years in PA practice are summarized in Table 14. The SPSS outputs for the comparisons are shown in Tables 43-46 of Appendix D.

Table 14.

Comparisons of Study Respondents with AAPA's Database (AAPA, 2002)

Study Variable	AAPA Result	Sample Result	Statistical Value	*df*	*p* Value	
Gender Female	0.58	0.573	X^2=0.31	1	0.58	
Male	0.42	0.423	(*N*=982)			
Age (years)	41.3	41.47	*t*=0.55 (*N*=1131)	1130	0.58	
Clinical Practice PAs	0.88	0.86.6	X^2=1.62 (*N*=1134)	1	0.20	
Years in PA Practice	9.2	9.75	*t*=2.02 (*N*=981)	980	0.04	*

*statistically significant at p = 0.05 level

A one sample chi-square test was conducted to evaluate if the proportion of male and female respondents of this study were representative of the AAPA's census. The results of this test were not significant, X^2 (1, N = 982) = 0.31, p = 0.58, suggesting the sample was representative of the AAPA's census in terms of sex.

A one sample *t* test was conducted on respondent age to evaluate whether or not the sample's mean age was representative of the AAPA's census mean age. The sample mean of 41.47 years ($SD \pm 10.31$), was not significantly different from 41.3, $t(1130) = 0.55$, $p = 0.58$. The 95% confidence interval for the mean age ranged from 40.87 to 42.07. This suggests that the sample was representative of the AAPA's census in terms of age.

A one sample chi-square test was conducted to evaluate if the proportion of respondents in clinical practice was representative of the 88% seen in the AAPA's census. The sample proportion of clinically practicing PA was 86.6%. The results of this test were not significant, $X^2(1, N = 1134) = 1.62$, $p = 0.20$, suggesting the sample was representative of the PA census in terms of clinical practice.

A one sample *t* test was conducted on respondent clinically practicing PAs' (FT or PT status, $N = 981$) years in clinical practice to evaluate whether or not the sample's mean years were equivalent to the AAPA's mean. The sample mean of 9.75 years in clinical practice ($SD \pm 8.45$), was significantly different from 9.2, $t(980) = 2.02$, $p = 0.04$. The 95% confidence interval for the years in clinical practice ranged from 9.18 to 10.28 years. The effect size, d of 0.06 indicates a very small effect. While the sample mean years in PA practice is higher, this is only by about one-half of a year; the sample may still approximate that of the AAPA's census.

The employment settings are not able to be compared directly to the AAPA's list as the AAPA specifically requests information on the primary employer and the original survey instrument asked for information about all employers. In a similar fashion, the AAPA inquired into the primary specialty of practice whereas the original survey allowed for all current specialties. Some PAs worked in multiple specialties and could not be declared into one or another. However, some specialties had fairly clear and adequate representation from the study respondents and are compared to the AAPA's practice specialties as shown in Table 15.

Table 15.

Selected Practice Specialty Comparison of AAPA Census Survey

Practice Specialty	AAPA Percentage	AAPA Number (16835)	Original Survey Percentage	Original Survey Number (983)
Cardiology	2.96%	499	2.8%	28
Family General Practice	32.08%	5400	31.9%	314
General Surgery	2.51%	423	2.7%	27
Occupational Medicine	2.93%	497	2.4%	24
Orthopedic Surgery	9.09%	1531	9.2%	91
Pediatrics	4.12%	438	3.6%	35

Original Survey Items

In addition to the demographic information, other original survey items included the preferred specialty preference, the length of time practicing in the preferred specialty, the satisfaction scales for career choice, specialty choice, and job, and the likelihood to refer into the PA profession. The analyses of these items are found in Appendix E. Of those PA respondents (FT, PT, other PA related discipline, and unemployed PAs) who noted a preferred specialty of PA practice (item 7, $N = 991$), there were five main specialty categories selected as shown in Table 16. Almost half (46.9%) of the surgical category was represented by orthopedic PAs ($n = 99$). The SPSS output is shown in Table 47 of Appendix E.

Table 16.

PA Practice Specialty Preference Areas

Specialty Area	Frequency (N=991)	Percent
Emergency Medicine or Urgent Care	118	11.9%
Other	144	14.5%
Internal Medicine	180	18.2%
Surgery	211	21.3%
Family or General Practice	338	34.1%

The mean total length of PA practice in the preferred specialty (item 8, $N = 1007$) was 7.72 years ($SD \pm 6.95$) with a minimum of less than one year to a maximum of 33 years. The SPSS output is shown in Table 48 of Appendix E.

The next survey items were Likert scale measurement of PA career satisfaction, specialty satisfaction, job satisfaction, and the likelihood to refer others into the PA profession, respectively. The SPSS output of the descriptive statistics for the Likert scale

items is summarized in Table 49 of Appendix E. More specifically, satisfaction levels of the PA profession (item 9, a 6 point Likert scale) were reported by 1117 respondents as: extremely unsatisfied, 0.7% (n = 8); very dissatisfied, 1.4% (n = 16); unsatisfied, 3.8% (n = 43); satisfied, 19.9% (n = 226); very satisfied, 46.8% (n = 532); and extremely satisfied, 25.7% (n = 292). The mean satisfaction level was 3.91 the median, 4 and the mode, 4. PA career satisfaction is shown in Table 50 of Appendix E.

Satisfaction levels for the preferred PA specialty (item 10, a 6 point Likert scale) were reported by 1061 respondents as: extremely unsatisfied, 0.4% (n = 4); mostly dissatisfied, 0.4% (n = 4); unsatisfied, 1.8% (n = 20); satisfied, 13.5% (n = 153); mostly satisfied, 42.4% (n = 482); and extremely satisfied, 35.0% (n = 398). The mean satisfaction level was 4.17, the median 4, and the mode, 4. The SPSS output is shown in Table 51 of Appendix E.

Job satisfaction levels of the current PA position (item 11, a 6 point Likert scale) were reported by 1012 respondents as: extremely unsatisfied, 0.8% (n = 9); mostly dissatisfied, 1.0% (n = 11); unsatisfied, 5.5% (n = 63); satisfied, 20.1% (n = 228); mostly satisfied, 38.9% (n = 442); and extremely satisfied, 22.8% (n = 259). The mean satisfaction level was 3.84, the median 4, and the mode, 4. The SPSS output is shown in Table 52 of Appendix E.

When PAs were asked how likely they were to "suggest to a bright young person searching careers to become a PA?" (item 12, a 4 point Likert scale), of 1112 respondents, 4.0% (n = 46) reported very unlikely; 6.9% (n = 78) reported fairly unlikely; 34.0% (n = 387), fairly likely; and 52.9% (n = 601), very likely. The mean likelihood to

refer was 3.39, the median 4, the mode, 4. The SPSS output is shown in Table 53 of Appendix E.

The relation between PA career satisfaction and the likelihood to refer a bright young person into the career is shown in Figure 2. A correlation was conducted to test for the internal validity for the two survey items. The values for each item were ranked and converted into z scores for comparison with each other. Paired samples correlations showed a significant positive correlation of 0.48, $p < 0.001$, between the two items. This result suggests high internal validity between the two survey items. The SPSS output is shown in Table 54 of Appendix E.

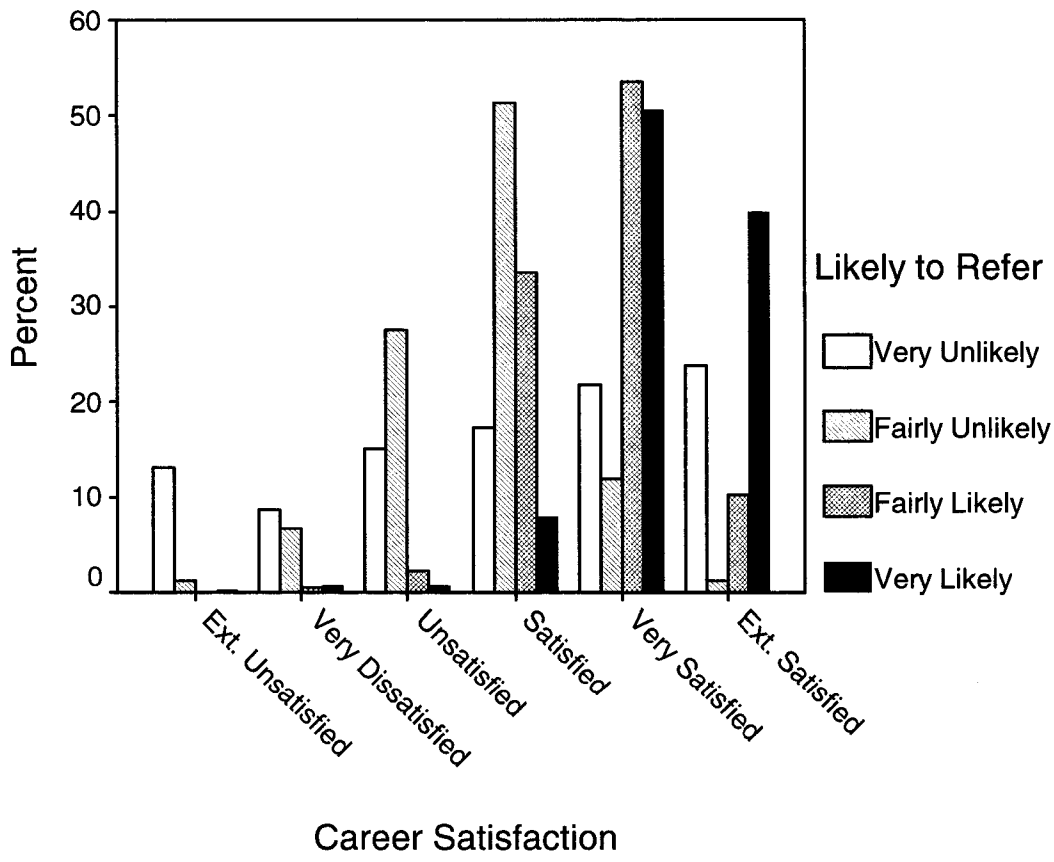

Figure 2. The likelihood to refer into the PA profession based upon career satisfaction.

Items 13 and 14 asked open-ended questions regarding factors for PA career satisfaction and dissatisfaction. These survey items represent a qualitative component of this dissertation study, enabling the participants to speak for themselves on the factors important to themselves in terms of their career satisfaction. Only 7.5% (n = 86) of participants left both items blank for a 92.5% participation rate. Item 13 (satisfaction) was answered by 90.0% (n = 1023) of the subjects and item 14 (dissatisfaction) by 89.4% (n = 1017).

For this qualitative component of the survey, coding was formulated for the open-items' responses to look for recurrent themes within answers from each of the questions and for similar and contrasting ideas between the questions' answers. Repetitions or elaborations of themes within a single answer were coded as one theme. There arose 21 different themes for career satisfaction (Table 17) and 29 for career dissatisfaction (Table 18) from almost 5000 coded items. Items were validated for data entry and inter-coder reliability by two PA students. Coding was changed for 14 items (inter-rater reliability of over 99%) with a resulting consensus of all items.

The definitions of each of the categories for the open-ended questions are specified as results of the qualitative analysis of the responses as these reported variables were participant-driven as opposed to predefined for the study. These definitions are important to present to appreciate the richness of the responses to this qualitative component and to understand the coding scheme for the variable categorization. To close the qualitative results, some quotations as paired responses to the open-ended questions are presented.

Table 17.

Career Satisfaction Factors

Satisfaction Variable	Frequency of Response	Percent Response
Helping Others	552	48.8%
Patient Interaction	302	26.6%
Intellectual Challenge	222	19.5%
Autonomy	120	10.6%
Teaching	117	10.3%
Flexibility	106	9.3%
Teamwork	91	8.0%
Other	84	7.3%
Compensation	83	7.3%
Variety	70	6.2%
Appreciation	62	5.5%
Procedures	62	5.5%
Respect	59	5.2%
Specialty Change	52	4.6%
Problem Solving	51	4.5%
Responsibility	45	4.0%
Physician Backup	26	2.3%
Professional	21	1.8%
Job Availability	18	1.6%
Global Satisfaction	9	0.8%
Limited Liability	4	0.4%

Table 18.

Career Dissatisfaction Factors

Dissatisfaction Variable	Frequency of Response	Percent of Respondents
Respect	147	12.9%
Compensation	139	12.2%
Other	121	10.6%
Misunderstood PA role	111	9.8%
Hours	110	9.7%
Insurance	110	9.7%
Paperwork or Administrative	89	7.8%
Bureaucracy	81	7.1%
Regulatory Issues	77	6.8%
No Dissatisfaction	62	5.5%
Job Availability	62	5.5%
Productivity	60	5.3%
Patient Care Disrupted	50	4.4%
Malpractice Issues	50	4.4%
Supervising Physician	47	4.1%
Patient Demands	46	4.0%
Autonomy	37	3.3%
PA Role	34	3.0%
Nurse Practitioner	29	2.6%
Reimbursement	25	2.2%
Team Issues	19	1.7%
No Advancement	17	1.5%
Work Life Balance	17	1.5%
NCCPA	16	1.4%
No Input	14	1.2%
Name	13	1.1%
Stress	12	1.1%
CME	8	0.7%
Lack of Residency Program	3	0.3%

The 21 categories for career satisfaction factors are defined as follows, beginning with the most frequently cited category to the least. "Helping Others" emerged for those who enjoyed helping people in general or patients in particular. This was for those who voiced "caring for the patient," "patient care," or having a positive influence on patients. Those who voiced "practicing medicine" in general, in addition to categorization in

Helping Others were also classified into Intellectual Challenge, since this comment could be interpreted either way. One respondent explained:

> Helping people-even if it is only to help them die with dignity. I cannot express in words the feeling I get when an elderly, lonely patient smiles because I treat them with care and RESPECT. I feel I am serving God.

The "Patient Interaction" category was developed for those who specifically voiced enjoying a patient relationship in terms of a social, personal aspect and not just for a purely medical purpose. An example: "The opportunity to be face to face with people in a way to hopefully impact their lives."

An "Intellectual Challenge" category was derived for those who enjoyed the scientific nature of practicing medicine, practicing medicine in general, or the fund of medical knowledge. Of note, those who voiced "practicing medicine" in general were also categorized into Helping Others, since this comment could be interpreted either way. The respondent to the example of Patient Interaction continues to explain the intellectual challenge "and to continually learn an ever changing fascinating body of knowledge to be discussed and implemented with other professionals."

"Autonomy" referred to PAs who voiced their enjoyment of their self-sufficiency in PA practice.

"Teaching" referred to those who spoke in particular to enjoying the aspect of teaching whether the education of patients or of residents, interns, or other students.

> My limited experience as a PA may diminish my contribution to your survey, however, I can say after 15 years of nursing, becoming a PA was the best career choice for me. The ability to reach more people as a provider and *to educate them about their health and illnesses* and possess the skills to work with them through their illnesses and recoveries is great! [italics added]

"Flexibility" referred to those who enjoyed their hours, not being on-call or the shorter time for PA training over that of physicians; in other words, the work life balance that they had with this career. An example: "the ability to practice medicine so thoroughly & yet be able to turn off my pager at the end of the day." Another example: "to be able to work a parttime [sic] or perdiem position when I have children."

"Teamwork" was created for those who expressed that they enjoyed their staff (administrative or medical personnel) and social interactions with them at work. For example: "I have a great job, work with great intelligent professionals."

"Other" was identified as a category for those satisfied comments that did not fit into the themes nor were mentioned frequently enough times to have their own category. Such comments included regulatory issues including state and hospital regulations, advancement opportunities, or opportunities to diversify in their positions.

"Compensation" covered those who are happy with their compensation whether salary, benefits, or other forms of compensation.

"Variety" as a category was for those who enjoyed the variety of PA practice in terms of patients' medical conditions or the different patient populations.

"Appreciation" was the theme for those who felt that they were appreciated by their patients, staff, colleagues, or the general population.

"Procedures" were noted for those who commented on the variety or types of procedures that they perform. This included those commenting on the surgical aspects of their positions.

"Respect" was seen for those who enjoyed the respect that they received from colleagues, patients, other professionals, and the general population.

"Specialty Change" was identified for those who enjoyed the ability to change specialties within PA practice. For example: "The ability to change specialties without the need for further education."

"Problem Solving" emerged as a category for those who voiced enjoying the problem solving aspect of the PA profession or the medical decision making. These individuals enjoy managing patient care and solving difficult cases. This comment was seen as a free standing subcategory beyond "Intellectual Challenge."

"Responsibility" was noted for those who enjoyed the level and types of responsibilities that they have in PA practice.

The "Physician Backup" category was identified for those respondents who voiced that they enjoyed having their supervising physician available in order to have support, to ask questions, and have discussions yet allowing the PAs to have independence and responsibilities. One such example: "The autonomy to make decisions yet having an MD for input takes a lot of stress away [sic]"

"Professional" was a category for those who voiced a pride in the PA profession in general and liked professional issues or circumstances surrounding their careers.

"Job Availability" was noted for those who were satisfied with the number or type of jobs available to them.

"Global Satisfaction" referred to those who voiced a general satisfaction with the PA profession and yet did not list specifics.

"Limited Liability" was a category for those who voiced satisfaction with decreased malpractice issues as compared to those facing physicians.

In terms of categories for PA career dissatisfaction, 29 were identified as follows.

"Respect" was for those who did not feel appreciated or respected by patients, colleagues, or other health professionals. This lack of respect contrasted with what was seen in the appreciation and respect categories of satisfaction. For example: "Staff & nurses & administrators made total fools of PAs. PAs are blamed for everything. Nurses who are once your friends automatically smirk you and hate you once they find out you're a PAs [sic]."

"Compensation" was coded for those who were not satisfied with their benefits or salaries. This was seen as the opposite of the satisfaction Compensation category.

"Other" was identified as a category for those dissatisfaction comments that did not fit into themes nor were mentioned enough times to have their own categories. Such comments included the lack of procedures, the need for more training or education (aside from CMEs), the lack of teaching, the feeling that "there is still so much to learn after you graduate," missing a diagnosis, not enough challenges, and additional varied comments.

"Misunderstood PA role" was the category for to those who do not like being used in ways for which the PA profession is not designed. Physicians, colleagues, or administrators do not understand the role of a PA. This was seen as a subcategory of the opposite of the Respect satisfier.

"Hours" were coded for those who voiced dissatisfaction with the hours they worked including on-call, weekends, and the number of hours. The number of hours was typically excessive. It was a subcategory of the opposite Flexibility satisfier.

"Insurance" refers to those who are not satisfied with the health insurance companies or third party payers because the PAs are not allowed to order certain

diagnostic studies or prescribe specific medications in order to care for their patients due to health insurance protocols. Furthermore, some PAs noted that they were not recognized as a health care provider by insurance companies for the services ordered. There was not a related satisfier.

"Paperwork or Administrative" was a category for those who expressed dissatisfaction due to paperwork or administrative duties. Paperwork often referred to forms to fill out for patients' health insurance companies or medical documentation for medicolegal purposes. There was not an associated satisfier.

"Bureaucracy" referred to dissatisfaction involving the bureaucracy or politics involved with medicine and healthcare with issues that are out of the PAs' hands and are handled at a higher level. There was no comparable satisfier.

"Regulatory Issues" referred to those who were dissatisfied with the PA practice regulations, either in the state or hospital in which they practice. To quote a subject: "Some limitations on scope of practice." There were so few affirmative responses regarding regulatory issues that it did not receive its own satisfaction category.

"No Dissatisfaction" was categorized for those who state that they do not have any dissatisfaction. This idea was indicated typically by "none" or the null sign. The analogous satisfier was Global Satisfaction. One subject summarized: "none- I believe our profession is so dynamic/flexible that if you are dissatisfied it is your own fault."

"Job Availability" emerged as a category for those who are not satisfied with the availability of PA jobs. It was seen as the opposite of the Job Availability satisfier. For example: "The job market for PAs has plummeted to zero. Everything has changed in job requirements."

"Productivity" arose as a category for those who are dissatisfied with the demands put on them to see a certain number of patients an hour in order to produce a certain revenue. This demand impeded PAs' abilities to take proper care of their patients. There was no satisfier category akin to Productivity. For example: "Increased workload/call s [without] compensation."

"Patient Care Disrupted" was identified as a category to represent those who are dissatisfied that they are unable to take proper care of their patients. Sometimes it was indicated more specifically when explained that it is due to insurance, bureaucracy, or other categorized reasons that may hinder proper patient care. The closest related satisfier was Helping Others in which patient care was embedded.

"Malpractice Issues" was for those who are dissatisfied with the medical malpractice climate or that they have to be extra careful in their documentation or practice defensive medicine due to the fear of malpractice litigation. It was seen as broader than the Limited Liability category of satisfaction. To quote one respondent: "Liability is more of an issue now in light of trying to be thorough and efficient."

"Supervising Physician" was used to code those who are specifically dissatisfied with their supervising physicians. This dissatisfaction was due to the lack of respect for the PA (coded solely here and not in Respect), lack of availability for a consult on a patient, perceived physician unethical behavior, or other reasons. Satisfaction with a supervising physician was included in either satisfaction category of Physician Backup or Teamwork depending upon the context of the satisfaction response. One subject wrote: "I have had supervising physicians who do not communicate well or who have practiced unethically, and this is frustrating."

"Patient Demands" identified dissatisfaction with certain demands of patients. Examples include drug-seeking patients, noncompliant patients, or patients that want the PA to fix their lifestyle-inflicted medical conditions without the patient taking responsibility for changing the health-corrupting behaviors. Some of these interactions were seen as the opposite of the satisfaction category of Patient Interaction.

"Autonomy" was a category for those who expressed dissatisfaction with their level of independence in PA practice. It typically referred to constraints on PA practice. This was the opposite of the satisfier autonomy. For example: "Lack of full autonomy..."

"PA Role" was developed to represent those who express dissatisfaction with the midlevel provider role. They complain of being the "middle man" or someone that has to do things that the physician or other colleagues do not like to do. There was no analogous opposite category. To quote a respondent: "Some frustration w [with] lack of understanding about the PA profession among patients and even in healthcare." Another stated: Extreme variations of job expectations i.e. medical assistant like role vs. PA role in eval/Tx [evaluating and treating] pts.

"Nurse Practitioner" arose as a category for those who made comparisons to NPs because of competition, name, or rivalry. The NP responses were also coded more specifically into the category of the issues for which the comparison was made such as regulatory issues. There was no corresponding category in the satisfiers. One PA wrote "I have met with discrimination on other jobs requiring RNs only and NPs only even though I was qualified."

"Reimbursement" referred to those comments that health care insurance companies do not cover the costs of patient care. Examples include the lack of coverage

for diagnostic tests, therapeutic procedures, prescription medications, or the lack of universal healthcare coverage for all patients.

"Team Issues" was a category to identify those who are not satisfied with their working environment in terms of office staff, colleagues, or other health professionals. This category contrasted with the Teamwork satisfier.

"No Advancement" covered those who were dissatisfied that there were no opportunities for advancement in their current position or in the PA profession. Advancement as a satisfier did not surface into its own category. One subject wrote: "No attempts are made to advance PAs."

"Work life balance" referred to those who were dissatisfied with the imbalance of their work and life because they are unable to spend time with their families. When this imbalance was because of hours worked, that category was also coded. The satisfier of Flexibility is the most comparable category.

"NCCPA" was identified for those who were not satisfied with the recertification process determined by the NCCPA. Their dissatisfaction was due to the time required, the testing process, or the expenses involved to maintain PA certification. This also included the barrier to re-entry into PA practice. There was no equivalent satisfier. An example: "There is no way to get back in the profession once you are gone."

"No Input" was coded for those who are dissatisfied due to the lack of input or of impact on the practice, or that they cannot own part of the practice. The opposite of this dissatisfaction factor was embedded into other satisfaction factors such as Teamwork, Appreciation, and Respect.

"Name" was noted for those who are dissatisfied with the name "Physician Assistant" for the profession. Respondents explained that the name "assistant" implies PAs are an assistant to the physician (confused with medical assistant), and are not qualified to see patients. This was seen as another subcategory of the opposite of the respect satisfier.

"Stress" was noted when PAs voiced feeling burned out or stressed out with the demands of the PA profession. This category also encompasses emotional stress and physical stresses. Respondents may have also coded into specific reasons for the stress, such as productivity. There was no opposite category. One respondent explained:

> Being a PA is sometimes very demanding emotionally (i.e. watching a nursing home patient suffer, giving people bad news about their health or their loved one's death, injury, or illness) and this can affect me even after I leave work sometimes. However, this is often balanced by the knowledge that I did something good for someone.

"CME" was defined as a category for those who are dissatisfied with the CME requirements as part of the recertification process. This dissatisfaction was usually due to the time and cost of fulfilling such requirements. CME can be seen as a subcategory of NCCPA. There was no comparable satisfier; the closest item would be the intellectual challenge in that the PAs like to learn but this CME category is not about the intellectual aspect.

"Lack of Residency Program" was a category for those who would like to have a PA post graduate residency program but none was perceived as available to them. There was not a comparable satisfier category. As one example: "The profession did not keep up residency in specialties-needed specialties."

To show two perspectives of questions 13 and 14 from the same subjects, the following two are quoted.

One subject:

> 13. helping people (my work as a paramedic & midwife was more fulfilling)
>
> 14. hostility of other practitioners- "turf wars"; lack of respect & collegiality amongst "professionals" (nurses, MD, PAs, DOs...[doctors of osteopathy]) Dumping-hireing [sic] PA's only to get in an extra golfing day not as a co-practitioner. MDs not respecting the legal limits of PAs. Inability of fellow PAs to admit gaps in their education- all of these issues fail to keep patient's needs first!

Another subject:

> 13. The ability to diagnose & Tx [treat] diseases & disorders that most other providers would miss. The practice of medicine is an emotional & intellectual endeavor, that when done correctly, with heart, brings great satisfaction & humility. It engenders real respect from patients & physician supervisors.
>
> 14. Uneven playing field with doctors & N.P.s in the business of medicine. In Colorado, I can not be a partner in a medical corporation. I also dislike being a Physician(s) ASSISTANT. We need to change our name to Physician Associate. We need to keep second rate colleges & "tech schools" from training PAs. We need to maintain a high educational standard that would be expected of a medical school. We must hold ourselves to the same high standards that our physician colleagues are held to.

Self-Directed Search

Of the 1137 PAs that returned completed surveys, 945 met the inclusion criteria for the next step of the study. Of the 945 *SDS* booklets sent, 465 booklets were returned for a 49.21% response rate. Two returned were not usable (too many items or sections not completed). In addition, 4 booklets were returned to sender and follow-up mailings of postcards to *SDS* nonrespondents revealed that 17 completed booklets were lost in the return mail and 41 never received the booklet. In addition, 58 qualifying PAs actively

declined participation. The adjusted response rate was 50.49% (465 of 921) of *SDS* returned with a resultant usable sample size of 463 *SDS* booklets.

Several comparisons were made of the *SDS* group to the PA respondents at large to see if this subgroup was representative of the overall PA respondents for gauging the ability to generalize the findings from the *SDS* to the PA population at large. The SPSS outputs of the comparisons are found in Tables 55-59 of Appendix F. The chi-squared test was utilized to compare sex and one sample *t* tests were used for age, years practicing as a PA and time in chosen specialty. Table 19 summarizes these comparisons which suggest that this subgroup is similar to the sample at large as there were no statistically significant differences.

Table 19.

Subgroup Comparisons to PA Respondents

Variable Compared	Sample at Large (PAs only) Values	*SDS* Subgroup	Test Value	Sig.
Sex	M= 43.1% F=56.6% (*N*=1032)	M=40.69%, F= 59.31 (*n*=462)	X^2=1.18	0.28
Age	Mean= 41.16 (*N*=1031)	Mean= 40.57 (*n*=463)	*t*=-1.26	0.21
Years Practicing as PA	Mean=8.66 (*N*=1030)	Mean=9.78 (*n*=463)	*t*=-1.09	0.28
Time in Specialty	Mean=7.80 (*N*=962)	Mean=7.36 (*n*=435)	*t*=-1.36	0.17

Hypothesis Testing

Four main hypotheses were tested in this study. The detailed SPSS outputs of these statistical analyses are found in Appendices G to J.

Hypothesis 1

This researcher theorized that the IS components of the published PA code were probably correct, although not necessarily in this order. The third component was uncertain. This hypothesis is partially in congruence with the published PA code of ISA.

Furthermore, for statistical testing, it was hypothesized that full time PAs have the same code as part time PAs.

To address hypothesis 1 (Appendix G), the mean and standard deviation of each of the RIASEC levels were calculated for the participating PAs who were satisfied with the profession (as indicated by a score of 3 or higher on the Likert scale item for career satisfaction, item 9). Thus, the mean PA profile is: SIREAC. Table 20 shows the means of the RIASEC levels (Holland Profile). The PA code is the top three means in descending rank order of these RIASEC levels: SIR. The previously established PA code was ISA (Gottfredson & Holland, 1996; Richards, 1977).

Table 20.

Physician Assistant Holland Profile

	R	I	A	S	E	C
Mean (*N*=463)	22.79	30.75	20.93	31.27	22.48	20.71
SD	10.51	8.33	10.13	7.64	8.75	8.48
Minimum	2	8	2	11	3	5
Maximum	50	50	48	49	50	50

To explore if there was a statistical difference between any of the means of the six RIASEC levels, a one-way repeated measures ANOVA was run. As explained in the methodology, a repeated measures component was used as each PA respondent contributed a measurement in each of the six scales of the *SDS*. The ANOVA was significant, $F(5, 463) = 167.66$ ($p < 0.001$). Details of the SPSS output are shown in Table 60 of Appendix G.

Post-hoc testing with paired *t* tests (*df* = 462) determined that there was a statistically significant difference between all the pairs except RE, IS and AC. This creates a PA profile of S/I-R/E-A/C, in which a dash (-) separates the statistically significant letters and a slash (/) represents no statistical difference between the letters. To explain further, the S/I components are statistically tied, the I-R components are statistically significantly different, the R/E letter are statistically tied, E-A are statistically different (at $p = 0.05$ level), and A/C are statistically tied. (This convention of slashes and dashes with a p level of 0.05 will be used throughout the remainder of the paper. With the Bonferroni correction, A and E are also statistically tied but the convention for this paper will not take this correction into account in an effort to keep the profiles as distinct as possible for ease of understanding.) Table 21 summarizes the statistics and the details of the SPSS output are found in Table 61 of Appendix G.

Next, the *SDS* respondents were categorized by full time and part time PA employment status to explore if the codes were the same. In a similar fashion to creating the overall PA profile and code, the PT and FT profiles were calculated and tested for tied scores (Tables 62 to 65 of Appendix G). The PT code was S/I/A/C-E/R and the FT code was S-I-R-E-A/C.

Hypothesis testing was conducted utilizing independent samples *t* testing with equal variances shown via the Levene's test for each of the RIASEC levels to test if the FT and PT codes were statistically different (Table 22, detailed SPSS output in Table 66 of Appendix G).

Table 21.

Paired Samples Test of PA Holland Profile

Pairs	*t* (*df*=462)	Sig (2-tailed)	
R-I	-13.93	0.000	*
R-A	2.96	0.003	*
R-S	-13.81	0.000	*
R-E	0.55	0.585	
R-C	3.50	0.000	*
I-A	18.49	0.000	*
I-S	-1.15	0.250	
I-E	17.01	0.000	*
I-C	21.11	0.000	*
A-S	-21.13	0.000	*
A-E	-2.79	0.005	**
A-C	0.37	0.713	
S-E	19.81	0.000	*
S-C	21.38	0.000	*
E-C	4.12	0.000	*

*statistically significant at $p = 0.05$

**not significant with Bonferroni correction but with $p = 0.05$

Table 22.

Independent Samples t Test for PT and FT Profiles

	Employment Status	Mean	*SD***	*t* (*df*=441)	*p* Value	
R	FT (*n*=389)	23.03	10.44	1.45	0.15	
	PT (*n*=54)	20.83	10.47			
I	FT	30.81	8.49	0.50	0.62	
	PT	30.20	7.65			
A	FT	20.76	10.21	-0.93	0.36	
	PT	22.13	10.08			
S	FT	30.90	7.65	-2.21	0.03	*
	PT	33.33	6.99			
E	FT	22.51	8.68	1.18	0.24	
	PT	21.02	8.83			
C	FT	20.60	8.58	-0.62	0.54	
	PT	21.37	8.46			

*statistically significant at $p = 0.05$

** Levene's test shows equal variances

The independent *t* test showed that there was not a statistically significant difference between the FT and the PT means ($df = 441$) with the exception of the S levels ($p = 0.03$). This result does not provide a meaningful difference in the codes however, thus the FT equals the PT code. Since the codes are equal in a practical sense, all *SDS* participants were used for the rest of the statistical analyses involving the *SDS* findings.

Hypothesis 2

Hypothesis 2 declared that there was no statistically significant gender difference in the PA codes. The SPSS printouts for hypothesis 2 are found in Appendix H. The female and male profiles were defined from the means (Table 23). The female profile was defined as SIAECR and the male, ISRECA. Similar to the analyses for hypothesis 1, the six RIASEC levels were compared for statistically significant differences between the RIASEC types for each gender utilizing the one-way repeated measures ANOVA. The ANOVA was significant for each females and males. For women, $F(5, 274) = 165.18$ ($p < 0.001$). For men, $F(5, 188) = 73.78$ ($p < 0.001$). Each of these significant ANOVA tests warranted post-hoc testing to determine where the significance was to further delineate the gender profiles. SPSS outputs of the one-way repeated measures ANOVA gender tests are provided in Table 67 of Appendix H.

Table 23.

Mean PA Profile Values for Women and Men

	R	I	A	S	E	C
Women (n=275)	18.19	30.94	21.62	32.16	21.24	21.14
Men (n=189)	29.49	30.40	19.81	30.03	24.34	20.13

Post-hoc testing with paired *t* tests (Table 24) for women determined that there was a statistically significant difference between all the pairs except I/S, A/C, A/E and E/C (*df* = 273). This creates a female PA profile of S/I-A/E/C-R. In a similar fashion, there was a statistically significant difference for men between all the pairs except R/I, R/S, I/S and A/C (*df* = 187). This creates a male PA profile of I/S/R-E-C/A. The SPSS output of the post-hoc gender testing is displayed in Table 68 of Appendix H.

Next, the mean profile of men (I/S/R-E-C/A) and women (S/I-A/E/C-R) were compared to each other with multiple independent *t* tests with the Levene's test showing equal variances (Table 25). Women statistically differed from men on the R, S, and E components, indicating the profile for women is different than that of men but both have statistically tied S/I components as the first two levels. Table 69 of Appendix H illustrates the SPSS output of the multiple independent *t* tests.

Hypothesis 3

Hypothesis 3 stated that PAs with increasing levels of satisfaction (Likert scale responses of 3, 4, or 5) with their choice of the PA profession will not have statistically significant greater congruent codes as measured with the Brown-Gore Index (BGI). The BGI was the method selected to measure the degree of match or fit (congruence) between a subject's Holland code and the code identified in this study, reflecting Holland's theory of personality and work environment matching. The BGI provides an ordinal scale measure from 0-18 in which 0 is a complete mismatch and 18 is a complete match to a comparison three-letter code.

Table 24.

Paired Samples Tests for Female and Male PA Profiles

Female Pairs (*df*=273)	*t*	Sig (2-tailed)	
R-I	-20.89	0.000	*
R-A	-5.36	0.000	*
R-S	-21.04	0.000	*
R-E	-4.51	0.000	*
R-C	-4.51	0.000	*
I-A	13.61	0.000	*
I-S	-2.03	0.043	
I-E	15.64	0.000	*
I-C	16.16	0.000	*
A-S	-16.76	0.000	*
A-E	0.56	0.575	
A-C	0.63	0.530	
S-E	19.12	0.000	*
S-C	17.08	0.000	*
E-C	0.18	0.858	
Male Pairs (*df*=187)			
R-I	-1.05	0.293	
R-A	9.81	0.000	*
R-S	-0.61	0.545	
R-E	5.72	0.000	*
R-C	10.85	0.000	*
I-A	12.55	0.000	*
I-S	0.56	0.578	
I-E	8.10	0.000	*
I-C	13.50	0.000	*
A-S	-13.30	0.000	*
A-E	-5.14	0.000	*
A-C	-0.35	0.727	
S-E	8.79	0.000	*
S-C	12.84	0.000	*
E-C	6.57	0.000	*

*statistically significant at $p = 0.05$

Table 25.

Independent Samples Tests for Female and Male Profiles

Level	Sex	Mean	*SD***	*t* (*df*=460)	Sig (2-tailed)	
R	F (*n*=274)	18.19	8.449	13.36	0.000	*
	M (*n*=188)	29.49	9.592			
I	F	30.94	8.212	-0.69	0.491	
	M	30.40	8.460			
A	F	21.62	9.644	-1.89	0.059	
	M	19.81	10.634			
S	F	32.16	7.423	-2.97	0.003	*
	M	30.03	7.785			
E	F	21.24	8.562	3.80	0.000	*
	M	24.34	8.688			
C	F	21.14	8.440	-1.25	0.211	
	M	20.13	8.526			

*statistically significant at $p = 0.05$
** Levene's test shows equal variances

The BGI was calculated for each subject's three-letter code against the overall PA code, SIR, as identified in hypothesis 1. To test for a difference in the median Brown-Gore Index scores between PAs of the three satisfaction variables, the Kruskal-Wallis one-way ANOVA (KW-ANOVA) by ranks test was used. The analyses for hypothesis 3 are located in Appendix I.

For PA career satisfaction, the satisfaction levels were limited to levels 3, 4, and 5 (satisfied, very satisfied, and extremely satisfied, respectively) due to qualification criteria into this part of the study. The Kruskal-Wallis test was not significant, $X^2(2, N = 462) = 0.719, p > 0.05$ (Table 70, Appendix I). Similar Kruskal-Wallis analyses were also conducted for congruence and satisfaction for PA specialty choice and job. For PA specialty satisfaction, the levels 0 (extremely unsatisfied) and 1 (mostly dissatisfied) were not represented and there was only one response for level 2 (unsatisfied). The Kruskal-

Wallis test was not significant, $X^2(3, N = 443) = 1.92, p > 0.05$ (Table 71, Appendix I). The Kruskal-Wallis test for job satisfaction (no responses for mostly dissatisfied, level 1) was not significant, $X^2(3, N = 456) = 8.33, p > 0.05$ (Table 72, Appendix I). These results do not show a relation between code congruence as measured by the BGI and PA career, job, or specialty satisfaction.

Hypothesis 4

Hypothesis 4 was divided into four parts. Hypothesis 4a stated that older PAs will not have more congruent codes than younger PAs. Hypothesis 4b declared that PAs with varying levels of satisfaction with their choice of the PA profession will not have statistically significant different ages. Hypotheses 4c and 4d stated, similar to 4b, that PAs with varying levels of satisfaction with their specialty (4c) or job choices (4d) will not have statistically significant different ages. These hypotheses were rooted in Holland's and Schein's works.

Hypothesis 4a (age and congruence) provides a way to test for a link between Schein's and Holland's theories. Hypotheses 4b-d test Schein's theory. As elucidated in the literature review, Schein's organizational approach to careers encompasses 10 stages of career development and eight career anchors. Schein's (1993) theory espouses that when an adult changes jobs or careers, it is to better match his or her anchor. These vocational moves can be typically seen in his middle to slightly later career stages, often around the ages of 35 to 40. The ultimate match meets both the individual's career anchor and the employing organization's needs. The successful match leads to vocational and life satisfaction. Of note, there are career circumstances that prevent an individual from realizing his career anchor.

Therefore, for the hypothesis testing, ages were grouped into those 35 years old and older and those under 35 guided by the rationale that individuals of about 35 years old should have moved in and out of jobs to meet their career anchors whereas younger individuals have not yet had this opportunity per Schein's (1993) theory. In support of Schein's theory, older PAs (35 years old and older) would show statistically significantly higher median congruence for hypothesis 4a and satisfaction levels for hypotheses 4b-d than those younger (less than 35 years old).

The results of the Mann-Whitney *U* test analyses for hypothesis 4 are summarized in Table 26. The SPSS statistical analyses outputs for hypothesis 4 are found in Appendix J. For hypothesis 4a, age and the code congruence of the *SDS* participants showed no statistical difference (Table 73, Appendix J). The age divisions also showed no statistically significant difference for the Likert scale items for career, specialty, and job satisfaction, and likelihood to refer (Table 74, Appendix J).

Table 26.

Mann-Whitney U Test Results for Age

	Age	Number	MWU	Sig. (2 tailed)
SIR Congruence	Under 35	159	22919.00	0.36
	35 and Up	304		
Career Satisfaction	Under 35	336	123309.00	0.85
	35 and Up	739		
Specialty Satisfaction	Under 35	304	103933.00	0.20
	35 and Up	717		
Job Satisfaction	Under 35	332	104841.50	0.12
	35 and Up	670		
Likelihood to Refer	Under 35	334	116380.00	0.16
	35 and Up	732		

To further explore Schein's theory, PAs with higher satisfaction levels would be statistically significantly older than those with lower satisfaction levels. Thus, for hypotheses 4b-d (Likert scale items and age), one-way ANOVA testing was conducted with the factors of satisfaction and the dependent variable of age for those declared as PAs. In terms of PA career satisfaction, there was no statistical difference, $F(5, 1074) = 1.02$, $p = 0.40$ (Table 75, Appendix J). Thus, age is not shown to be related to career satisfaction with this analysis.

For specialty satisfaction, there was a significant difference, $F(5, 1020) = 3.54$, $p = 0.004$ (Table 76, Appendix J). Post-hoc testing with the Scheffe test revealed that the extremely satisfied respondents (mean age 43.09) differed from the mostly satisfied (mean age 40.47). The remaining comparisons were not significant (Table 77, Appendix J). Thus, older PAs may be more satisfied with their specialty choices in partial support of Schein's theory. For job satisfaction, there was no statistical difference, $F(5, 1001) = 1.81$, $p = 0.11$ (Table 78, Appendix J). Thus, age is not shown to be related to job satisfaction with this analysis.

Specialty Code Analyses

The sample and its *SDS* subsample had adequate and clear representation from family or general practice (together abbreviated as FP) ($n = 144$) and surgical PAs ($n = 76$) for some further study. These two specialties were analyzed for their mean profiles and for gender differences within the specialties. The SPSS results of these tests are found in Appendix K.

As determined by the means, the FP PA profile was SIRECA and the surgical PA profile was ISRECA. Repeated measures ANOVA testing was performed for each of FP and surgery profiles to look for statistically significant differences between the means. Both profiles were statistically significant different (Table 79, Appendix K) warranting post-hoc testing.

The six RIASEC levels were compared for statistically significant differences between the RIASEC types for each of these two specialties utilizing multiple paired *t* tests (Table 27). The tests for FP determined that there was a statistically significant difference between all the pairs except R/A, R/E, A/C, A/E and R/C. As a result, the FP PA profile was S-I-R/E/C/A. In a similar fashion, there was a statistically significant difference for surgical PAs between all the pairs except S/I, R/E, and R/I. Thus, the surgical PA profile was I/S/R/E-CA (Table 80, Appendix K).

It stood to reason that these different types of PAs would have different RIASEC profiles due to their differing job requirements and skills sets. A series of independent samples *t* tests were conducted to test this concept. The Levene's test upheld that the variances were equal. The results of the tests with $df = 204$ are shown in Table 28. The mean profiles statistically differ for the realistic and social components between FP and surgical PAs, with surgical PAs having a stronger realistic score and FP PAs with a higher social score. SPSS outputs of the independent samples *t* test are located in Table 81 of Appendix K.

Given the significant difference in the codes by sex as well as the difference in the R and S components of FP and surgical PAs, it was thought that surgical PAs may

Table 27.

Paired Samples Tests of FP and Surgical Profiles

FP Pairs (*df*=143)	*t*	Sig (2-tailed)	
R-I	-7.94	0.000	*
R-A	1.42	0.158	
R-S	-9.52	0.000	*
R-E	-0.13	0.895	
R-C	1.39	0.168	
I-A	11.08	0.000	*
I-S	-2.77	0.006	**
I-E	9.97	0.000	*
I-C	11.66	0.000	*
A-S	-14.49	0.000	*
A-E	-0.16	0.877	
A-C	0.63	0.530	
S-E	12.86	0.000	*
S-C	13.31	0.000	*
E-C	2.07	0.040	**
Surg Pairs (*df*=75)			
R-I	-2.74	0.008	
R-A	4.86	0.000	*
R-S	-2.45	0.017	**
R-E	1.19	0.240	
R-C	2.71	0.008	**
I-A	7.80	0.000	*
I-S	0.29	0.777	
I-E	4.41	0.000	*
I-C	7.33	0.000	*
A-S	-8.75	0.000	*
A-E	-3.76	0.000	*
A-C	-2.40	0.019	**
S-E	4.94	0.000	*
S-C	7.05	0.000	*
E-C	2.10	0.039	**

*statistically significant at $p = 0.05$

**not significant with Bonferroni correction but with $p = 0.05$

Table 28.

Independent Samples Tests of FP and Surgical Profiles

	Specialty	Mean	*SD***	*t* (*df*=204)	Sig. (2-tailed)	
R	FP (*n*=144)	21.93	10.82	2.77	0.006	*
	S (*n*=76)	26.14	10.61			
I	FP	30.56	7.56	-0.64	0.522	
	S	29.82	9.14			
A	FP	20.29	9.85	-0.63	0.533	
	S	19.43	9.34			
S	FP	32.53	7.41	-3.05	0.003	*
	S	29.49	6.28			
E	FP	22.07	8.86	1.88	0.062	
	S	24.42	8.80			
C	FP	20.44	8.56	1.70	0.090	
	S	22.46	7.92			

*statistically significant at $p = 0.05$
** Levene's test shows equal variances

primarily be men so that the male code may reflect the work environment or perhaps the surgical work environment favors R types. To investigate this further, a chi-square test was conducted on the full sample of PA survey respondents to see if there were more men currently practicing in surgery than expected as compared to the proportions of male and female PAs overall from the AAPA Census (Table 29). In a similar fashion, the proportion of males and females in FP were analyzed. The chi-square results suggest that there are proportionately more men than women working in surgical fields but the proportion of men to women in FP reflect the gender proportion of PAs at large. SPSS outputs are found in Table 82 of Appendix K.

Table 29.

Chi-square Testing for Sex Differences in Surgery and FP

Specialty	Observed *N*	Expected *N*	Chi-Square	Sig	
Surgery (*n*=193)	Male = 97	81.1	5.401	0.020	*
	Female = 96	111.9			
Family or General	Male = 130	133.1	0.128	0.721	
Practice (*n*=317)	Female = 187	183.9			

*statistically significant at $p = 0.05$

The same analyses were conducted for proportion of men and women in the preferred specialties of surgery and FP as those currently practicing in a certain specialty may not have declared that certain specialty as their preferred one (Table 30, SPSS outputs Table 83, Appendix K). Again, men were overrepresented in surgery as a preferred specialty than expected but the proportion of men and women in FP was not statistically significantly different from expected. This degree of agreement of the preferred specialty with the expected numbers of the AAPA's current specialty allows for further analyses.

Table 30.

Chi-square Testing for Sex Differences in the Preferred Specialties of Surgery and FP

Preferred Specialty	Observed *N*	Expected *N*	Chi-Square	Sig	
Surgery	Male = 111	88.6	9.75	0.002	*
	Female = 100	122.4			
Family or General	Male = 144	141.5	0.074	0.786	
Practice	Female = 193	195.5			

*statistically significant at $p = 0.05$

The subsample of surgical PAs (those stating a preference for surgery) finishing the *SDS* ($n = 76$) was also compared to the expected proportions of men and women practicing in surgery as stated in the AAPA Census. This comparison facilitates the generalization of the findings from the surgical subsample completing the *SDS* to the surgical PAs at large.

The observed proportion of women and men in the surgical subsample (*SDS*) were equal ($n = 38$ each). The proportion of women and men preferring surgery was not significantly different from the proportion noted by the AAPA as currently practicing in surgery, $X^2(2, N = 76) = 1.997, p = 0.158$ (Table 84, Appendix K).

In general, these results of the gender proportions show that men are currently represented in greater proportion in surgery than FP (with the subsamples representative of the AAPA's census) and thereby may influence both the overall gender and surgical codes by environment choice.

Along this line of thinking, the FP and surgery codes were then calculated separately for men and women and tested for differences in the mean profiles and proportions of the sexes to see if FP males have different profiles than FP females. The female FP profile was defined as SICEAR from the means. The male FP profile was defined as SIREAC. The six RIASEC levels were compared for statistically significant differences between the RIASEC types for each gender utilizing the one-way repeated measures ANOVA. The ANOVA was significant for each females and males. For women, $F(5, 89) = 63.26$, $p < 0.01$; for men, $F(5, 55) = 28.10$, $p < 0.01$. Table 85 of Appendix K shows the SPSS outputs for these analyses.

Since the ANOVAs were significant, post-hoc testing was conducted to further delineate the FP gender codes. Post-hoc testing with paired *t* tests (Table 31) for women determined that there was a statistically significant difference between all the pairs except A/E, A/C and E/C. This creates a female FP PA profile of S-I-A/E/C-R. In a similar fashion, that there was a statistically significant difference for men between all the pairs except R/I, R/S, I/S and A/C. This creates a male FP PA profile of I/S/R-E-C/A. Table 86 of Appendix K displays the details of the SPSS outputs for these post-hoc tests.

Next, the mean profile of men in FP (I/S/R-E-C/A) and women in FP (S-I-A/E/C-R) were compared to each other with multiple independent *t* tests, Levene's test showing equal variances ($df = 142$) (Table 32), to see if they were statistically different from each other. FP men were statistically higher on the R and E components, indicating the profile for FP women is different than that from men but both have the SI components as the first two levels. Table 87 shows the SPSS outputs for the independent *t* tests.

In a similar fashion to the FP analyses for gender codes, the female surgery profile was defined as ISCERA from the means. The male surgery profile was defined as RISEAC. The six RIASEC levels were compared for statistically significant differences between the RIASEC types for each gender utilizing the one-way repeated measures ANOVA. The ANOVA was significant for each females and males. For women, $F(5, 38) = 12.00$, $p < 0.01$. For men, $F(5, 38) = 22.16$, $p < 0.01$. SPSS outputs detailing these analyses are displayed in Table 88 of Appendix K.

Since the ANOVAs were significant, post-hoc testing was conducted to further delineate the surgery gender codes. Post-hoc testing with paired *t* tests (Table 33) for women in surgery determined that there was a statistically significant difference between

Table 31.

Paired Samples Tests for Female and Male FP Profiles

Female FP Pairs (*df*=88)	*t*	Sig (2-tailed)	
R-I	-11.37	0.000	*
R-A	-3.26	0.002	*
R-S	-13.33	0.000	*
R-E	-3.09	0.003	*
R-C	-3.68	0.000	*
I-A	8.08	0.000	*
I-S	-3.00	0.003	*
I-E	9.00	0.000	*
I-C	8.59	0.000	*
A-S	-10.98	0.000	*
A-E	0.02	0.985	
A-C	-0.29	0.771	
S-E	11.94	0.000	*
S-C	10.24	0.000	*
E-C	-0.40	0.692	
Male FP Pairs (*df*=54)			
R-I	-0.68	0.501	
R-A	5.23	0.000	*
R-S	-1.33	0.190	
R-E	3.10	0.003	*
R-C	6.59	0.000	*
I-A	7.66	0.000	*
I-S	-.083	0.409	
I-E	4.82	0.000	*
I-C	7.95	0.000	*
A-S	-9.46	0.000	*
A-E	-3.09	0.003	*
A-C	0.13	0.898	
S-E	6.05	0.000	*
S-C	8.44	0.000	*
E-C	4.18	0.000	*

*statistically significant at $p = 0.05$

Table 32.

Independent Samples Tests for Female and Male FP Profiles

Level	Sex	Mean	SD**	*t*	*p* Value	
R	M (*n* =55)	29.65	10.42	8.12	0.00	*
	F (*n* =89)	17.16	7.96			
I	M	30.82	8.33	0.33	0.74	
	F	30.39	7.09			
A	M	19.47	10.64	-0.78	0.44	
	F	20.80	9.35			
S	M	31.87	8.00	-0.83	0.41	
	F	32.93	7.04			
E	M	24.16	8.03	2.26	0.03	*
	F	20.78	9.15			
C	M	19.27	7.96	-1.29	0.20	
	F	21.17	8.88			

*statistically significant at $p = 0.05$
** Levene's test shows equality of variances

all the pairs except I/S, A/E, A/C and E/C, R/A, R/E, R/C. In a similar fashion, there was a statistically significant difference for men in surgery between all the pairs except R/I, R/S, I/S, I/E, A/C and S/E. Due to the increased number of tied pairs over other paired *t* testing conducted, the resultant profiles were somewhat muddled. The resultant codes were I/S-C/E/R/A and R/I/S/E-A/C, for women and men in surgery, respectively. SPSS outputs of the post-hoc testing are located in Table 89 of Appendix K.

Next, the mean profile of men and women in surgery were compared to each other with multiple independent *t* tests, Levene's test showing equal variances ($df = 74$) (Table 34). Similar to the findings for FP gender differences, men in surgery scored significantly higher on the R and E components, indicating the profile for women in surgery is different than that from men. Female surgical PAs have tied I/S components as the first two levels and male surgical PAs have tied R/I/S levels. SPSS outputs are shown in Table 90 of Appendix K.

Table 33.

Paired Samples Tests for Female and Male Surgery Profiles

Female Surgery Pairs (*df*=37)	*t*	Sig (2-tailed)	
R-I	-5.24	0.000	*
R-A	0.62	0.951	
R-S	-4.56	0.000	*
R-E	-0.72	0.476	
R-C	-1.32	0.196	
I-A	5.54	0.000	*
I-S	0.26	0.796	
I-E	4.14	0.000	*
I-C	4.37	0.000	*
A-S	-5.57	0.000	*
A-E	-1.01	0.320	
A-C	-1.37	0.180	
S-E	4.70	0.000	*
S-C	4.43	0.000	*
E-C	-0.51	0.612	
Male Surgery Pairs (*df*=37)			
R-I	1.30	0.202	
R-A	8.53	0.000	*
R-S	1.47	0.149	
R-E	3.02	0.005	**
R-C	6.47	0.000	*
I-A	5.50	0.000	*
I-S	0.12	0.905	
I-E	2.02	0.051	
I-C	6.24	0.000	*
A-S	-6.78	0.000	*
A-E	-4.34	0.000	*
A-C	-2.00	0.053	
S-E	2.27	0.029	**
S-C	5.52	0.000	*
E-C	4.49	0.000	*

*statistically significant at $p = 0.05$

**not significant with Bonferroni correction but with $p = 0.05$

Table 34.

Independent Samples Tests for Female and Male Surgery Profiles

Level	Sex	Mean	*SD***	*t* (*df*=74)	*p* Value	
R	M (*n*=38)	31.58	8.32	5.18	0.00	*
	F (*n*=38)	20.71	9.91			
I	M	29.58	8.14	-0.22	0.82	
	F	30.05	10.15			
A	M	18.26	10.50	-1.10	0.28	
	F	20.61	7.98			
S	M	29.42	6.24	-0.09	0.93	
	F	29.55	6.40			
E	M	26.50	9.04	2.11	0.04	*
	F	22.34	8.14			
C	M	21.84	8.32	-0.68	0.50	
	F	23.08	7.55			

*statistically significant at $p = 0.05$
** Levene's test shows equal variances

For the final statistical analyses, chi-square tests were conducted on both the full sample and the subsample to compare the proportion of men to women preferring FP. The expected proportions were those of the AAPA Census and the full sample: 0.58 for women, 0.42, men. The observed proportions preferring FP of the overall sample was not statistically significant, $X^2(1, 348) = 0.04, p = 0.842$, nor for the FP subsample, $X^2(1, 144) = 0.86, p = 0.355$. The similarity of the FP study samples to the FP PA population at large provides for the generalization of the results. SPSS outputs for each of these analyses are found in Tables 91 and 92 of Appendix K, respectively.

These results of the specialty code analyses comparing men to women in FP and surgery show that men are currently represented in greater proportion in surgery than FP but that the male profile, regardless of these two specialty preferences, has higher realistic and entrepreneurial components than the female profile.

CHAPTER 5. DISCUSSION AND CONCLUSIONS

This chapter summarizes the research problem and literature reviewed. It also analyzes the methodology, including the success of the original survey instrument, the response rates, and the study's findings. The findings are compared and contrasted to the vocational literature and are tied into the conceptual frameworks of Holland's and Schein's theories. Implications of the findings are woven into the discussion as are suggestions for further research. Finally, concluding comments, other recommendations, and final implications are given.

Research Problem

The relatively young PA profession has undergone much growth and change and its growth is projected to double over the years from 2000 to 2010 (USBLS, 2002). Very high levels of PA vocational satisfaction have been shown in some previous survey studies, although the factors for this high level of satisfaction are not known. These factors are important to determine in order to retain the professional practice characteristics that contribute to this high level of satisfaction. Furthermore, with the rapid changes in the profession, its increasing popularity, and the lack of empirical evidence in the published PA vocational code (ISA), the vocational personality code needed validation. Accordingly, this research study was designed with two main goals: to discover the factors PAs consider key for vocational satisfaction and to determine the current Holland code for PAs.

Literature Reviewed

The literature considered several theories on career choice and development as well as those on job satisfaction. Key vocational development theorists included Super, Holland, and Schein. The basic premise of these theories was that by assessing an individual's personality and preferences, individuals then could be matched with a vocation that would be rewarding.

Holland's work was detailed as the primary theoretical basis for this study with specific attention to his six RIASEC types for work environments and personalities. Holland's RIASEC types represent: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (Holland, 1997). Realistic types prefer handling of tools, objects, animals and machines, and have a dislike for therapeutic or educational activities. Investigative types prefer creative, systematic, and symbolic exploration of biological, cultural, and physical occurrences and have a dislike for social, repetitive, and persuasive actions. Artistic types prefer free, ambiguous, unsystematized deeds that encompass the handling of verbal, human, or physical resources to fashion art products and have a dislike for systematic, unequivocal, and structured actions. Social types prefer actions that involve the management of others to train, inform, cure, or develop, with a dislike for unambiguous, systematic, or ordered actions concerning tools, machines, or materials. Enterprising types prefer actions that require the management of others to achieve financial gain or organizational goals, and have a dislike for figurative, systematic, and observational actions. Conventional types prefer actions that demand the unambiguous, systematic manipulation of data, and have a dislike for free, unsystematized, or exploratory tasks.

Schein's work provided a second theoretical framework with his career anchors typological system of eight types: autonomy, creativity, technical or functional competence, security, general management, pure challenge, service or dedication to a cause, and lifestyle (Schein, 1993).

The measurement of vocational satisfaction was evaluated to help guide the development of the original survey instrument. Medical professional's employment satisfaction was examined including the nursing profession, physicians, PAs, and RTs. Of these medical professions, PAs indicated the most satisfaction with their vocations.

Methodology

A blend of qualitative and quantitative research methods were used to identify factors for PA vocational satisfaction and to facilitate the validation of the PA occupational code. A mailed written survey methodology was employed. An original survey was piloted over a three month period from March to May, 2003 with 100 random members from the AAPA's mailing list. The study data was collected over another three month period from early June until early September, 2003 from another 2223 listed members. The final results included participants from both the pilot and actual studies.

Participation in the research study was voluntary, with the completion of the surveys implying consent. The conditions for the protection of human subjects as dictated by the IRB and for the use of the AAPA mailing list were adhered to.

Survey Instruments

The study involved the use of two survey instruments. The first survey instrument was an original survey tool to collect information on demographics and vocational

satisfaction. The second instrument was the *SDS* (Holland, 1994). The original survey tool was evaluated with focus groups and was also piloted before use in the study. It appears that the respondents understood the survey items and were not biased against answering any particular item as each closed ended question of the original survey had a 99% participation rate, and the open-ended questions about 90%. The original survey tool, developed to control for potential comprehension errors, was determined to have internal validity. Items 9 (PA career satisfaction) and 12 (likelihood to refer into the profession) had a statistically significant correlation, further demonstrating internal validity. An improvement in the survey instrument for future use would be to clarify the current practice specialty (item 5) in terms of primary and secondary clinical employers to aid comparison to the AAPA's census survey. The original survey offered the opportunity to indicate all practice specialties and environments that applied without distinctions.

The second tool was the *SDS* (Holland, 1994), sent to a pool of satisfied PAs as identified from inclusion criteria from the original survey respondents. The *SDS* is a well-researched tool with proven reliability and validity for the measurement of the construct of vocational personality. The *SDS* creates a profile score of the six RIASEC levels. The three-letter vocational personality code (Holland code) is derived from the top three scores of the profile in descending order. A close match between an individual's vocational personality and a work environment has predictive value in terms of vocational satisfaction making the *SDS* a useful tool for career exploration and development. In this dissertation study, only two of the 465 *SDS* booklets returned were not usable as too many of the items were left blank to calculate a profile.

Quality Measures

There were several quality control measures for data collection and processing included in the study. The researcher reviewed the qualitative categorization system two weeks after its inception for an internal quality check. Additionally, independent reviewers were used to verify the coding of the qualitative components. There was nearly 100% inter-coder reliability. The *SDS* booklets were checked for accuracy of the calculations to generate the three-letter codes. Statistical analyses were calculated for a second time a week after the first analyses, again validating the initial findings. The success of the survey instrument and the internal quality checks give the findings a high degree of internal validity.

Response Rates

The response rate for this study was approximately 50% for each part of the study. The sample and its subsample of *SDS* participants overall seem to reflect the demographics of that of the AAPA's 2002 Census survey as shown by statistical testing on sex, age, and percent in clinical practice. The samples also approximate well in terms of years in PA practice and some specialties' distributions. The high response rate and the degree of agreement between the sample and the AAPA's census survey give the results external validity. The results can, therefore, be generalized to the PA population at large with a high degree of confidence.

Study Findings

The study findings are divided into discussions on the closed-ended survey items, open-ended survey items, the hypothesis testing, and specialty code analysis.

Discussion of Closed-Ended Survey Items

PAs are satisfied with their careers, specialty choices, and jobs with median and mode responses of 4 each on a 0 to 5 scale where 5 equals extremely satisfied. The respondent PAs were found to be satisfied (19.9%), very satisfied (46.8 %) or extremely satisfied (25.7%) with their career choices with this global measure of satisfaction. In total, 92.4% of all respondents were satisfied with their careers, 81.8% with their jobs and 90.9% with their specialties. This corresponds to the findings of Marvelle and Kreditor (1999) that showed high PA vocational satisfaction for many separate job elements although there was no global measure of satisfaction. This dissertation study also supports the findings of overall high levels of satisfaction for PAs in other studies (Dosher, 2002; Lane, 2002; Muus, 1996). Satisfaction as related to specialty is an area for further investigation.

Closely related to career satisfaction was that PAs were likely to refer "a bright young person searching careers to become a PA" (item 12). This study showed 86.9 % of all respondents were fairly or very likely to recommend the profession, regardless of their current status as a PA. Similarly, Lane (2002) showed that 90% of clinically practicing PAs would recommend the PA profession to others, while 86% of PAs who have left PA clinical practice would recommend the profession.

Discussion of Open-Ended Survey Items

Approximately 90% of the participants responded to each of the open-ended questions on career satisfaction and dissatisfaction. The responses were categorized resulting in 21 main categories for PA career satisfaction (Table 13) and 29 for sources of dissatisfaction (Table 14). The top six of each are discussed next as well as an unexpected category for dissatisfaction. Then the categories for satisfaction and dissatisfaction are put into the theoretical frameworks of Holland and Schein. Then this section concludes with some other observations of the categories as compared to the literature.

Satisfaction Factors (Item 13)

Of the 21 variables (Table 17) categorized in this study for PA vocational satisfaction, the upper six are discussed in this section. The top three (helping others, 48.8%; patient interaction, 26.6%; and intellectual challenge, 19.5%) deal with the practice of medicine. A more distant fourth was autonomy (10.6%). This is likely not as important to PAs because, by definition, they are dependent providers.

The fifth satisfaction category, teaching (10.3%), closely followed autonomy. PAs mostly spoke of patient education, although they also mentioned the enjoyment of teaching others including PA students and other health professionals. This enjoyment of teaching is no surprise as midlevel providers are known to be used for patient education thereby freeing up the physician for more complex work.

Flexibility (9.3%) was the sixth most common variable cited for satisfaction. PAs did voice flexibility in terms of hours worked, on-call assignments, time required for training, and the ability to change specialties. Marvelle and Kreditor (1999) hypothesized

that the flexibility in the profession may be one of the factors that lead to high levels of satisfaction. This dissertation study supports their notion.

Dissatisfaction Factors (Item 14)

Of the 29 categories identified for PA career dissatisfaction in this study (Table 18), the six upper variables are examined in this section. The factors for dissatisfaction varied greatly without on overwhelming outlier for dissatisfaction. Respect (12.9%) was the most frequently cited cause for dissatisfaction, followed closely by compensation (12.2%), other (10.6%), misunderstood PA role (9.8%), hours (9.7%), and insurance (9.7%).

These findings for dissatisfaction are compared to those noted in the literature for other health care professionals. RTs and other nonphysician health care workers reviewed also note the respect issue (Blegen & Mueller, 1987; Butler & Parsons, 1989; Cavanagh, 1990, 1992; Frobe et al., 1983; Sanchez, 2002). PAs and other health care workers indicate that salary is not the most important reason for dissatisfaction but is relatively important (Blegen & Mueller, Butler & Parsons, Cavanagh, Frobe et al., Sanchez). Even physicians are not happy with pay (Edwards et al., 2002). PAs do not appear to be attracted into the profession for compensation as it is not seen as a primary satisfier. Instead, PAs see compensation as a practical benefit for performing work they really like but want to be compensated fairly, especially when they engage in many hours of work since hours are frequently cited as problematic. Physicians show increasing satisfaction with increasing income (Leigh et al., 2002) and in the comparison study of managed care physicians and midlevel providers, PAs and NPs are less satisfied with their salaries.

Further study of salary and benefits and their influence on PA vocational satisfaction should be conducted.

Unique to the young PA profession is the misunderstanding of their roles in medical practice by patients, physicians, other health care team members, office staff, and the general public. Most PAs noted that they were not used to their full capacity. A few others noted inappropriate task delegation—that delegated tasks were beyond their midlevel provider capability. It is interesting to note that inappropriate task delegation is also found as a cause of dissatisfaction in the nursing literature (Weisman et al., 1981a).

Career counselors, PA educators, and PAs referring others into the field should explain the lack of understanding that many non-PAs have of the parameters of the PA professional's role in the healthcare team. As a relatively young profession, there needs to be ongoing education of the public and other medical professionals on both the training of PAs and what PAs are allowed, legally, to do.

Like physicians (Leigh et al., 2002), PAs express dissatisfaction with the number and types of hours worked. Also like physicians, some PAs specifically cite their dissatisfaction of the lack of work life balance. Because only 1.5% of PAs express this dissatisfaction, this issue appears not to be prevalent.

Health care insurance issues are basically unavoidable at this time for PAs as well as physicians, but PAs also are unrecognized as a provider by health insurance programs, creating an additional problem for them over physicians. The associated paperwork is also an unavoidable cause for dissatisfaction.

One unexpected category was that of Nurse Practitioner (NP). The comparisons of NPs to PAs by 2.6% of respondents in this study were all in terms of factors with which

PAs were not satisfied. The main difference focused on the dependent practitioner role of the PA versus the independent practitioner role of an NP. This encompassed regulatory issues, health care insurance issues including reimbursement, and the restriction on autonomy.

Other Comparisons

There are some other comparisons of career satisfaction factors between this study and those reviewed in the literature. Akin to the findings of Muus (1996) for rural PAs, this current dissertation study found the variables of autonomy, respect, appreciation, and supervising physicians as important satisfaction factors and hours were problematic for some PAs.

Bell et al. (2002) showed the importance of the role of a supportive supervising physician in EMPAs as well as increased autonomy in terms of vocational satisfaction. PAs in this study noted these factors as well. As in Bell's study, this dissertation also showed that administrative duties are not viewed as favorable.

Freeborn, Hooker and Pope (2002) showed in their sample of PAs working in a managed care setting that there were no issues of autonomy, however patient load, stress, and less compensation were sources of dissatisfaction more so for the midlevel providers over physicians. These variables for dissatisfaction were also found in this study.

Factors for vocational satisfaction and dissatisfaction as compared to other disciplines show many similarities and some key differences as discussed but a few more deserve mention with respect to physicians. PAs note that they have decreased decision-making and no input (1.2%) in a practice but even physicians complain about this (Muus, 1996). One may speculate that this lack of input may be worse for PAs, however. Both

professions dislike repetitive, mundane tasks. The dissatisfaction may be worse for PAs given that these tasks can be delegated to them, freeing up the physician for other tasks but only 3.0% of respondents in this study had responses fitting into the PA role category.

Physicians note a poor medicolegal climate for practice (Edwards et al., 2002). It appears that PAs may have a better situation given the shared responsibility for the patient. Only 4.4% of PAs in this study indicated malpractice issues as a cause for dissatisfaction and 0.4% note limited liability as a source of satisfaction.

Physicians complain about practice overhead and finances (Edwards et al., 2002). No PAs in this study complained about this. This concern would likely be a rare problem for PAs as very few own their own practices.

Holland's Typology

The variables identified in this study for satisfaction and dissatisfaction can be analyzed in terms of Holland's (1977) typological system. In this study, satisfaction factors seemed distributed predominately along Holland's social and investigative themes. Social themes (n = 1062) were shown by the Helping Others (n = 552), Patient Interaction (n = 302), Teaching (n = 117), Teamwork (n = 91), and Appreciation (n = 62) categories. Investigative themes (n = 273) were seen in the Intellectual Challenge (n = 222) and Problem Solving (n = 51) categories. Less prevalent were the realistic procedure based themes (n = 62). The other satisfaction factors identified do not seem to represent Holland's RAIASEC types. This absence would be expected given the clear S/I code components for PAs.

In terms of Holland's RIASEC types and PA career dissatisfaction, in this study, career dissatisfaction revealed an aversion to paperwork or administrative duties (n = 89)

suggesting that PAs are not Cs (those who prefer manipulation of data). The mean PA profile is in accordance with this observation.

Schein's Typology

The variables identified for satisfaction and dissatisfaction can also be examined in terms of Schein's typological system (Table 10) (Schein, 1993). The factors for PA career satisfaction and dissatisfaction in this study, in terms of Schein's career anchors, show scattered responses across five of the eight anchor types. Autonomy was seen as a satisfier (n = 120) and the lack of autonomy as a dissatisfier (n = 37) although the definitions are not precisely matched between Schein's anchor type and the PA profession.

Schein's technical or functional competence may be suggested by surgical PAs (n = 191) as they appear to be procedure oriented (n = 62) in their source of satisfaction. The lack of procedures was a rare comment, categorized into other factors for dissatisfaction. The anchor of security may be alluded to in terms of Compensation and Job Availability themes. PAs satisfied with their compensation (n = 83) and job availability (n = 18) totaled 101. PAs unsatisfied with their compensation (n = 139) and job availability (n = 62) totaled 201. The anchor of service or dedication to a cause was seen by the Helping Others (n = 552) and Teaching (n = 117) themes for a total of 669 responses. It is possible that the service theme is also reflected in the Patient Interaction (n = 302) and Appreciation (n = 62) categories. Dissatisfaction was seen with the category of disruption of patient care (n = 50) suggesting that these PAs may have the service theme.

The anchor of lifestyle may be seen in the satisfaction categories of Flexibility (n = 106) and the dissatisfaction of Hours (n = 110), the specific comments related to Work Life Balance (n = 17), and Stress (n = 12). These findings for satisfaction and dissatisfaction suggest that the PA profession may readily accommodate many of Schein's career anchor types. Investigation of PA career anchors could be conducted for future research to provide another method of personality and work environment fit in addition to Holland's typology to guide an individual's career management and development.

Other implications of Schein's system include the organizational approach in which managers knowledgeable of anchor types can provide reward systems and flexible career paths for their employees enabling their recruitment and retention. Also facilitated by managers cognizant of the anchor types, organizations can clarify what the individual employee can contribute to the organization.

Discussion of Hypotheses

Hypothesis 1

Hypothesis 1 was to identify the PA code and to determine if the codes for FT and PT PAs were equivalent. The PA code was identified as SIR, with a mean profile of S/I-R/E-A/C. This means the IS components of the published PA code (ISA) (Gottfredson & Holland, 1996; Richards, 1977) were correct, although not in the correct rank order. However, in both the Richards' study and the dissertation study, the values for I were similar to that of S. The third level in the dissertation study was found to be R, not A, as in the published code. The mean profile showed a clear favoring for the SI components over the third element. The other four elements of the profile became muddled but the C

component was ranked last in both the Richards' study and this dissertation study. A comparison of the RIASEC levels between Richards' study and this dissertation is shown in Table 35.

Table 35.

A Comparison of PA Holland Profiles

	LaBarbera (*N*=463) *SDS Form R*			Richards (1977) (*N*=74) *VPI*		
Profile Type	Mean	*SD*	Rank	Mean	*SD*	Rank
R	22.79	10.51	3	4.04	2.88	4
I	30.75	8.33	2	7.52	3.58	1
A	20.93	10.13	5	7.28	4.28	3
S	31.27	7.64	1	7.40	3.41	2
E	20.71	8.48	4	3.15	2.62	5
C	20.71	8.48	6	1.30	2.12	6

For the first hypothesis, statistical testing showed no relevant difference between the codes of FT and PT PAs, although PT PAs had a statistically significant higher social mean. The relative order and the internal ties of the profile elements remained the same.

Hypothesis 2

Hypothesis 2 was to determine if there was a gender difference reflected in the PA code. There was a statistically significant gender difference in the PA profile, although the first 2 elements (SI) were statistically the same. Female PAs had the code S/I-A/E/C-R and males, I/S/R-E-C/A. Statistically, women differed significantly from men on the R, S, and E components. Women were higher for S whereas men were higher on the R and E means. These findings are aligned with Holland's (1997) observations of sex

differences. It was speculated that this sex difference could be due to the greater number of males in surgical specialties and was analyzed further with the specialty analyses.

Hypothesis 3

Hypothesis 3 was that PAs with increasing levels of satisfaction with their choice of the PA profession will not have greater congruent codes that are statistically significant as measured with the Brown-Gore Index (BGI). Similar analyses were also performed for specialty choice and job satisfaction. These analyses were conducted in an effort to demonstrate support for Holland's personality and work environment fit theory specifically for PAs beyond identifying the PA three-letter code. Clear demonstration of Holland's theory could further aid career development beyond potential vocational choices. It could also guide PAs into specialty or job placement and implications could even extend into organizations in their efforts for recruitment and retention along the lines of Schein's thinking.

For hypothesis 3, PAs with increasing levels of satisfaction with their choice of the PA profession did not have statistically significant greater congruent codes as measured with the BGI. This lack of support for Holland's theory could be due to two reasons in terms of limitations of the study. The first limitation deals with satisfaction scales and the second with the BGI as a congruence measure for this particular study.

First, the PA satisfaction levels were constricted from a 6 point scale to a 3 point scale by selecting only satisfied PAs for participation in the *SDS*. As stated in the limitations, satisfaction scales are inherently restricted, and PA career satisfaction levels were further constricted by the study inclusion criteria.

Second, the BGI may not have been the best congruence measure for this study. Although the BGI was chosen for its larger range and normal distribution, a measure looking at the first 2 letters may be more appropriate given the clear statistical separation of the first 2 letters from the other 4 letters of the PA profile. Also, the internal congruence of the BGI in terms of mixing the order of the 3 letters of the Holland code does not seem to fit, particularly when participant codes were tied and then averaged for a usable congruence measure.

For practical purposes in career counseling, one such tied code, IRS/E, would be utilized in the *Career Options Finder* and other resources as IRS and IRE and all combinations of these four letters in any order. For the purpose of this dissertation study, an average of the BGI scores of the individual codes of IRS and IRE were used for the above tie. IRS had a BGI value of 7 and IRE had a BGI = 8. These BGI scores were averaged to obtain an index of 7.5 for the adjusted computed measure for this study. (BGI scores were calculated for congruence with the PA three-letter code SIR for this study.) This solution for a tie seems reasonable given that there was some consistency in the BGI between these two permutations of the code.

In a similar fashion, S-I/A or S-A/I yield BGI scores of 16 and 15 respectively, for an average score of 15.5. R-A/S or R-S/A yield scores of 4 and 3 respectively, for an average of 3.5. Both of these examples of tied codes (SA/I or RS/A) have two matches to the PA code SIR. Averaging the BGI scores for these tied examples again seems reasonable given the consistency between the tied scores. The difference in the BGI scores is great, however, suggesting great degrees of mismatch although both tied examples match two letters.

Unlike the examples above, other tied codes have little consistency between the BGI scores of its combinations, making the decision to average ties come more into question. The tied three-letter code I/S-E and S/I-E, again with two matches to the first two PA letters (SI), have BGI of 6 and 16 respectively for an average of 11. In another example, I/S-C and S/I-C have respective scores of 7 and 17, averaged to 12, and still have 2 matches to the first two letters. S-E/I and S-I/E (11, 16, average 13.5) score better on the average of all three of these tied examples in spite of a partial mismatch of the first two letters of the PA code. The code RES has a BGI value of 0 in spite of matching two letters.

The PA code has no statistical difference between S and I, yet each of the BGI scores are very different from each other with the same matched first two letters. To reiterate, a congruence measure utilizing the matching of 2 letters may be the most relevant for this study given the clear distinction of the SI components over the other 4 levels and the statistically tied nature of these first 2 elements. Reevaluation of the data with other congruence measures is recommended for future study. Other congruence measures may reveal better support of Holland's theory.

Other analyses related to hypothesis 3 were conducted on specialty and job satisfaction and congruence. Specialty and job satisfaction scales were not theoretically restricted from the inclusion criteria but there were very small numbers of respondents reporting dissatisfaction on either of these two scales. Neither of these analyses showed statistical significance between congruence and satisfaction. Again, this could be from constriction of the satisfaction scale but appears to be influenced by the BGI as a congruence measure as well.

While the findings of hypothesis 3 results were not supportive of Holland's theory, this lack of significance could be due to these two study limitations as opposed to theoretical flaws.

Hypothesis 4

Hypothesis 4 was divided into four parts, 4a testing a combination of Holland's and Schein's theories, and 4b-d testing Schein's theory. Hypothesis 4a set forth that older PAs will not have more congruent codes than younger PAs. Hypotheses 4b-d stated that PAs with varying levels of satisfaction with their choices of the PA profession, specialties, or jobs, respectively, will not have statistically significant different ages.

For hypothesis 4a, ages were divided into under 35 years old and 35 years old and above, guided by Schein's theory. Older age did not show a greater congruence for the participants in the *SDS* or a significant association with any of the Likert scale items evaluated with all of the subjects. The lack of significance with congruence could be the result of a less than ideal congruence measure as explained earlier. Lack of significance with the Likert scale items could also be due to the age groupings. Further study could be conducted with different categories of age (e.g., 40 and up instead of 35), or even divided by decades.

For hypothesis 4b-d, there was no statistical difference in age with PA career or job satisfaction. On the other hand, age with specialty satisfaction was significant. The PAs that were extremely satisfied with their specialty choice were about 2 to 3 years older than those mostly satisfied with their specialty choice. This finding was in accordance with Schein's theory in that PAs in practice longer will have had time to move in and out of specialties to find the best fit.

While the findings of hypothesis 4 results were not clearly supportive of Holland's and Schein's theories, the lack of significance could be due to the limitation of the BGI as a congruence measure in this study as opposed to theoretical defects.

Discussion of Specialty Code Analyses

The subsample participating in the *SDS* had adequate and clear representation from FP and surgical PAs for studying their Holland profiles. It was possible that PAs working in specialty practice may have different Holland profiles and three-letter codes as do different types of physicians as shown in Table 8 of the literature review. For example, physicians in general practice have the code ISE while surgeons are coded as IRA. The FP profile was found to be S-I-R/E/C/A, resembling the overall PA profile. The surgery profile was fairly similar: I/S/R/E-CA. The surgical profile, however, did have significantly higher realistic means and lower social means than for FP PAs. It was thought that these different types of PAs would have different profiles due to the different nature of their jobs. However, this could be due to a gender influence as shown in hypothesis 2.

This gender-versus-specialty influence was investigated further. There were significantly more men in surgery than expected which could be biasing the surgery code, or the male code of hypothesis 2 may have been biased by the higher representation of men in surgery. The profiles between male and female surgical PAs differed from each other, however, suggesting a gender difference as opposed to a specialty code trend. Male surgical PAs were statistically significantly higher on the R and E components than female surgical PAs.

An analysis of men compared to women in FP revealed that men, even in FP, still had statistically significant higher R and E means than women. This finding again suggests that the high male R and E component is a gender related, not a specialty preference phenomenon. This gender finding is in agreement with Holland's work which shows that men obtain more I, R, and E codes than women, whereas women demonstrate more S, A, and C codes. Regardless of the proclivity of the genders to have some codes over another, men or women can successfully perform in any of the coded careers.

Implications of the Study

There are implications of the study findings for career counseling purposes, for recommendations to the AAPA, and for organizations. The organizational implications have already been stated in the analysis of Schein's typology.

Implications for Career Counseling

The top categories of satisfaction and dissatisfaction have already been discussed, including in terms of career counseling, but several of the lesser cited categories deserve particular mention here. A number of the variables for dissatisfaction can be considered issues with the profession while others may be job issues, and not concerns of the PA profession itself. In either case, along the general suggestion of Dawis and Lofquist (1984) for career investigation, individuals interested in training for the PA profession should be aware of dissatisfaction variables as possible drawbacks to the profession and balance those with the identified satisfaction variables as possible rewards from the PA profession. Those already trained as PAs searching for PA employment should carefully investigate the intended scope of PA practice and other typical employment issues

(compensation, hours, and the like) of the specific employment positions in order to make an informed decision to avoid controllable sources of dissatisfaction. The complaint of PA compensation could also be due to an overabundance of PAs in the job market, in spite of the USBLS projected increased need for the profession. Then compensation becomes a career problem and not a job-specific issue.

The category Paperwork or Administrative was cited in 7.8% of respondents as a source of dissatisfaction. It is perceived by some as overemphasized in today's litigious society and managed care environment and yet it is necessary for patient care, medical billing, and medicolegal reasons. Those entering the PA profession need to know that this is an important part of the job. The profession attracts SI types who tend to find paperwork undesirable in Holland's typology. Paperwork is also a delegated task to PAs, so those entering the profession must be aware of its importance and volume.

Bureaucracy, cited in 7.1% as a source of dissatisfaction, may not be controllable or avoidable but it should be pointed out that this category is not a complaint unique to the PA profession. The category of Regulatory Issues (6.8%), while generally improving for the PA profession, rounds out the top ten sources of dissatisfaction noted in this study.

Patient load and the lack of time with patients (i.e. productivity), cited in 5.3% as a source of dissatisfaction, are other issues in common with the health care disciplines reviewed (Edwards et al., 2002; Freeborn et al., 2002; Packard & Motowidlo, 1987; Sanchez, 2002). It appears to be unavoidable in general, although some employers may have less emphasis on this for their PAs than other employers.

The issues with poor supervising physicians (4.1%) for PAs can be changed with different jobs; that is a job-specific problem and should not be a career issue. PAs need

ways to help identify whether or not potential supervising physicians are ones in which they can work with together as a team as 4.1%. This compatibility is something that could be addressed as part of a vocational counseling program.

The issue with the lack of autonomy (3.3%) can be either a career or job issue. If a PA is looking for more autonomy than provided by the dependent provider concept, then it is a career issue. If it is due to the lack of delegation by the supervising physician or due to regulatory issues, then it is likely a job problem. Team issues (1.7%) look to be more job-related challenges as opposed to career problems.

Work life balance, cited in 1.5%, can also be seen as a job issue as opposed to a career one; a PA must choose a job within the profession that allows for this balance. This may become more difficult if the job market does not expand as projected and then become a career problem.

Finally, while it appears that PAs like to teach patients and others about healthcare, it appears that educating others on PA roles may be a frustrating topic for PAs. Those contemplating entry into the profession should be made aware of this potential source of frustration.

Implications for the PA Profession

As suggested by the variable of flexibility (9.3%) as a source of satisfaction, the ability to change disciplines is important to many PAs. With the further evolution and growth of the profession, the AAPA could guide the NCCPA in certification and recertification regulations so as to not lose this mobility. For example, if surgical PAs are required to take surgical specialty board exams instead of the general exam, then the

ability to move between primary care and surgery and visa versa may be lost. The same applies for specialty examinations for surgical subspecialties and IM subspecialties.

Job availability is perceived to be problematic for 5.5% of respondents. This PA saturation, in spite of the USBLS projections, might be seen in certain geographic regions which are more heavily PA populated (such as the East coast) and thus geographic factors as well as the number of PA programs and program graduates should be studied. Decreased job availability also affects the unique flexibility and mobility of the PA profession. One PA pointed out that if she does not like something, "I move on." That may no longer be a viable solution.

Further Research Opportunities

As a result of this study, there are several offshoot research questions and areas to explore to provide follow-up for this study. Some have been alluded to in the previous discussion and are reiterated here as research questions and some new ideas are also set forth.

Would a different congruence measure provide a better measure of matching to the PA code S/I-R? A suggestion would be to analyze the data with different congruence measures, particularly focusing on the matching of the SI components, to improve the ability to test Holland's theory as in hypothesis 3. Other congruence measures could aid the age and congruence test of Schein's theory (hypothesis 4) as well.

Would different age groupings other than the division into two groups at 35 years old show significance? Further study could be done dividing the ages at 40 or 45 years

old instead of 35, or even breaking age by decades to improve the ability to test Holland's and Schein's theories as in hypothesis 4.

What are the career anchors of PAs as measured with the *Career Orientations Inventory*? Schien's career anchors could specifically be identified for PAs. Are there any relationships between the anchors and Holland typology?

Are PAs in certain specialties more satisfied than other disciplines? What are the factors that drive this difference, if any? Studies could be conducted to type PA specialties according to Holland's and Schein's schemes and explore specialty satisfaction, sampling purposefully to gain representation of smaller disciplines such as obstetrics or gynecology and pediatrics.

What are the occupational daydreams (as identified by the *SDS*) of PAs? The occupational daydreams of PAs gleaned from this portion of the *SDS* can be studied to further understand the career development of PAs and thereby aid the career-counseling process.

What is the relative importance of the PA respondent-identified variables for career satisfaction? Follow-up studies could ask PAs to rank the most prevalent variables identified in this dissertation to further define the importance of the variables. Further delineation of these variables can be used to more specifically guide the profession as is further evolves.

Do PAs choose the PA profession over that of a physician in an effort to control work hours, including on-call hours, in an attempt to have a work life balance? Do they favor Schein's typologies of lifestyle and service or dedication to a cause?

Were PAs knowledgeable of variables causing their specific dissatisfaction before entry into the PA profession? This dissertation study identified many factors for career dissatisfaction. Some PAs tempered their identified dissatisfiers, explaining that knew about these issues before they entered the profession or that the areas for dissatisfaction were more than balanced by the satisfiers. Further research could explore if dissatisfied PAs were aware of these factors before entry into the profession. If they were unaware, then there is a void in their career decision making methods or materials. The void could possibly be addressed as an early portion of the PA curriculum or in the PA training admissions process.

A tangential question also arises due to the literature and the work life balance variable identified by PAs: Would physicians employing PAs (or other midlevel providers) have higher vocational satisfaction than those without PAs (or other midlevel providers)?

Conclusions

The two overriding research questions for this study were: "What is the current three-letter vocational personality code for PAs as identified by the *Self-Directed Search Form R*?" and "What factors are important to PAs in terms of vocational satisfaction?" This research project appears to have successfully answered the two main research questions with a great degree of internal and external validity with reasonable assumptions and limitations, although the challenge with the BGI as a congruence measure was not anticipated.

Overall for PAs, the PA code was identified as S/I-R. The PA profile's first two letters are SI, regardless of gender. This finding partially matched the published code, ISA. There was not a practical difference between the codes for PAs employed full time and part-time (< 32 hours per week) enabling the use of all the *SDS* PA respondents. There was a statistically significant gender difference between the codes of men and women, with men having statistically higher R and E components.

PAs with varying levels of satisfaction with their career choice did not have statistically significant more congruent codes nor did older PAs (with age as a reflection of life experiences) have more congruent codes than younger PAs. PAs with varying levels of satisfaction with their careers, specialties, and jobs did not have statistically significant different ages. While these findings did not support Holland's theory, it is likely a problem with the BGI congruence measure, and not a theoretical flaw, as discussed under hypothesis 3.

The high degree of PA vocational satisfaction still could be related to the work environment and vocational personality fit per Holland's theory. The PA profession affords the ability to change specialties or to enter the profession later in life as two avenues for the best fit. These two caveats also provide a fit for the model of Schein as well, since PAs can move along in life to match their career anchors. As expressed by the study participants, the flexibility in the profession, including the ability to change disciplines, may be keys to vocational satisfaction.

In addition to flexibility and specialty change, PAs have voiced other factors for vocational satisfaction and dissatisfaction in the qualitative part of this dissertation. Many of the factors reported for dissatisfaction within the PA profession appear to be issues that

are either resolvable or avoidable while others appear to be inherent in the profession; One may speculate, however, that currently controllable problems may also be issues on the rise.

The knowledge gained from this study can have implications for individuals contemplating entry into the PA profession, PAs considering a job or specialty change, the PA profession at large, and organizations employing PAs. An individual contemplating entry into PA training can be guided into this profession which appears to accommodate many of the different vocational personality types of Holland, although favoring those who are social and investigative. Those with a strong realistic component may find an interest in surgical areas. These profiles can be emphasized in vocational counseling with the *SDS*.

New graduates entering the job market may be able to control some of the variables for satisfaction and dissatisfaction noted in this study by their experienced PA colleagues. For PAs contemplating a job or specialty change, the profession currently offers many options that can improve a personality and work environment fit and improve vocational satisfaction.

To achieve a personality and work environment fit, an individual facing career decisions should explore his or her needs, skills, values, and interests as first suggested by Parsons (1909, as cited in Brown & Brooks, 1990, and Super, 1953). This introspection can be aided with career counseling inventories such as Holland's *SDS* (Holland, 1994). An analysis of the work environment for fit with the individual should also be conducted by the PA before securing a position. These detailed evaluations of the individual and the potential employer could be facilitated by a career counseling program

such as that developed for medical students to guide them into their residency choice (AAMC & AMA, 1999a, 1999b).

As the PA profession continues to grow and evolve, it can be guided in its development from these findings to keep the factors for satisfaction in the profession and to invest its resources in solving professional issues for career dissatisfaction. For example, the PA profession's advisory board could guide its policy making, including counseling the PA national certification board on modifications to its recertification process, to maintain the mobility between specialties within the profession. It could deploy more resources to end regulatory issues.

A good fit resulting in satisfying employment will theoretically help an employing organization as well to retain PAs thereby reaping financial and other benefits from its hiring investment. As suggested by Schein (1971, 1978, 1993, 1999), organizations can play a role in career development and motivation for their PAs by providing incentive programs and flexible career paths that meet individual PA needs, by facilitating the process of individual introspection, and by clarifying what is needed from its PAs in order to achieve the bottom line goal.

In conclusion, an understanding of PA vocational satisfaction and the achievement of a good fit between a PA and the work environment will provide benefits on many levels. The newly identified code can facilitate the match between a potential PA and the profession's work environment in Holland's system. Furthermore, an understanding of the variables identified for satisfaction and dissatisfaction can help an individual have a deeper appreciation of the pros and cons of the PA profession as a vocation as compared to his skills, interests, and aptitudes. With a well-matched

personality and work environment fit as espoused by the theorists, the PA is more likely to be satisfied and committed to the employer or organization thereby reducing turnover. Most importantly, patients can benefit.

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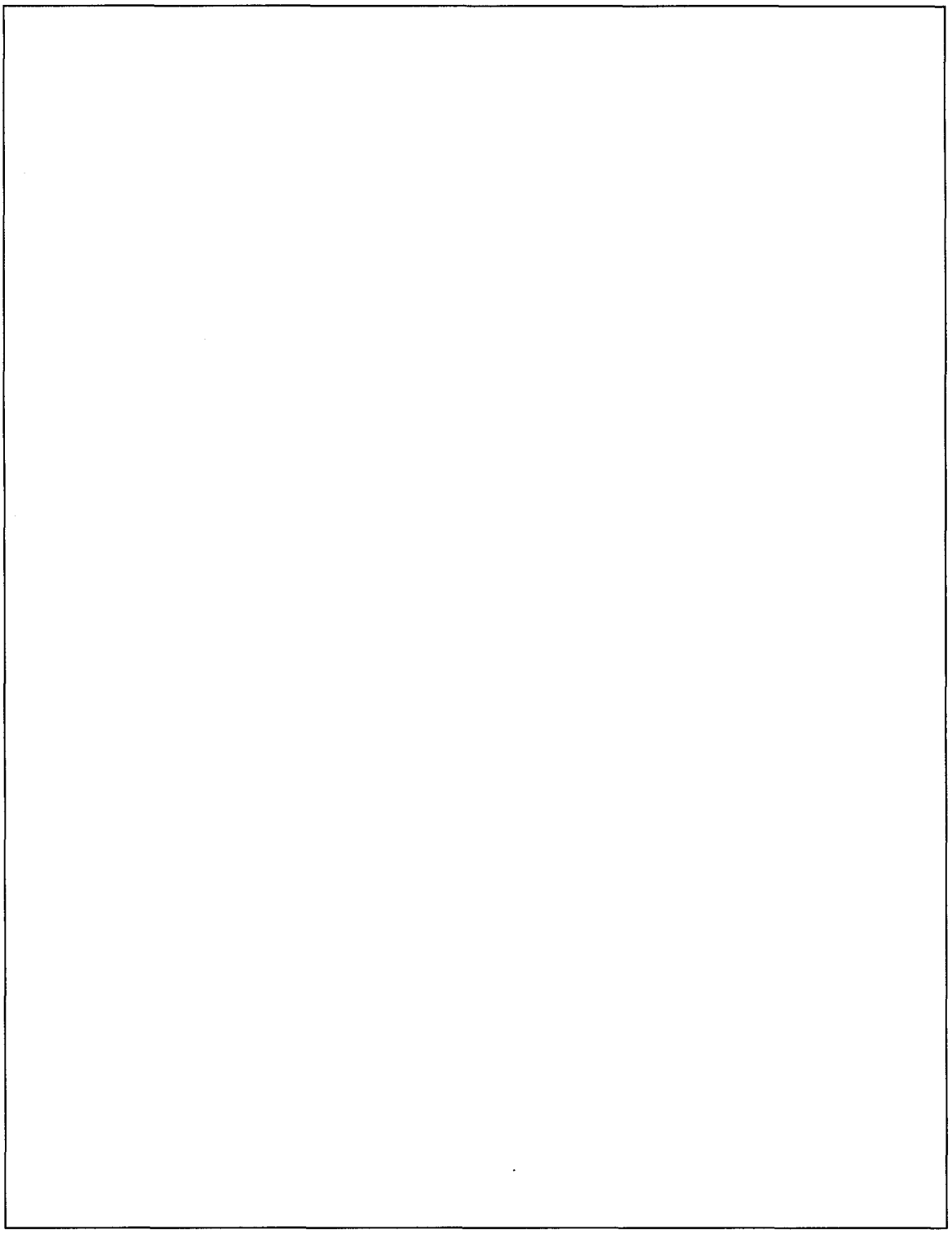
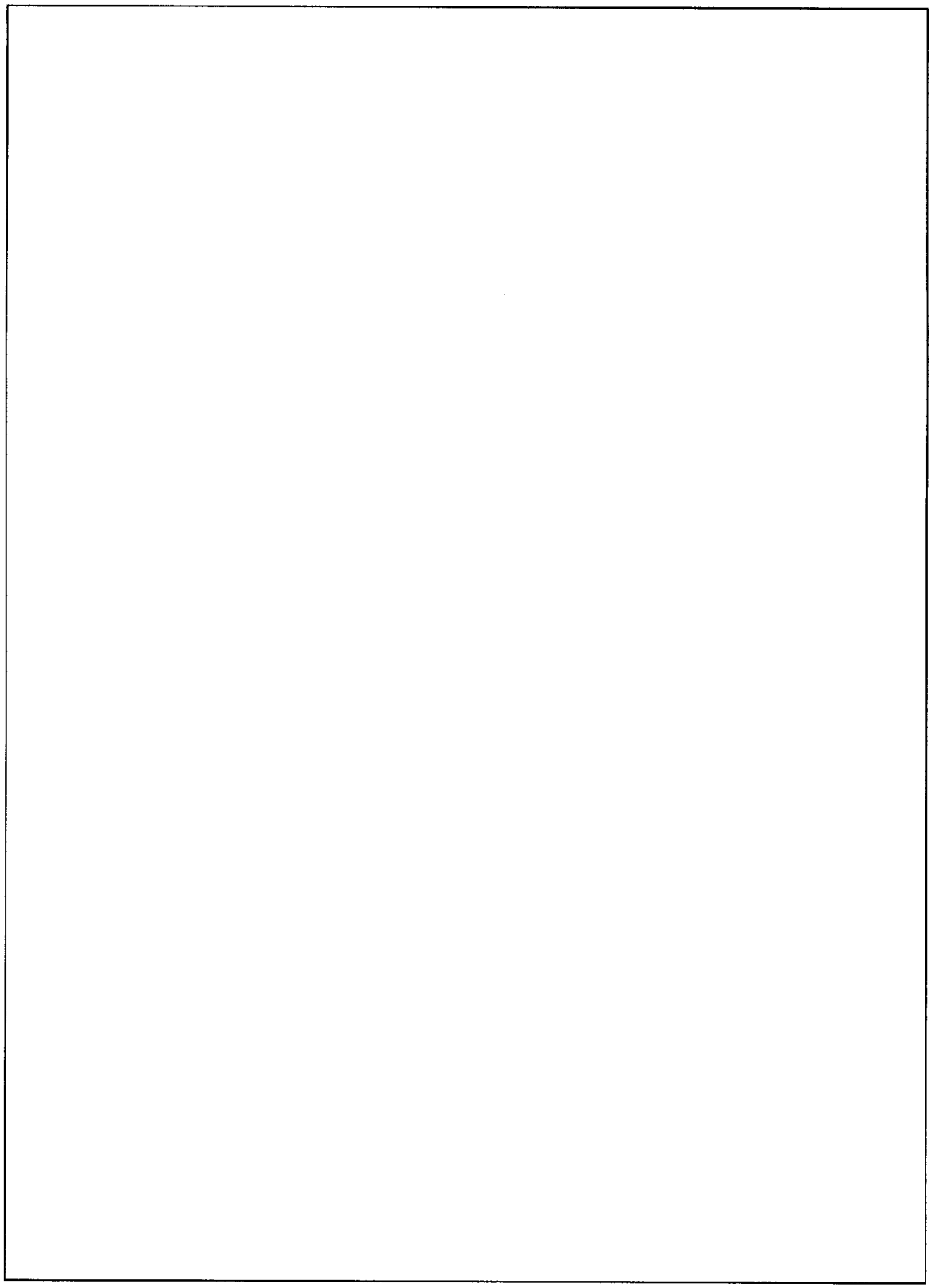
APPENDIX A

Copyright Materials from Psychological Assessment Resources





APPENDIX B

First Step Mailing Materials

Cover letter

Demographic survey

Follow-up letter

The cover letters were printed on FUHS/CMS letterhead in 12 point font. The requested return date was approximately two weeks after the letter date. The demographic survey, enclosed with each letter, was printed double-sided on lilac colored paper in 10 and 12 point font.

Physician Assistant Career Satisfaction and Their Vocational Personalities

<Date>, 2003

Dear Physician Assistant:

As you may know, the PA profession has been rapidly expanding. It is estimated that the profession will grow by another 53% by 2010 (USBLS, 2001). This growth has career-counseling implications for persons contemplating entry into the PA profession, for new PA graduates, and for PAs looking for changes in employment.

You have been randomly selected to receive this survey in an effort to identify and recruit subjects for participation in a doctoral dissertation research study. The goal is to obtain valuable information on PA vocational satisfaction. If you meet the inclusion criteria for this study, you will be sent a separate packet with a vocational personality inventory.

Would you be so kind as to complete the enclosed survey? Please place your completed survey in the stamped envelope provided and mail it no later than <DATE>.

Your survey results will be kept confidential. This survey is coded for the purpose of identifying PAs who meet the inclusion criteria of the study and for sending follow-up materials.

Regardless of your participation, if you are interested in learning the results of this study, you may send a self-addressed stamped envelope, along with a brief note referring to this study to the address below. Completion is projected for Winter 2003.

I am grateful for your assistance. Please feel free to contact me should you have any questions pertaining to this study. My phone number is (847) 578-8687 or you may e-mail me at the address below.

Sincerely,

Dawn LaBarbera, PA-C, PhD candidate, Capella University
Assistant Professor, Finch University PA Program
labarbed@finchcms.edu

Reference: United States Bureau of Labor Statistics, (2001). November 2001 monthly labor review table 3 [on-line]. Available: http//stats.bls.gov/emp/emptab3.htm. (Accessed 1-22-02).

Physician Assistant Career Satisfaction and Their Vocational Personalities _____

Completion of this survey implies consent.

1. Current employment status: (mark all that apply)

Full-time Clinical PA Part-time Clinical PA (less than 32 hours/ week) Retired

Non PA related job Not employed Other PA related discipline _____

2. Your gender? Male Female

3. Your Age in years? _____

4. Total number of years in PA practice? _____

5. Your current work setting? Hospital Group physician office practice HMO

Community Health Center Solo physician office practice Other_____

6. Please circle your **current** specialty:

Not applicable	Family/General Medicine	Emergency Medicine
OB/Gyne	Internal Medicine (General)	IM-Cardiology
IM-Other (Please list)	General Pediatrics	General Surgery
Orthopedic Surgery	Cardiovascular Surgery	Surgery-Other (Please list)
Industrial/Occupational Medicine	Other (please list):_____	

7. Please circle your **most preferred** specialty in which you have practiced as a PA:

No preference	Family/General Medicine	Emergency Medicine
OB/Gyne	Internal Medicine (General)	IM-Cardiology
IM-Other (Please list)	General Pediatrics	General Surgery
Orthopedic Surgery	Cardiovascular Surgery	Surgery-Other (Please list)
Industrial/Occupational Medicine	Other (please list):_____	

8. Total length in preferred specialty indicated in #7 above (in years)? _____

Over Please

Dawn LaBarbera, PA-C
Finch University PA Dept
3333 Green Bay Rd
North Chicago, IL 60064

Physician Assistant Career Satisfaction and Their Vocational Personalities _____

9. Please circle your satisfaction level of the **PA profession** for your career:

Extremely Unsatisfied	Very Dissatisfied	Unsatisfied	Satisfied	Very Satisfied	Extremely Satisfied
0	1	2	3	4	5

10. Please circle your satisfaction level of your preferred PA **specialty** (from #7):

Extremely Unsatisfied	Mostly Dissatisfied	Unsatisfied	Satisfied	Mostly Satisfied	Extremely Satisfied
0	1	2	3	4	5

11. Please circle your **job** satisfaction level of your current PA position:

Extremely Unsatisfied	Mostly Dissatisfied	Unsatisfied	Satisfied	Mostly Satisfied	Extremely Satisfied
0	1	2	3	4	5

12. How likely would you suggest to a bright young person searching careers to become a PA? Very Unlikely Fairly Unlikely Fairly Likely Very Likely

13. As you reflect about your career as a PA, what aspects of your career choice bring you career satisfaction? _____

_____

_____

14. What aspects of your career choice do not satisfy you?_____

_____

_____

Please return in the enclosed postage paid envelope.

Thank you for your participation.

Dawn LaBarbera, PA-C
Finch University PA Dept
3333 Green Bay Rd
North Chicago, IL 60064

Physician Assistant Career Satisfaction and Their Vocational Personalities

<Date>, 2003

Dear Physician Assistant:

This is a second attempt to reach you to ask for your valued participation in a research study on PA vocational satisfaction. I understand how busy you may be and have enclosed duplicate materials should the first not have made it to your address or if you can now find a few moments to complete the materials.

As you may know, the PA profession has been rapidly expanding. It is estimated that the profession will grow by another 53% by 2010 (USBLS, 2001). This growth has career-counseling implications for persons contemplating entry into the PA profession, for new PA graduates, and for PAs looking for changes in employment.

You have been randomly selected to receive this survey in an effort to identify and recruit subjects for participation in a doctoral dissertation research study. The goal is to obtain valuable information on PA vocational satisfaction. If you meet the inclusion criteria for this study, you will be sent a separate packet with a vocational personality inventory.

Would you be so kind as to complete the enclosed survey? Please place your completed survey in the stamped envelope provided and mail it by <DATE>.

Your survey results will be kept confidential. This survey is coded for the purpose of sending follow-up materials to PAs who meet the inclusion criteria of the study.

Regardless of your participation, if you are interested in learning the results of this study, you may send a self-addressed stamped envelope, along with a brief note referring to this study to the address below. Completion is projected for Winter 2003.

I am grateful for your assistance. Please feel free to contact me should you have any questions pertaining to this study. My phone number is (847)-578-8687 or you may e-mail me at the address below.

Sincerely,

Dawn LaBarbera, PA-C, PhD candidate, Capella University
Assistant Professor, Finch University PA Program
labarbed@finchcms.edu

Reference: United States Bureau of Labor Statistics, (2001). November 2001 monthly labor review table 3 [on-line]. Available: http//stats.bls.gov/emp/emptab3.htm. (Accessed 1-22-02).

APPENDIX C

Second Step Mailing Materials

Cover letter

Follow-up letter

Postcard

The cover letters were printed on Finch University letterhead in 12 point font. The requested return date was approximately three weeks after the letter date. The postcard was printed double sided on lilac colored paper.

Physician Assistant Career Satisfaction and Their Vocational Personalities

<Date>, 2003

Dear Physician Assistant:

Thank you for your participation in an initial survey regarding PA career satisfaction. You have met the inclusion criteria for participation in the final step of a doctoral dissertation study that has possible career counseling implications for persons contemplating entry into the PA profession, for new PA graduates, and for PAs looking for changes in employment. Therefore, you will find enclosed the most-widely used vocational personality inventory, the Self-Directed Search (SDS) by John Holland. Over the past four decades, Holland's theory has greatly influenced the fields of interest assessment and vocational counseling.

Would you be so kind as to complete **only pages 3-10** of the SDS? You may find this career interest inventory insightful. The SDS typically takes about 15-30 minutes to complete and the directions are in the booklet. To maintain your confidentiality, do NOT place your name anywhere in the booklet. It is coded to link your initial survey results to the SDS results.

After completing the SDS (page 10 is optional), please place it in the stamped envelope provided and mail it by <DATE>. Your participation implies consent for inclusion in this study. Should you elect not to participate in this phase, please return the unused SDS to me.

If you are interested in learning the results of this study, and have not already done so, you may send a self-addressed stamped envelope along with a brief note referring to this study to the address listed below. Completion is projected for Winter 2003.

I am grateful once again for your assistance. Please feel free to contact me should you have any questions pertaining to this study. My phone number is (847)-578-8687 or you may e-mail me at the address below.

Sincerely,

Dawn LaBarbera, PA-C, PhD candidate, Capella University
Assistant Professor, Finch University PA Program
labarbed@finchcms.edu

Physician Assistant Career Satisfaction and Their Vocational Personalities

<Date>, 2003

Dear Physician Assistant:

Thank you for your participation in an initial survey regarding PA career satisfaction.

This is a second attempt to reach you to ask for your valued participation in the final step of a doctoral dissertation study that has possible career counseling implications for the PA profession. You have met the inclusion criteria of the study. Earlier you were sent the Self-Directed Search (SDS) booklet for completion.

Would you be so kind as to take some time out of your busy schedule to now complete **only pages 3-10**? The SDS typically takes about 15-30 minutes and the directions are in the booklet. To maintain your confidentiality, do NOT place your name anywhere in the booklet. After completing the SDS, please place it in the stamped envelope provided and mail by <DATE>. Your participation implies consent for inclusion in this study.

In the meantime, please use the enclosed postcard to notify me of your participation status. If you did not receive the SDS booklet, I will be happy to send you a replacement package. If you have already sent in the SDS, please indicate so. If you do not wish to participate in this step, please so indicate. Please mail your postcard within 2 business days from its receipt.

If you are interested in learning the results of this study, and have not already done so, you may send a self-addressed stamped envelope along with a brief note referring to this study to the address listed below. Completion is projected for Winter 2003.

I am grateful once again for your assistance. Please feel free to contact me should you have any questions pertaining to this study. My phone number is (847) 578-8687 or you may e-mail me at the address below.

Sincerely,

Dawn LaBarbera, PA-C, PhD candidate, Capella University
Assistant Professor, Finch University PA Program
labarbed@finchcms.edu

Postcard

The subject number (#) was hand printed onto the postcard in the return address area to identify the subject.

☐ Yes, I would like to participate in your study

- ☐ I will be sending back my materials
- ☐ Please send me another packet
- ☐ I sent the packet in already on _____ (date)

☐ No, I do not wish to participate in your study - *If you choose this option, please send back the unused SDS*

#

Finch University of Health Sciences/
The Chicago Medical School
Attention: Ms. Dawn LaBarbera, PA-C
3333 N. Green Bay Road
North Chicago IL 60064

APPENDIX D

SPSS Output Demographics

Table 36.

SPSS Output for Employment Status

Employment Status	Number	Percent
Full Time	872	76.9
Part Time	112	9.9
Retired	27	2.4
Other	24	2.1
Unemployed	50	4.4
Non-PA	49	4.3
Total	1,134	100.0

Table 37.

SPSS Output for Sex

Sex	Number	Percent
Male	481	42.5
Female	651	57.5
Total	1,132	100.0

Table 38.

SPSS Output for Age

N=1131	Minimum	Maximum	Mean	*SD*
Age	23	84	41.47	10.31

Table 39.

SPSS Output for Years as PA

N=981	Minimum	Maximum	Mean	*SD*
Years as PA	0	35	9.75	8.45

Table 40.

SPSS Output for Employment Setting

Setting	Number	Percent
Group	328	33.4
Hospital	225	22.9
Solo physician	130	13.2
Multiple settings	105	10.7
Community Health Center	43	4.4
Rural Health Center	22	2.2
Correctional Medicine	16	1.6
Military	19	1.9
Health Maintenance Organization	17	1.7
Veteran's Affairs	11	1.1
Other	66	6.7
Total	982	100.0

Table 41.

SPSS Output for Current Specialty

Current Specialty	Number	Percent
Emergency Medicine or Urgent Care	89	9.0
Internal Medicine	53	5.4
Family General Medicine	314	31.9
Ortho Surgery	91	9.2
Other Surgery	100	10.2
Cardiology	28	2.8
Occupational Med	24	2.4
Pediatrics	35	3.6
Obstetrics Gynecology	17	1.7
Multiple Settings	83	8.4
Other	35	3.6
Dermatology	27	2.7
Other Internal Medicine	77	7.8
Total	973	98.9

Table 42.

SPSS Output for Grouped Current Specialty

Current Specialty	Number	Percent
Emergency Medicine or Urgent Care	89	9.1
Internal Medicine	185	19.0
Family General Medicine	314	32.3
Surgery	191	19.6
Pediatrics	35	3.6
Obstetrics Gynecology	17	1.7
Multiple Settings	83	8.5
Other	59	6.1
Total	973	100.0

Table 43.

SPSS Output for Chi-square Analysis of Respondent Men and Women Compared to AAPA

Sex	Observed *N*	Expected *N*	Residual	Stats	Stat value
Male	421	412.4	8.6	Chi-Square	0.306
Female	561	569.6	-8.6	*df*	1
Total	982			Asymp. Sig.	0.580

Table 44.

SPSS Output for One Sample t Test of Respondent Age to AAPA

	N	Mean	Std. Deviation	Std. Error Mean
Age	1,131	41.47	10.311	0.307

Test Value = 41.3					
				95% Confidence Interval of the Difference	
t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
0.547	1,130	0.584	0.17	-0.43	0.77

Table 45.

SPSS Output for Chi-square of Clinical PAs to AAPA

Clinical Status	Observed *N*	Expected *N*	Residual	Stats	Stat value
Clinical	984	997.9	-13.9	Chi-Square	1.618
Non Clinical PA	150	136.1	13.9	*df*	1
Total	1,134			Asymp. Sig.	0.203

Table 46.

SPSS Output for t Test of Years as PA to AAPA

	N	Mean	Std. Deviation	Std. Error Mean
Years as PA	981	9.75	8.450	0.270

Test Value = 9.2					
				95% Confidence Interval of the Difference	
t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
2.024	980	0.043	0.55	0.02	1.08

APPENDIX E

SPSS Output Other Survey Items

Table 47.

SPSS Output for Specialty Preference

Specialty	Frequency	Percent
EM	118	11.9
IM	180	18.2
FP GP	338	34.1
Orthosu	99	10.0
Surg	112	11.3
Other	144	14.5
Total	991	100.0

Table 48.

SPSS Output for Time in Preferred Specialty

	N	Minimum	Maximum	Mean	*SD*
Time in Preferred Specialty	1,007	0	33	7.72	6.945

Table 49.

SPSS Output for Likert Scale Items: Descriptives

	Career Satisfaction	Job Satisfaction	Specialty Satisfaction	Likelihood to Refer
Number	1,117	1,061	1,012	1112
Mean	3.91	4.17	3.84	3.39
Median	4.00	4.00	4.00	4.00
Mode	4	4	4	4
Range	5	5	5	3
Minimum	0	0	0	1
Maximum	5	5	5	4

Table 50.

SPSS Output for Career Satisfaction

Satisfaction Level	Frequency	Percent
Extremely Unsatisfied	8	0.7
Very Dissatisfied	16	1.4
Unsatisfied	43	3.8
Satisfied	226	20.2
Very Satisfied	532	47.6
Extremely Satisfied	292	26.1
Total	1,117	100.0

Table 51.

SPSS Output for Specialty Satisfaction

Satisfaction Level	Frequency	Percent
Extremely Unsatisfied	4	0.4
Mostly Dissatisfied	4	0.4
Unsatisfied	20	1.9
Satisfied	153	14.4
Mostly Satisfied	482	45.4
Extremely Satisfied	398	37.5
Total	1,061	100.0

Table 52.

SPSS Output for Job Satisfaction

Satisfaction Level	Frequency	Percent
Extremely Unsatisfied	9	0.9
Mostly Dissatisfied	11	1.1
Unsatisfied	63	6.2
Satisfied	228	22.5
Mostly Satisfied	442	43.7
Extremely Satisfied	259	25.6
Total	1,012	100.0

Table 53.

SPSS Output for Likelihood to Refer

Likelihood to Refer	Frequency	Percent
Very Unlikely	46	4.1
Fairly Unlikely	78	7.0
Fairly Likely	387	34.8
Very Likely	601	54.0
Total	1,112	100.0

Table 54.

SPSS Output for Paired Correlations between PA Career Satisfaction and Likelihood to Refer

N=1105		Mean	*SD*	SE Mean	Correlation	Sig.
Pair 1	RANK of PASATIS	560.24	299.77	9.02	0.483	0.000
	RANK of REFER	557.09	286.89	8.63		

APPENDIX F

SPSS Output Subgroup Comparisons

Table 55a.

SPSS Output for Demographics of All PA Survey Respondents

Variable	*N*	Minimum	Maximum	Mean	*SD*
Years as PA	1,030	0	35	10.22	8.663
Age	1,031	24	84	41.16	10.401
Time in Preferred Specialty	962	0	33	7.80	7.031

Table 55b.

SPSS Output for Demographics for All PA Survey Respondents

Sex	Frequency	Percent
Male	446	43.2
Female	586	56.8
Total	1,032	100.0

Table 56.

SPSS Output for Chi-square Analysis of Sex for All PA Survey Respondents

Sex	Observed *N*	Expected *N*	Residual	Statistics	Values
Male	188	199.6	-11.6	Chi-Square	1.184
Female	274	262.4	11.6	*df*	1
Total	462			Asymp. Sig.	0.277

Table 57.

SPSS Output for One Sample t Test of Age for All PA Survey Respondents

N	Mean	Std. Deviation	*SE* Mean
463	40.57	10.109	0.470

Test Value = 41.16					
				95% Confidence Interval of the Difference	
t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
-1.255	462	0.210	-0.59	-1.51	0.33

Table 58.

SPSS Output for One Sample t Test of Years as a PA for All PA Survey Respondents

N	Mean	Std. Deviation	*SE* Mean
463	9.78	8.556	0.398

Test Value = 10.22					
				95% Confidence Interval of the Difference	
t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
-1.094	462	0.275	-0.44	-1.22	0.35

Table 59.

SPSS Output for One Sample t Test of Time in Preferred Specialty for All PA Survey Respondents

N	Mean	Std. Deviation	Std. Error Mean
435	7.36	6.665	0.320

Test Value = 7.80					
				95% Confidence Interval of the Difference	
t	*df*	Sig. (2-tailed)	Mean Difference	Lower	Upper
-1.363	434	0.174	-0.44	-1.06	0.19

APPENDIX G

SPSS Output Hypothesis 1

Table 60a.

SPSS Output for Repeated Measures ANOVA for PAs Completing the SDS

RIASEC Levels (*N*=463)	Mean	Std. Deviation
R	22.79	10.501
I	30.75	8.330
A	20.93	10.128
S	31.27	7.638
E	22.48	8.745
C	20.71	8.477

Table 60b.

SPSS Output for Repeated Measures ANOVA for PAs Completing the SDS

Tests of Within-Subjects Effects
Measure: MEASURE_1

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Sphericity Assumed	54,838.99	5	10,967.798	167.66	0.00	0.266
	Greenhouse-Geisser	54,838.99	4.37	12,535.460	167.66	0.00	0.266
	Huynh-Feldt	54,838.99	4.42	12,402.189	167.66	0.00	0.266
	Lower-bound	54,838.99	1.00	54,838.991	167.66	0.00	0.266
Error(RIASEC)	Sphericity Assumed	151,114.18	2,310	65.417			
	Greenhouse-Geisser	151,114.18	2,021.12	74.768			
	Huynh-Feldt	151,114.18	2,042.83	73.973			
	Lower-bound	151,114.18	462.00	327.087			

Table 60c.

SPSS Output for Repeated Measures ANOVA for PAs Completing the SDS

Tests of Within-Subjects Contrasts
Measure: MEASURE_1

Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Linear	4,088.341	1	4,088.341	50.114	0.00	0.10
	Quadratic	10,927.137	1	10,927.137	126.259	0.00	0.22
	Cubic	99.456	1	99.456	1.776	0.18	0.00
	Order 4	2,293.675	1	2,293.675	46.856	0.00	0.09
	Order 5	37,430.382	1	37,430.382	692.945	0.00	0.60
Error(RIASEC)	Linear	37,690.045	462	81.580			
	Quadratic	39,984.136	462	86.546			
	Cubic	25,868.694	462	55.993			
	Order 4	22,615.717	462	48.952			
	Order 5	24,955.583	462	54.016			

Table 60d.

SPSS Output for Repeated Measures ANOVA for PAs Completing the SDS

Tests of Between-Subjects Effects
Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	1,711,687.491	1	1,711,687.491	10,578.65	0.00	0.958
Error	74,754.343	462	161.806			

Table 60e.

SPSS Output for Repeated Measures ANOVA for PAs Completing the SDS

RIASEC Estimated Margins of Means Measure: MEASURE_1				
			95% Confidence Interval	
RIASEC	Mean	Std. Error	Lower Bound	Upper Bound
1	22.788	0.488	21.829	23.747
2	30.754	0.387	29.993	31.515
3	20.931	0.471	20.006	21.856
4	31.272	0.355	30.575	31.970
5	22.475	0.406	21.676	23.274
6	20.715	0.394	19.941	21.489

Table 61a.

SPSS Output for Paired Samples t Test of PAs Completing the SDS

Paired Samples Statistics					
		Mean	*N*	Std. Deviation	Std. Error Mean
Pair 1	R	22.79	463	10.501	0.488
	I	30.75	463	8.330	0.387
Pair 2	R	22.79	463	10.501	0.488
	A	20.93	463	10.128	0.471
Pair 3	R	22.79	463	10.501	0.488
	S	31.27	463	7.638	0.355
Pair 4	R	22.79	463	10.501	0.488
	E	22.48	463	8.745	0.406
Pair 5	R	22.79	463	10.501	0.488
	C	20.71	463	8.477	0.394
Pair 6	I	30.75	463	8.330	0.387
	A	20.93	463	10.128	0.471
Pair 7	I	30.75	463	8.330	0.387
	S	31.27	463	7.638	0.355
Pair 8	I	30.75	463	8.330	0.387
	E	22.48	463	8.745	0.406
Pair 9	I	30.75	463	8.330	0.387
	C	20.71	463	8.477	0.394
Pair 10	A	20.93	463	10.128	0.471
	S	31.27	463	7.638	0.355
Pair 11	A	20.93	463	10.128	0.471
	E	22.48	463	8.745	0.406
Pair 12	A	20.93	463	10.128	0.471
	C	20.71	463	8.477	0.394
Pair 13	S	31.27	463	7.638	0.355
	E	22.48	463	8.745	0.406
Pair 14	S	31.27	463	7.638	0.355
	C	20.71	463	8.477	0.394
Pair 15	E	22.48	463	8.745	0.406
	C	20.71	463	8.477	0.394

Table 61b.

SPSS Output for Paired Samples t Test of PAs Completing the SDS

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	*SE* Mean	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1	R - I	-7.97	12.303	0.572	-9.09	-6.84	-13.931	462	0.000
Pair 2	R - A	1.86	13.513	0.628	0.62	3.09	2.958	462	0.003
Pair 3	R - S	-8.48	13.218	0.614	-9.69	-7.28	-13.810	462	0.000
Pair 4	R - E	0.31	12.342	0.574	-0.81	1.44	0.546	462	0.585
Pair 5	R - C	2.07	12.754	0.593	0.91	3.24	3.498	462	0.001
Pair 6	I - A	9.82	11.432	0.531	8.78	10.87	18.489	462	0.000
Pair 7	I - S	-0.52	9.684	0.450	-1.40	0.37	-1.152	462	0.250
Pair 8	I - E	8.28	10.470	0.487	7.32	9.23	17.014	462	0.000
Pair 9	I - C	10.04	10.232	0.476	9.10	10.97	21.111	462	0.000
Pair 10	A - S	-10.34	10.531	0.489	-11.30	-9.38	-21.129	462	0.000
Pair 11	A - E	-1.54	11.891	0.553	-2.63	-0.46	-2.794	462	0.005
Pair 12	A - C	0.22	12.610	0.586	-0.94	1.37	0.369	462	0.713
Pair 13	S - E	8.80	9.556	0.444	7.92	9.67	19.809	462	0.000
Pair 14	S - C	10.56	10.624	0.494	9.59	11.53	21.382	462	0.000
Pair 15	E - C	1.76	9.197	0.427	0.92	2.60	4.118	462	0.000

Table 62a.

SPSS Output for Repeated Measures ANOVA for PT PAs

Descriptive Statistics			
	Mean	Std. Deviation	*N*
R	20.83	10.466	54
I	30.20	7.651	54
A	22.13	10.075	54
S	33.33	6.993	54
E	21.02	8.833	54
C	21.37	8.464	54

Table 62b.

SPSS Output for Repeated Measures ANOVA for PT PAs

Tests of Within-Subjects Effects Measure: MEASURE_1							
Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Sphericity Assumed	8,150.96	5	1,630.19	24.83	0.00	0.32
	Greenhouse-Geisser	8,150.96	3.99	2,043.62	24.83	0.00	0.32
	Huynh-Feldt	8,150.96	4.35	1,872.22	24.83	0.00	0.32
	Lower-bound	8,150.96	1.00	8,150.96	24.83	0.00	0.32
Error(RIASEC)	Sphericity Assumed	17,400.37	265	65.66			
	Greenhouse-Geisser	17,400.37	211.39	82.31			
	Huynh-Feldt	17,400.37	230.74	75.41			
	Lower-bound	17,400.37	53.00	328.30			

Table 62c.

SPSS Output for Repeated Measures ANOVA for PT PAs

Tests of Within-Subjects Contrasts Measure: MEASURE_1							
Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Linear	144.086	1	144.09	1.578	0.22	0.029
	Quadratic	2,475.573	1	2,475.57	26.633	0.00	0.334
	Cubic	147.408	1	147.41	3.283	0.08	0.058
	Order 4	0.556	1	0.56	0.012	0.92	0.000
	Order 5	5,383.339	1	5,383.34	105.399	0.00	0.665
Error(RIASEC)	Linear	4,840.314	53	91.33			
	Quadratic	4,926.510	53	92.95			
	Cubic	2,379.831	53	44.90			
	Order 4	2,546.694	53	48.05			
	Order 5	2,707.022	53	51.08			

Table 62d.

SPSS Output for Repeated Measures ANOVA for PT PAs

Tests of Between-Subjects Effects
Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	199,511.111	1	199,511.111	1,426.703	0.000	0.964
Error	7,411.556	53	139.841			

Table 62e.
SPSS Output for Repeated Measures ANOVA for PT PAs

RIASEC Estimated Marginal Means
Measure: MEASURE_1

RIASEC	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	20.833	1.424	17.977	23.690
2	30.204	1.041	28.115	32.292
3	22.130	1.371	19.380	24.880
4	33.333	0.952	31.425	35.242
5	21.019	1.202	18.608	23.429
6	21.370	1.152	19.060	23.681

Table 63a.

SPSS Output for Paired t Tests for PT PAs

Paired Samples Statistics					
		Mean	*N*	Std. Deviation	Std. Error Mean
Pair 1	R	20.83	54	10.466	1.424
	I	30.20	54	7.651	1.041
Pair 2	R	20.83	54	10.466	1.424
	A	22.13	54	10.075	1.371
Pair 3	R	20.83	54	10.466	1.424
	S	33.33	54	6.993	0.952
Pair 4	R	20.83	54	10.466	1.424
	E	21.02	54	8.833	1.202
Pair 5	R	20.83	54	10.466	1.424
	C	21.37	54	8.464	1.152
Pair 6	I	30.20	54	7.651	1.041
	A	22.13	54	10.075	1.371
Pair 7	I	30.20	54	7.651	1.041
	S	33.33	54	6.993	0.952
Pair 8	I	30.20	54	7.651	1.041
	E	21.02	54	8.833	1.202
Pair 9	I	30.20	54	7.651	1.041
	C	21.37	54	8.464	1.152
Pair 10	A	22.13	54	10.075	1.371
	S	33.33	54	6.993	0.952
Pair 11	A	22.13	54	10.075	1.371
	E	21.02	54	8.833	1.202
Pair 12	A	22.13	54	10.075	1.371
	C	21.37	54	8.464	1.152
Pair 13	S	33.33	54	6.993	0.952
	E	21.02	54	8.833	1.202
Pair 14	S	33.33	54	6.993	0.952
	C	21.37	54	8.464	1.152
Pair 15	E	21.02	54	8.833	1.202
	C	21.37	54	8.464	1.152

Table 63b.

SPSS Output for Paired t Tests for PT PAs

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1	R - I	-9.37	11.845	1.612	-12.60	-6.14	-5.813	53	0.000
Pair 2	R - A	-1.30	13.863	1.886	-5.08	2.49	-0.687	53	0.495
Pair 3	R - S	-12.50	13.567	1.846	-16.20	-8.80	-6.770	53	0.000
Pair 4	R - E	-0.19	13.304	1.810	-3.82	3.45	-0.102	53	0.919
Pair 5	R - C	-0.54	12.646	1.721	-3.99	2.91	-0.312	53	0.756
Pair 6	I - A	8.07	12.064	1.642	4.78	11.37	4.918	53	0.000
Pair 7	I - S	-3.13	9.116	1.240	-5.62	-0.64	-2.523	53	0.015
Pair 8	I - E	9.19	10.432	1.420	6.34	12.03	6.470	53	0.000
Pair 9	I - C	8.83	10.249	1.395	6.04	11.63	6.333	53	0.000
Pair 10	A - S	-11.20	10.289	1.400	-14.01	-8.40	-8.002	53	0.000
Pair 11	A - E	1.11	12.268	1.670	-2.24	4.46	0.666	53	0.509
Pair 12	A - C	0.76	13.231	1.800	-2.85	4.37	0.422	53	0.675
Pair 13	S - E	12.31	8.181	1.113	10.08	14.55	11.061	53	0.000
Pair 14	S - C	11.96	9.584	1.304	9.35	14.58	9.173	53	0.000
Pair 15	E - C	-0.35	9.147	1.245	-2.85	2.14	-0.283	53	0.779

Table 64a.

SPSS Output for Repeated Measures ANOVA for FT PAs

Descriptive Statistics			
	Mean	Std. Deviation	*N*
R	23.03	10.461	389
I	30.81	8.492	389
A	20.76	10.213	389
S	30.93	7.646	389
E	22.51	8.683	389
C	20.60	8.581	389

Table 64b.

SPSS Output for Repeated Measures ANOVA for FT PAs

Tests of Within-Subjects Effects
Measure: MEASURE_1

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Sphericity Assumed	45024.78	5	9004.96	136.47	0.00	0.26
	Greenhouse-Geisser	45024.78	4.40	10224.70	136.47	0.00	0.26
	Huynh-Feldt	45024.78	4.46	10094.46	136.47	0.00	0.26
	Lower-bound	45024.78	1.00	45024.78	136.47	0.00	0.26
Error(RIASEC)	Sphericity Assumed	128011.56	1940	65.99			
	Greenhouse-Geisser	128011.56	1708.57	74.92			
	Huynh-Feldt	128011.56	1730.61	73.97			
	Lower-bound	128011.56	388.00	329.93			

Table 64c.

SPSS Output for Repeated Measures ANOVA for FT PAs

Tests of Within-Subjects Contrasts
Measure: MEASURE_1

Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
RIASEC	Linear	4,038.053	1	4,038.05	49.014	0.00	0.112
	Quadratic	8,088.201	1	8,088.20	93.614	0.00	0.194
	Cubic	63.523	1	63.52	1.106	0.29	0.003
	Order 4	2,353.468	1	2,353.47	48.895	0.00	0.112
	Order 5	30,481.531	1	30,481.53	548.666	0.00	0.586
Error(RIASEC)	Linear	31,965.347	388	82.39			
	Quadratic	33,523.025	388	86.40			
	Cubic	22,291.938	388	57.45			
	Order 4	18,675.640	388	48.13			
	Order 5	21,555.607	388	55.56			

Table 64d.

SPSS Output for Repeated Measures ANOVA for FT PAs

Tests of Between-Subjects Effects
Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	1,431,874.936	1	1,431,874.94	8,784.130	0.000	0.958
Error	63,246.731	388	163.01			

Table 64e.

SPSS Output for Repeated Measures ANOVA for FT PAs

RIASEC Estimated Marginal Means
Measure: MEASURE_1

RIASEC	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	23.033	0.529	21.993	24.074
2	30.815	0.431	29.968	31.661
3	20.758	0.518	19.740	21.776
4	30.900	0.388	30.138	31.662
5	22.506	0.440	21.641	23.372
6	20.599	0.435	19.744	21.454

Table 65a.

SPSS Output for Paired t Tests for FT PAs

Paired Samples Statistics					
		Mean	*N*	Std. Deviation	Std. Error Mean
Pair 1	R	23.03	389	10.441	0.529
	I	30.81	389	8.492	0.431
Pair 2	R	23.03	389	10.441	0.529
	A	20.76	389	10.213	0.518
Pair 3	R	23.03	389	10.441	0.529
	S	30.90	389	7.646	0.388
Pair 4	R	23.03	389	10.441	0.529
	E	22.51	389	8.683	0.440
Pair 5	R	23.03	389	10.441	0.529
	C	20.60	389	8.581	0.435
Pair 6	I	30.81	389	8.492	0.431
	A	20.76	389	10.213	0.518
Pair 7	I	30.81	389	8.492	0.431
	S	30.90	389	7.646	0.388
Pair 8	I	30.81	389	8.492	0.431
	E	22.51	389	8.683	0.440
Pair 9	I	30.81	389	8.492	0.431
	C	20.60	389	8.581	0.435
Pair 10	A	20.76	389	10.213	0.518
	S	30.90	389	7.646	0.388
Pair 11	A	20.76	389	10.213	0.518
	E	22.51	389	8.683	0.440
Pair 12	A	20.76	389	10.213	0.518
	C	20.60	389	8.581	0.435
Pair 13	S	30.90	389	7.646	0.388
	E	22.51	389	8.683	0.440
Pair 14	S	30.90	389	7.646	0.388
	C	20.60	389	8.581	0.435
Pair 15	E	22.51	389	8.683	0.440
	C	20.60	389	8.581	0.435

Table 65b.

SPSS Output for Paired t Tests for FT PAs

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1	R - I	-7.78	12.311	0.624	-9.01	-6.55	-12.47	388	0.000
Pair 2	R - A	2.28	13.528	0.686	0.93	3.62	3.32	388	0.001
Pair 3	R - S	-7.87	13.168	0.668	-9.18	-6.55	-11.78	388	0.000
Pair 4	R - E	0.53	12.262	0.622	-0.70	1.75	0.85	388	0.397
Pair 5	R - C	2.43	12.893	0.654	1.15	3.72	3.72	388	0.000
Pair 6	I - A	10.06	11.410	0.578	8.92	11.19	17.38	388	0.000
Pair 7	I - S	-0.08	9.738	0.494	-1.06	0.89	-0.17	388	0.864
Pair 8	I - E	8.31	10.514	0.533	7.26	9.36	15.59	388	0.000
Pair 9	I - C	10.22	10.317	0.523	9.19	11.24	19.53	388	0.000
Pair 10	A - S	-10.14	10.678	0.541	-11.21	-9.08	-18.73	388	0.000
Pair 11	A - E	-1.75	11.854	0.601	-2.93	-0.57	-2.91	388	0.004
Pair 12	A - C	0.16	12.716	0.645	-1.11	1.43	0.25	388	0.805
Pair 13	S - E	8.39	9.676	0.491	7.43	9.36	17.11	388	0.000
Pair 14	S - C	10.30	10.847	0.550	9.22	11.38	18.73	388	0.000
Pair 15	E - C	1.91	9.247	0.469	0.99	2.83	4.07	388	0.000

Table 66a.

SPSS Output for Independent Samples t Test of FT and PT PAs

Group Statistics					
	Employment Status	*N*	Mean	Std. Deviation	Std. Error Mean
R	Full Time	389	23.03	10.441	0.529
	Part Time	54	20.83	10.466	1.424
I	Full Time	389	30.81	8.492	0.431
	Part Time	54	30.20	7.651	1.041
A	Full Time	389	20.76	10.213	0.518
	Part Time	54	22.13	10.075	1.371
S	Full Time	389	30.90	7.646	0.388
	Part Time	54	33.33	6.993	0.952
E	Full Time	389	22.51	8.683	0.440
	Part Time	54	21.02	8.833	1.202
C	Full Time	389	20.60	8.581	0.435
	Part Time	54	21.37	8.464	1.152

Table 66b.

SPSS Output for Independent Samples t Test of FT and PT PAs

		Independent Samples Test								
		Levene's Test for Equality of Variances		*t* Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. 2-tailed	Mean Diff.	*SE* Diff.	Lower	Upper
	Equal variances assumed	0.84	0.36	1.45	441	0.15	2.20	1.517	-0.78	5.181
	Equal variances not assumed			1.45	68.48	0.15	2.20	1.519	-0.83	5.232
I	Equal variances assumed	1.43	0.23	0.50	441	0.62	0.61	1.219	-1.79	3.007
	Equal variances not assumed			0.54	72.39	0.59	0.61	1.127	-1.64	2.857
	Equal variances assumed	0.02	0.89	-0.93	441	0.36	-1.37	1.481	-4.28	1.539
	Equal variances not assumed			-0.94	69.01	0.35	-1.37	1.466	-4.30	1.553
S	Equal variances assumed	1.53	0.22	-2.21	441	0.03	-2.43	1.099	-4.59	-0.273
	Equal variances not assumed			-2.37	71.78	0.02	-2.43	1.028	-4.48	-0.385
	Equal variances assumed	0.13	0.72	1.18	441	0.24	1.49	1.264	-1.00	3.971
	Equal variances not assumed			1.16	68.01	0.25	1.49	1.280	-1.07	4.042
	Equal variances assumed	0.00	0.99	-0.62	441	0.54	-0.77	1.244	-3.22	1.674
	Equal variances not assumed			-0.63	69.01	0.53	-0.77	1.231	-3.23	1.685

APPENDIX H
SPSS Output Hypothesis 2

Table 67a.

SPSS Output for Repeated Measures ANOVA for Males and Females

Descriptive Statistics				
Sex		Mean	Std. Deviation	*N*
Male	R	29.49	9.592	188
	I	30.40	8.460	188
	A	19.81	10.634	188
	S	30.03	7.785	188
	E	24.34	8.688	188
	C	20.13	8.526	188
Female	R	18.19	8.449	274
	I	30.94	8.212	274
	A	21.62	9.644	274
	S	32.16	7.423	274
	E	21.24	8.562	274
	C	21.14	8.440	274

Table 67b.

SPSS Output for Repeated Measures ANOVA for Males and Females

Tests of Within-Subjects Effects Measure: MEASURE_1								
Sex	Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
M	RIASEC	Sphericity Assumed	23,057.42	5	4,611.48	73.78	0.00	0.28
		Greenhouse-Geisser	23,057.42	4.3	5,313.82	73.78	0.00	0.28
		Huynh-Feldt	23,057.42	4.5	5,175.60	73.78	0.00	0.28
		Lower-bound	23,057.42	1.0	23,057.42	73.78	0.00	0.28
	Error (RIASEC)	Sphericity Assumed	58,443.25	935	62.51			
		Greenhouse-Geisser	58,443.25	811.4	72.03			
		Huynh-Feldt	58,443.245	833.1	70.15			
		Lower-bound	58,443.25	187.0	312.53			
F	RIASEC	Sphericity Assumed	46,511.59	5	9,302.32	165.18	0.00	0.38
		Greenhouse-Geisser	46,511.59	4.5	10,276.17	165.18	0.00	0.38
		Huynh-Feldt	46,511.59	4.6	10,085.18	165.18	0.00	0.38
		Lower-bound	46,511.59	1.0	46,511.59	165.18	0.00	0.38
	Error (RIASEC)	Sphericity Assumed	76,874.08	1,365	56.32			
		Greenhouse-Geisser	76,874.08	1,235.6	62.21			
		Huynh-Feldt	76,874.08	1,259.0	61.06			
		Lower-bound	76,874.08	273.0	281.59			

Table 67c.

SPSS Output for Repeated Measures ANOVA for Males and Females

Tests of Within-Subjects Contrasts
Measure: MEASURE_1

Sex	Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
M	RIASEC	Linear	8,049.032	1	8,049.032	106.18	0.00	0.36
		Quadratic	80.286	1	80.286	0.93	0.34	0.01
		Cubic	2,136.052	1	2,136.052	41.85	0.00	0.18
		Order 4	1,493.620	1	1,493.620	30.67	0.00	0.14
		Order 5	11,298.432	1	11,298.432	221.48	0.00	0.54
	Error (RIASEC)	Linear	14,176.053	187	75.808			
		Quadratic	16,077.309	187	85.975			
		Cubic	9,543.870	187	51.037			
		Order 4	9,106.451	187	48.698			
		Order 5	9,539.560	187	51.014			
F	RIASEC	Linear	56.827	1	56.827	0.81	0.37	0.00
		Quadratic	16,281.377	1	16,281.377	243.32	0.00	0.47
		Cubic	2,500.877	1	2,500.877	60.06	0.00	0.18
		Order 4	913.960	1	913.960	18.63	0.00	0.06
		Order 5	26,758.548	1	26,758.548	494.10	0.00	0.64
	Error (RIASEC)	Linear	19,058.973	273	69.813			
		Quadratic	18,268.004	273	66.916			
		Cubic	11,367.212	273	41.638			
		Order 4	13,395.325	273	49.067			
		Order 5	14,784.563	273	54.156			

Table 67d.

SPSS Output for Repeated Measures ANOVA for Males and Females

Test of Between-Subjects Effects Measure: MEASURE_1 Transformed Variable: Average							
Sex	Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Male	Intercept	745,053.28	1	745,053.280	4,309.190	0.000	0.958
	Error	32,332.05	187	172.899			
Female	Intercept	963,818.51	1	963,818.513	6,430.510	0.000	0.959
	Error	40,917.82	273	149.882			

Table 67e.

SPSS Output for Repeated Measures ANOVA for Males and Females

RIASEC Estimated Marginal Means Measure: MEASURE_1					
				95% Confidence Interval	
Sex	RIASEC	Mean	Std. Error	Lower Bound	Upper Bound
Male	1	29.489	0.700	28.109	30.869
	2	30.399	0.617	29.182	31.616
	3	19.814	0.776	18.284	21.344
	4	30.027	0.568	28.907	31.147
	5	24.340	0.634	23.090	25.590
	6	20.133	0.622	18.906	21.360
Female	1	18.186	0.510	17.181	19.191
	2	30.942	0.496	29.965	31.918
	3	21.617	0.583	20.470	22.764
	4	32.157	0.448	31.274	33.040
	5	21.237	0.517	20.219	22.256
	6	21.139	0.510	20.135	22.142

Table 68a.

SPSS Output for Paired t Tests for Male and Female PAs

Paired Samples Statistics						
Sex			Mean	*N*	Std. Deviation	*SE* Mean
Male	Pair 1	R	29.49	188	9.592	0.700
		I	30.40	188	8.460	0.617
	Pair 2	R	29.49	188	9.592	0.700
		A	19.81	188	10.634	0.776
	Pair 3	R	29.49	188	9.592	0.700
		S	30.03	188	7.785	0.568
	Pair 4	R	29.49	188	9.592	0.700
		E	24.34	188	8.688	0.634
	Pair 5	R	29.49	188	9.592	0.700
		C	20.13	188	8.526	0.622
	Pair 6	I	30.40	188	8.460	0.617
		A	19.81	188	10.634	0.776
	Pair 7	I	30.40	188	8.460	0.617
		S	30.03	188	7.785	0.568
	Pair 8	I	30.40	188	8.460	0.617
		E	24.34	188	8.688	0.634
	Pair 9	I	30.40	188	8.460	0.617
		C	20.13	188	8.526	0.622
	Pair 10	A	19.81	188	10.634	0.776
		S	30.03	188	7.785	0.568
	Pair 11	A	19.81	188	10.634	0.776
		E	24.34	188	8.688	0.634
	Pair 12	A	19.81	188	10.634	0.776
		C	20.13	188	8.526	0.622
	Pair 13	S	30.03	188	7.785	0.568
		E	24.34	188	8.688	0.634
	Pair 14	S	30.03	188	7.785	0.568
		C	20.13	188	8.526	0.622
	Pair 15	E	24.34	188	8.688	0.634
		C	20.13	188	8.526	0.622

Table 68b.

SPSS Output for Paired t Tests for Male and Female PAs

Sex	Pair		Mean	*N*	Std. Deviation	*SE* Mean
Female	Pair 1	R	18.19	274	8.449	0.510
		I	30.94	274	8.212	0.496
	Pair 2	R	18.19	274	8.449	0.510
		A	21.62	274	9.644	0.583
	Pair 3	R	18.19	274	8.449	0.510
		S	32.16	274	7.423	0.448
	Pair 4	R	18.19	274	8.449	0.510
		E	21.24	274	8.562	0.517
	Pair 5	R	18.19	274	8.449	0.510
		C	21.14	274	8.440	0.510
	Pair 6	I	30.94	274	8.212	0.496
		A	21.62	274	9.644	0.583
	Pair 7	I	30.94	274	8.212	0.496
		S	32.16	274	7.423	0.448
	Pair 8	I	30.94	274	8.212	0.496
		E	21.24	274	8.562	0.517
	Pair 9	I	30.94	274	8.212	0.496
		C	21.14	274	8.440	0.510
	Pair 10	A	21.62	274	9.644	0.583
		S	32.16	274	7.423	0.448
	Pair 11	A	21.62	274	9.644	0.583
		E	21.24	274	8.562	0.517
	Pair 12	A	21.62	274	9.644	0.583
		C	21.14	274	8.440	0.510
	Pair 13	S	32.16	274	7.423	0.448
		E	21.24	274	8.562	0.517
	Pair 14	S	32.16	274	7.423	0.448
		C	21.14	274	8.440	0.510
	Pair 15	E	21.24	274	8.562	0.517
		C	21.14	274	8.440	0.510

Table 68c.

SPSS Output for Paired t Tests for Male and Female PAs

Paired Samples Test										
			Paired Differences							
						95% Confidence Interval of the Difference				
Sex			Mean	*S D*	*SE* Mean	Lower	Upper	*t*	*df*	Sig. 2-tailed
M	Pair 1	R - I	-0.91	11.84	0.863	-2.61	0.79	-1.053	187	0.293
	Pair 2	R - A	9.68	13.52	0.986	7.73	11.62	9.813	187	0.000
	Pair 3	R - S	-0.54	12.13	0.885	-2.28	1.21	-0.607	187	0.545
	Pair 4	R - E	5.15	12.34	0.900	3.37	6.92	5.723	187	0.000
	Pair 5	R - C	9.36	11.82	0.862	7.66	11.06	10.852	187	0.000
	Pair 6	I - A	10.59	11.57	0.844	8.92	12.25	12.547	187	0.000
	Pair 7	I - S	0.37	9.17	0.669	-0.95	1.69	0.557	187	0.578
	Pair 8	I - E	6.06	10.25	0.748	4.58	7.53	8.102	187	0.000
	Pair 9	I - C	10.27	10.43	0.760	8.77	11.77	13.502	187	0.000
	Pair 10	A - S	-10.21	10.53	0.768	-11.73	-8.70	-13.300	187	0.000
	Pair 11	A - E	-4.53	12.09	0.881	-6.27	-2.79	-5.136	187	0.000
	Pair 12	A - C	-0.32	12.54	0.914	-2.12	1.48	-0.349	187	0.727
	Pair 13	S - E	5.69	8.87	0.647	4.41	6.96	8.788	187	0.000
	Pair 14	S - C	9.89	10.56	0.770	8.37	11.41	12.841	187	0.000
	Pair 15	E - C	4.21	8.78	0.641	2.94	5.47	6.568	187	0.000
F	Pair 1	R - I	-12.76	10.11	0.611	-13.96	-11.55	-20.893	273	0.000
	Pair 2	R - A	-3.43	10.59	0.640	-4.69	-2.17	-5.364	273	0.000
	Pair 3	R - S	-13.97	10.99	0.664	-15.28	-12.66	-21.040	273	0.000
	Pair 4	R - E	-3.05	11.20	0.677	-4.38	-1.72	-4.509	273	0.000
	Pair 5	R - C	-2.95	10.84	0.655	-4.24	-1.66	-4.510	273	0.000
	Pair 6	I - A	9.32	11.34	0.685	7.98	10.67	13.606	273	0.000
	Pair 7	I - S	-1.22	9.90	0.598	-2.39	-0.04	-2.032	273	0.043
	Pair 8	I - E	9.70	10.27	0.620	8.48	10.93	15.643	273	0.000
	Pair 9	I - C	9.80	10.04	0.607	8.61	11.00	16.157	273	0.000
	Pair 10	A - S	-10.54	10.41	0.629	-11.78	-9.30	-16.763	273	0.000
	Pair 11	A - E	0.38	11.19	0.676	-0.95	1.71	0.561	273	0.575
	Pair 12	A - C	0.48	12.58	0.760	-1.02	1.97	0.629	273	0.530
	Pair 13	S - E	10.92	9.45	0.571	9.80	12.04	19.118	273	0.000
	Pair 14	S - C	11.02	10.68	0.645	9.75	12.29	17.078	273	0.000
	Pair 15	E - C	0.10	9.13	0.551	-0.99	1.18	0.179	273	0.858

Table 69a.

SPSS Output for Independent Samples t Tests of Male and Female PAs

Group Statistics					
	Sex	*N*	Mean	Std. Deviation	Std. Error Mean
R	Male	188	29.49	9.592	0.700
	Female	274	18.19	8.449	0.510
I	Male	188	30.40	8.460	0.617
	Female	274	30.94	8.212	0.496
A	Male	188	19.81	10.634	0.776
	Female	274	21.62	9.644	0.583
S	Male	188	30.03	7.785	0.568
	Female	274	32.16	7.423	0.448
E	Male	188	24.34	8.688	0.634
	Female	274	21.24	8.562	0.517
C	Male	188	20.13	8.526	0.622
	Female	274	21.14	8.440	0.510

Table 69b.

SPSS Output for Independent Samples t Tests of Male and Female PAs

		Levene's Test for Equality of Variances		*t* Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. 2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
R	Equal variances assumed	4.369	0.037	13.363	460	0.00	11.30	0.846	9.641	12.965
	Equal variances not assumed			13.052	367.72	0.00	11.30	0.866	9.600	13.006
I	Equal variances assumed	0.299	0.585	-0.689	460	0.49	-0.54	0.787	-2.090	1.005
	Equal variances not assumed			-0.685	394.11	0.49	-0.54	0.792	-2.099	1.014
A	Equal variances assumed	3.129	0.078	-1.893	460	0.06	-1.80	0.953	-3.675	0.069
	Equal variances not assumed			-1.859	375.65	0.06	-1.80	0.970	-3.710	0.104
S	Equal variances assumed	0.287	0.592	-2.971	460	0.00	-2.13	0.717	-3.540	-0.721
	Equal variances not assumed			-2.944	389.32	0.00	-2.13	0.724	-3.553	-0.708
E	Equal variances assumed	0.156	0.693	3.804	460	0.00	3.10	0.816	1.500	4.706
	Equal variances not assumed			3.794	398.17	0.00	3.10	0.818	1.495	4.711
C	Equal variances assumed	0.007	0.933	-1.253	460	0.21	-1.01	0.803	-2.583	0.572
	Equal variances not assumed			-1.251	399.34	0.21	-1.01	0.804	-2.587	0.575

APPENDIX I

SPSS Output Hypothesis 3

Table 70.

SPSS Output for Kruskal-Wallis Test for Congruence with Career Satisfaction

	Career Satisfaction	*N*	Mean Rank	Statistic (a,b)	Value
Congruence with SIR	Satisfied	88	231.19	Chi-Square	0.719
	Very Satisfied	229	236.21	*df*	2
	Extremely Satisfied	145	224.25	Asymp. Sig.	0.698
	Total	462			

a. Kruskal Wallis Test
b. Grouping Variable: Career Satisfaction

Table 71.

SPSS Output for Kruskal-Wallis Test for Congruence with Specialty Satisfaction

	Specialty Satisfaction	*N*	Mean Rank	Statistic (a,b)	Value
Congruence with SIR	Unsatisfied	1	250.00	Chi-Square	1.924
	Satisfied	45	223.16	*df*	3
	Mostly Satisfied	203	230.36	Asymp. Sig.	0.588
	Extremely Satisfied	194	212.84		
	Total	443			

a. Kruskal Wallis Test
b. Grouping Variable: Specialty Satisfaction

Table 72.

SPSS Output for Kruskal-Wallis Test for Congruence with Job Satisfaction

	Job Satisfaction	*N*	Mean Rank	Statistic (a,b)	Value
Congruence with SIR	Extremely Unsatisfied	2	273.50	Chi-Square	8.328
	Unsatisfied	11	264.09	*df*	4
	Satisfied	106	257.09	Asymp. Sig.	0.080
	Mostly Satisfied	207	220.15		
	Extremely Satisfied	130	214.78		
	Total	456			

a. Kruskal Wallis Test
b. Grouping Variable: Job Satisfaction

APPENDIX J

SPSS Output Hypothesis 4

Table 73.

SPSS Output for Mann-Whitney U Test of Congruence and Age

	Age	*N*	Mean Rank	Sum of Ranks	Statistics	Values
Congruence with SIR	Under 35	159	239.86	38,137.00	Mann-Whitney *U*	22,919.000
	35 and Over	304	227.89	69,279.00	Wilcoxon *W*	69,279.000
	Total	463			*Z*	-0.917
					Asymp. Sig. (2-tailed)	0.359

a. Grouping Variable: Age

Table 74a.

SPSS Output for Mann-Whitney U Test of Age and Satisfaction Variables

Variable	Age	*N*	Mean Rank	Sum of Ranks
Career Satisfaction	Under 35	336	540.51	181,611.00
	35 and Over	739	536.86	396,739.00
	Total	1,075		
Specialty Satisfaction	Under 35	304	494.38	150,293.00
	35 and Over	717	518.04	371,438.00
	Total	1,021		
Job Satisfaction	Under 35	332	482.29	160,119.50
	35 and Over	670	511.02	342,383.50
	Total	1,002		
Likelihood to Refer	Under 35	334	551.06	184,053.00
	35 and Over	732	525.49	384,658.00
	Total	1,066		

Table 74b.

SPSS Output for Mann-Whitney U Test of Age and Satisfaction Variables

Test Statistics(a)	Career Satisfaction	Specialty Satisfaction	Job Satisfaction	Likelihood to Refer
Mann-Whitney *U*	123,309.000	103,933.000	104,841.500	116,380.000
Wilcoxon W	396,739.000	150,293.000	160,119.500	384,658.000
Z	-0.192	-1.272	-1.570	-1.410
Asymp. Sig. (2-tailed)	0.847	0.203	0.116	0.158

a. Grouping Variable: Age

Table 75a.

SPSS Output for One-way ANOVA Test of Age and Career Satisfaction

Descriptives Age								
					95% Confidence Interval for Mean			
	N	Mean	*SD*	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Extremely Unsatisfied	7	42.14	9.05	3.419	33.78	50.51	27	52
Very Dissatisfied	13	42.15	8.34	2.312	37.12	47.19	28	56
Unsatisfied	36	39.92	10.11	1.685	36.50	43.34	24	63
Satisfied	217	40.94	10.12	0.687	39.59	42.30	24	84
Very Satisfied	516	40.72	10.22	0.450	39.84	41.61	24	72
Extremely Satisfied	286	42.27	10.50	0.621	41.05	43.49	24	76
Total	1,075	41.18	10.25	0.313	40.57	41.79	24	84

Table 75b.

SPSS Output for One-way ANOVA Test of Age and Career Satisfaction

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	535.433	5	107.087	1.020	0.404
Within Groups	112,236.275	1,069	104.992		
Total	112,771.708	1,074			

Table 76a.

SPSS Output for One-way ANOVA Test of Age and Specialty Satisfaction

Descriptives

Age

	N	Mean	*SD*	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Extremely Unsatisfied	4	45.25	6.40	3.198	35.07	55.43	38	52
Mostly Dissatisfied	2	46.00	0.00	0.000	46.00	46.00	46	46
Unsatisfied	17	38.47	7.95	1.929	34.38	42.56	27	55
Satisfied	146	40.77	9.49	0.785	39.22	42.33	24	84
Mostly Satisfied	460	40.47	9.80	0.457	39.57	41.37	24	69
Extremely Satisfied	392	43.09	10.76	0.543	42.02	44.15	24	76
Total	1,021	41.51	10.16	0.318	40.89	42.14	24	84

Table 76b.

SPSS Output for One-way ANOVA Test of Age and Specialty Satisfaction

ANOVA

Age

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1,804.893	5	360.979	3.539	0.004
Within Groups	103,532.151	1,015	102.002		
Total	105,337.044	1,020			

Table 77a.

SPSS Output Post hoc Test of Age and Specialty Satisfaction

Multiple Comparisons: Scheffe test Dependent Variable: Age

(I) Specialty Satisfaction	(J) Specialty Satisfaction	Mean Diff (I-J)	*SE*	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Extremely Unsatisfied	Mostly Dissatisfied	-.75	8.747	1.000	-29.91	28.41
	Unsatisfied	6.78	5.613	.918	-11.93	25.49
	Satisfied	4.48	5.119	.979	-12.59	21.54
	Mostly Satisfied	4.78	5.072	.971	-12.13	21.69
	Extremely Satisfied	2.16	5.076	.999	-14.76	19.08
Mostly Dissatisfied	Extremely Unsatisfied	.75	8.747	1.000	-28.41	29.91
	Unsatisfied	7.53	7.550	.963	-17.64	32.70
	Satisfied	5.23	7.190	.991	-18.75	29.20
	Mostly Satisfied	5.53	7.157	.988	-18.33	29.39
	Extremely Satisfied	2.91	7.160	.999	-20.96	26.78
Unsatisfied	Extremely Unsatisfied	-6.78	5.613	.918	-25.49	11.93
	Mostly Dissatisfied	-7.53	7.550	.963	-32.70	17.64
	Satisfied	-2.30	2.588	.977	-10.93	6.33
	Mostly Satisfied	-2.00	2.494	.986	-10.31	6.32
	Extremely Satisfied	-4.62	2.502	.638	-12.96	3.73
Satisfied	Extremely Unsatisfied	-4.48	5.119	.979	-21.54	12.59
	Mostly Dissatisfied	-5.23	7.190	.991	-29.20	18.75
	Unsatisfied	2.30	2.588	.977	-6.33	10.93
	Mostly Satisfied	.30	.959	1.000	-2.89	3.50
	Extremely Satisfied	-2.31	.979	.350	-5.58	.95
Mostly Satisfied	Extremely Unsatisfied	-4.78	5.072	.971	-21.69	12.13
	Mostly Dissatisfied	-5.53	7.157	.988	-29.39	18.33
	Unsatisfied	2.00	2.494	.986	-6.32	10.31
	Satisfied	-.30	.959	1.000	-3.50	2.89
	Extremely Satisfied*	-2.62	.694	.015	-4.93	-.30
Extremely Satisfied	Extremely Unsatisfied	-2.16	5.076	.999	-19.08	14.76
	Mostly Dissatisfied	-2.91	7.160	.999	-26.78	20.96
	Unsatisfied	4.62	2.502	.638	-3.73	12.96
	Satisfied	2.31	.979	.350	-.95	5.58
	Mostly Satisfied*	2.62	.694	.015	.30	4.93

*statistically significant at p = 0.05

Table 77b.

SPSS Output Post hoc Test of Age and Specialty Satisfaction

Age			
			Subset for alpha = .05
	Specialty Satisfaction	*N*	1
Scheffe(a,b)	Unsatisfied	17	38.47
	Mostly Satisfied	460	40.47
	Satisfied	146	40.77
	Extremely Satisfied	392	43.09
	Extremely Unsatisfied	4	45.25
	Mostly Dissatisfied	2	46.00
	Sig.		0.845

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 7.314.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 78a.

SPSS Output for One-way ANOVA Test of Age and Job Satisfaction

Descriptives Age								
					95% Confidence Interval for Mean			
	N	Mean	*SD*	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Extremely Unsatisfied	9	43.78	5.911	1.970	39.23	48.32	31	52
Mostly Dissatisfied	11	40.73	7.913	2.386	35.41	46.04	27	54
Unsatisfied	62	38.97	10.308	1.309	36.35	41.59	24	62
Satisfied	227	39.79	9.826	0.652	38.50	41.07	24	66
Mostly Satisfied	440	40.45	9.558	0.456	39.55	41.34	24	69
Extremely Satisfied	253	41.95	10.332	0.650	40.67	43.23	24	69
Total	1,002	40.62	9.848	0.311	40.01	41.23	24	69

Table 78b.

SPSS Output for One-way ANOVA Test of Age and Job Satisfaction

ANOVA

Age

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	875.714	5	175.143	1.813	0.108
Within Groups	96,212.653	996	96.599		
Total	97,088.367	1,001			

APPENDIX K

SPSS Output Specialty Evaluation

Table 79a.

SPSS Output Repeated Measures ANOVA Surgery and FP PAs

Descriptive Statistics				
Specialty Preference		Mean	Std. Deviation	*N*
Surgery	R	26.14	10.605	76
	I	29.82	9.140	76
	A	19.43	9.336	76
	S	29.49	6.279	76
	E	24.42	8.796	76
	C	22.46	7.917	76
Family General Practice	R	21.93	10.820	144
	I	30.56	7.562	144
	A	20.29	9.847	144
	S	32.53	7.412	144
	E	22.07	8.863	144
	C	20.44	8.561	144

Table 79b.

SPSS Output Repeated Measures ANOVA Surgery and FP PAs

Tests of Within-Subjects Effects Measure: MEASURE_1								
Specialty Preference	Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Surgery	RIASEC	Sphericity Assumed	6,222.73	5	1,244.55	21.60	0.00	0.22
		Greenhouse-Geisser	6,222.73	4.262	1,460.22	21.60	0.00	0.22
		Huynh-Feldt	6,222.73	4.550	1,367.57	21.60	0.00	0.22
		Lower-bound	6,222.73	1.000	6,222.73	21.60	0.00	0.22
	Error (RIASEC)	Sphericity Assumed	21,603.61	375	57.61			
		Greenhouse-Geisser	21,603.61	319.613	67.59			
		Huynh-Feldt	21,603.61	341.265	63.30			
		Lower-bound	21,603.61	75.000	288.05			
Family General Practice	RIASEC	Sphericity Assumed	21,264.52	5	4,252.91	65.36	0.00	0.31
		Greenhouse-Geisser	21,264.52	4.262	4,988.85	65.36	0.00	0.31
		Huynh-Feldt	21,264.52	4.410	4,822.25	65.36	0.00	0.31
		Lower-bound	21,264.52	1.000	21,264.52	65.36	0.00	0.31
	Error (RIASEC)	Sphericity Assumed	46,524.14	715	65.07			
		Greenhouse-Geisser	46,524.14	609.524	76.33			
		Huynh-Feldt	46,524.14	630.582	73.78			
		Lower-bound	46,524.14	143.000	325.34			

Table 79c.

SPSS Output Repeated Measures ANOVA Surgery and FP PAs

Tests of Within-Subjects Contrasts
Measure: MEASURE_1

Specialty Preference	Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Surgery	RIASEC	Linear	654.50	1	654.50	8.443	0.005	0.101
		Quadratic	43.01	1	43.01	0.746	0.390	0.010
		Cubic	183.87	1	183.87	3.592	0.062	0.046
		Order 4	717.90	1	717.90	13.516	0.000	0.153
		Order 5	4,623.44	1	4,623.44	95.154	0.000	0.559
	Error (RIASEC)	Linear	5,814.21	75	77.52			
		Quadratic	4,322.75	75	57.64			
		Cubic	3,838.79	75	51.18			
		Order 4	3,983.67	75	53.12			
		Order 5	3,644.18	75	48.59			
Family General Practice	RIASEC	Linear	877.45	1	877.45	11.548	0.001	0.075
		Quadratic	4,640.38	1	4,640.38	51.208	0.000	0.264
		Cubic	7.33	1	7.33	0.131	0.718	0.001
		Order 4	500.10	1	500.10	10.336	0.002	0.067
		Order 5	15,239.26	1	15,239.26	279.974	0.000	0.662
	Error (RIASEC)	Linear	10,865.07	143	75.98			
		Quadratic	12,958.50	143	90.62			
		Cubic	7,998.26	143	55.93			
		Order 4	6,918.67	143	48.38			
		Order 5	7,783.64	143	54.43			

Table 79d.

SPSS Output Repeated Measures ANOVA Surgery and FP PAs

Tests of Between-Subjects Effects
Measure: MEASURE_1
Transformed Variable: Average

Specialty Preference	Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Surgery	Intercept	291,739.377	1	291,739.377	1,670.992	0.000	0.957
	Error	13,094.289	75	174.591			
Family General Practice	Intercept	524,414.116	1	524,414.116	3,435.360	0.000	0.960
	Error	21,829.218	143	152.652			

Table 79e.

SPSS Output Repeated Measures ANOVA Surgery and FP PAs

RIASEC Estimated Marginal Means Measure: MEASURE_1					
				95% Confidence Interval	
Specialty Preference	RIASEC	Mean	Std. Error	Lower Bound	Upper Bound
Surgery	1	26.145	1.217	23.721	28.568
	2	29.816	1.048	27.727	31.904
	3	19.434	1.071	17.301	21.568
	4	29.487	0.720	28.052	30.922
	5	24.421	1.009	22.411	26.431
	6	22.461	0.908	20.651	24.270
Family General Practice	1	21.931	0.902	20.148	23.713
	2	30.556	0.630	29.310	31.801
	3	20.292	0.821	18.670	21.914
	4	32.528	0.618	31.307	33.749
	5	22.069	0.739	20.609	23.529
	6	20.444	0.713	19.034	21.855

Table 80a.

SPSS Output Paired Samples t Tests for Surgery and FP PAs

Paired Samples Statistics						
Specialty Preference			Mean	*N*	Std. Deviation	Std. Error Mean
Surgery	Pair 1	R	26.14	76	10.605	1.217
		I	29.82	76	9.140	1.048
	Pair 2	R	26.14	76	10.605	1.217
		A	19.43	76	9.336	1.071
	Pair 3	R	26.14	76	10.605	1.217
		S	29.49	76	6.279	0.720
	Pair 4	R	26.14	76	10.605	1.217
		E	24.42	76	8.796	1.009
	Pair 5	R	26.14	76	10.605	1.217
		C	22.46	76	7.917	0.908
	Pair 6	I	29.82	76	9.140	1.048
		A	19.43	76	9.336	1.071
	Pair 7	I	29.82	76	9.140	1.048
		S	29.49	76	6.279	0.720
	Pair 8	I	29.82	76	9.140	1.048
		E	24.42	76	8.796	1.009
	Pair 9	I	29.82	76	9.140	1.048
		C	22.46	76	7.917	0.908
	Pair 10	A	19.43	76	9.336	1.071
		S	29.49	76	6.279	0.720
	Pair 11	A	19.43	76	9.336	1.071
		E	24.42	76	8.796	1.009
	Pair 12	A	19.43	76	9.336	1.071
		C	22.46	76	7.917	0.908
	Pair 13	S	29.49	76	6.279	0.720
		E	24.42	76	8.796	1.009
	Pair 14	S	29.49	76	6.279	0.720
		C	22.46	76	7.917	0.908
	Pair 15	E	24.42	76	8.796	1.009
		C	22.46	76	7.917	0.908

Table 80b.

SPSS Output Paired Samples t Tests for Surgery and FP PAs

Specialty			Mean	*N*	Std. Deviation	Std. Error Mean
Family General Practice	Pair 1	R	21.93	144	10.820	0.902
		I	30.56	144	7.562	0.630
	Pair 2	R	21.93	144	10.820	0.902
		A	20.29	144	9.847	0.821
	Pair 3	R	21.93	144	10.820	0.902
		S	32.53	144	7.412	0.618
	Pair 4	R	21.93	144	10.820	0.902
		E	22.07	144	8.863	0.739
	Pair 5	R	21.93	144	10.820	0.902
		C	20.44	144	8.561	0.713
	Pair 6	I	30.56	144	7.562	0.630
		A	20.29	144	9.847	0.821
	Pair 7	I	30.56	144	7.562	0.630
		S	32.53	144	7.412	0.618
	Pair 8	I	30.56	144	7.562	0.630
		E	22.07	144	8.863	0.739
	Pair 9	I	30.56	144	7.562	0.630
		C	20.44	144	8.561	0.713
	Pair 10	A	20.29	144	9.847	0.821
		S	32.53	144	7.412	0.618
	Pair 11	A	20.29	144	9.847	0.821
		E	22.07	144	8.863	0.739
	Pair 12	A	20.29	144	9.847	0.821
		C	20.44	144	8.561	0.713
	Pair 13	S	32.53	144	7.412	0.618
		E	22.07	144	8.863	0.739
	Pair 14	S	32.53	144	7.412	0.618
		C	20.44	144	8.561	0.713
	Pair 15	E	22.07	144	8.863	0.739
		C	20.44	144	8.561	0.713

Table 80c.

SPSS Output Paired Samples t Tests for Surgery and FP PAs

Paired Samples Test										
			Paired Differences							
						95% Confidence Interval of the Difference				
Specialty Preference			Mean	*SD*	*SE* Mean	Lower	Upper	*t*	*df*	Sig. 2-tailed
Surgery	Pair 1	R - I	-3.67	11.68	1.34	-6.34	-1.00	-2.74	75	0.008
	Pair 2	R - A	6.71	12.03	1.38	3.96	9.46	4.86	75	0.000
	Pair 3	R - S	-3.34	11.90	1.37	-6.06	-0.62	-2.450	75	0.017
	Pair 4	R - E	1.72	12.68	1.45	-1.17	4.62	1.19	75	0.240
	Pair 5	R - C	3.68	11.84	1.36	0.98	6.39	2.71	75	0.008
	Pair 6	I - A	10.38	11.61	1.33	7.73	13.03	7.80	75	0.000
	Pair 7	I - S	0.33	10.08	1.16	-1.97	2.63	0.29	75	0.777
	Pair 8	I - E	5.39	10.68	1.23	2.96	7.83	4.41	75	0.000
	Pair 9	I - C	7.36	8.75	1.00	5.35	9.36	7.33	75	0.000
	Pair 10	A - S	-10.05	10.02	1.15	-12.34	-7.76	-8.75	75	0.000
	Pair 11	A - E	-4.99	11.57	1.33	-7.63	-2.34	-3.76	75	0.000
	Pair 12	A - C	-3.03	11.03	1.27	-5.55	-0.51	-2.39	75	0.019
	Pair 13	S - E	5.07	8.94	1.03	3.02	7.11	4.94	75	0.000
	Pair 14	S - C	7.03	8.70	1.00	5.04	9.01	7.05	75	0.000
	Pair 15	E - C	1.96	8.14	0.93	0.10	3.82	2.10	75	0.039
Family General Practice	Pair 1	R - I	-8.63	13.04	1.09	-10.77	-6.48	-7.94	143	0.000
	Pair 2	R - A	1.64	13.87	1.16	-0.65	3.92	1.42	143	0.158
	Pair 3	R - S	-10.60	13.36	1.11	-12.80	-8.40	-9.52	143	0.000
	Pair 4	R - E	-0.14	12.65	1.05	-2.22	1.95	-0.13	143	0.895
	Pair 5	R - C	1.49	12.87	1.07	-0.63	3.61	1.39	143	0.168
	Pair 6	I - A	10.26	11.12	0.93	8.43	12.10	11.08	143	0.000
	Pair 7	I - S	-1.97	8.55	0.71	-3.38	-0.56	-2.77	143	0.006
	Pair 8	I - E	8.49	10.21	0.85	6.80	10.17	9.97	143	0.000
	Pair 9	I - C	10.11	10.40	0.87	8.40	11.82	11.66	143	0.000
	Pair 10	A - S	-12.24	10.13	0.84	-13.91	-10.57	-14.49	143	0.000
	Pair 11	A - E	-1.78	11.51	0.96	-3.67	0.12	-1.85	143	0.066
	Pair 12	A - C	-0.15	11.78	0.98	-2.09	1.79	-0.16	143	0.877
	Pair 13	S - E	10.46	9.76	0.813	8.85	12.07	12.86	143	0.000
	Pair 14	S - C	12.08	10.90	0.91	10.29	13.88	13.31	143	0.000
	Pair 15	E - C	1.63	9.41	0.78	0.07	3.18	2.07	143	0.040

Table 81a.

SPSS Independent Samples t Tests for Surgery and FP PAs

Group Statistics					
	Specialty Preference	*N*	Mean	Std. Deviation	Std. Error Mean
R	Surgery	76	26.14	10.605	1.217
	Family General Practice	144	21.93	10.820	0.902
I	Surgery	76	29.82	9.140	1.048
	Family General Practice	144	30.56	7.562	0.630
A	Surgery	76	19.43	9.336	1.071
	Family General Practice	144	20.29	9.847	0.821
S	Surgery	76	29.49	6.279	0.720
	Family General Practice	144	32.53	7.412	0.618
E	Surgery	76	24.42	8.796	1.009
	Family General Practice	144	22.07	8.863	0.739
C	Surgery	76	22.46	7.917	0.908
	Family General Practice	144	20.44	8.561	0.713

Table 81b.

SPSS Independent Samples t Tests for Surgery and FP PAs

		Independent Samples Test								
		Levene's Test for Equality of Variances		*t* Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Diff	SE Diff	Lower	Upper
R	Equal variances assumed	0.242	0.623	2.766	218	0.006	4.21	1.524	1.211	7.217
	Equal variances not assumed			2.783	155.436	0.006	4.21	1.514	1.223	7.205
I	Equal variances assumed	3.600	0.059	-0.641	218	0.522	-0.74	1.154	-3.014	1.535
	Equal variances not assumed			-0.605	130.077	0.546	-0.74	1.223	-3.160	1.680
A	Equal variances assumed	0.243	0.623	-0.625	218	0.533	-0.86	1.372	-3.561	1.846
	Equal variances not assumed			-0.636	160.001	0.526	-0.86	1.349	-3.522	1.807
S	Equal variances assumed	2.960	0.087	-3.045	218	0.003	-3.04	0.999	-5.009	-1.073
	Equal variances not assumed			-3.205	175.961	0.002	-3.04	0.949	-4.913	-1.168
E	Equal variances assumed	0.000	0.989	1.876	218	0.062	2.35	1.253	-0.119	4.822
	Equal variances not assumed			1.881	153.761	0.062	2.35	1.250	-0.119	4.822
C	Equal variances assumed	0.074	0.786	1.704	218	0.090	2.02	1.183	-0.316	4.348
	Equal variances not assumed			1.746	163.473	0.083	2.02	1.155	-0.264	4.296

Table 82.

SPSS Output Chi-square Test for Proportion of Current Specialty Surgery and FP PAs as Compared to AAPA

Specialty	Sex	Observed *N*	Expected *N*	Residual	Statistic	Value
Surgery	Male	97	81.1	15.9	Chi-Square	5.404
	Female	96	111.9	-15.9	*df*	1
	Total	193			Asymp. Sig.	0.020
Family General Medicine	Male	130	133.1	-3.1	Chi-Square	0.128
	Female	187	183.9	3.1	*df*	1
	Total	317			Asymp. Sig.	0.721

Table 83.

SPSS Output Chi-square Test for Proportion of Preferred Specialty Surgery and FP PAs as Compared to AAPA

Specialty Preference	Sex	Observed *N*	Expected *N*	Residual	Statistic	Value
Surgery	Male	111	88.6	22.4	Chi-Square	9.745
	Female	100	122.4	-22.4	*df*	1
	Total	211			Asymp. Sig.	0.002
Family General Practice	Male	144	141.5	2.5	Chi-Square	0.074
	Female	193	195.5	-2.5	*df*	1
	Total	337			Asymp. Sig.	0.786

Table 84.

SPSS Output Chi-square Test for Proportion of Male and Female PAs Preferring Surgery as Compared to AAPA

Sex	Observed N	Expected *N*	Residual	Statistic	Value
Male	38	31.9	6.1	Chi-Square	1.997
Female	38	44.1	-6.1	*df*	1
Total	76			Asymp. Sig.	0.158

Table 85a.

SPSS Output Repeated Measures ANOVA Test for Male and Female Surgical Profiles

Descriptive Statistics				
Sex		Mean	Std. Deviation	*N*
Male	R	31.58	8.317	38
	I	29.58	8.143	38
	A	18.26	10.495	38
	S	29.42	6.241	38
	E	26.50	9.040	38
	C	21.84	8.320	38
Female	R	20.71	9.907	38
	I	30.05	10.145	38
	A	20.61	7.982	38
	S	29.55	6.400	38
	E	22.34	8.138	38
	C	23.08	7.553	38

Table 85b.

SPSS Output Repeated Measures ANOVA Test for Male and Female Surgical Profiles

Tests of Within-Subjects Effects Measure: MEASURE_1								
Sex	Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
M	RIASEC	Sphericity Assumed	5,046.408	5	1,009.282	22.16	0.000	0.375
		Greenhouse-Geisser	5,046.408	3.645	1,384.456	22.16	0.000	0.375
		Huynh-Feldt	5,046.408	4.093	1,233.027	22.16	0.000	0.375
		Lower-bound	5,046.408	1.000	5,046.408	22.16	0.000	0.375
	Error (RIASEC)	Sphericity Assumed	8,426.425	185	45.548			
		Greenhouse-Geisser	8,426.425	134.867	62.480			
		Huynh-Feldt	8,426.425	151.430	55.646			
		Lower-bound	8,426.425	37.000	227.741			
F	RIASEC	Sphericity Assumed	3,514.759	5	702.952	12.00	0.000	0.245
		Greenhouse-Geisser	3,514.759	3.997	879.436	12.00	0.000	0.245
		Huynh-Feldt	3,514.759	4.541	773.992	12.00	0.000	0.245
		Lower-bound	3,514.759	1.000	3,514.759	12.00	0.001	0.245
	Error (RIASEC)	Sphericity Assumed	10,838.741	185	58.588			
		Greenhouse-Geisser	10,838.741	147.874	73.297			
		Huynh-Feldt	10,838.741	168.020	64.509			
		Lower-bound	10,838.741	37.000	292.939			

Table 85c.

SPSS Output Repeated Measures ANOVA Test for Male and Female Surgical Profiles

Tests of Within-Subjects Contrasts Measure: MEASURE_1								
Sex	Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
M	RIASEC	Linear	1,187.116	1	1,187.116	22.452	0.000	0.378
		Quadratic	186.228	1	186.228	4.842	0.034	0.116
		Cubic	1,087.212	1	1,087.212	35.404	0.000	0.489
		Order 4	513.272	1	513.272	10.146	0.003	0.215
		Order 5	2,072.580	1	2,072.580	37.609	0.000	0.504
	Error (RIASEC)	Linear	1,956.327	37	52.874			
		Quadratic	1,423.069	37	38.461			
		Cubic	1,136.238	37	30.709			
		Order 4	1,871.764	37	50.588			
		Order 5	2,039.027	37	55.109			
F	RIASEC	Linear	2.978	1	2.978	0.033	0.856	0.001
		Quadratic	525.384	1	525.384	8.713	0.005	0.191
		Cubic	190.333	1	190.333	4.377	0.043	0.106
		Order 4	232.151	1	232.151	4.121	0.050	0.100
		Order 5	2,563.912	1	2,563.912	59.585	0.000	0.617
	Error (RIASEC)	Linear	3,322.294	37	89.792			
		Quadratic	2,231.081	37	60.299			
		Cubic	1,608.883	37	43.483			
		Order 4	2,084.384	37	56.335			
		Order 5	1,592.100	37	43.030			

Table 85d.

SPSS Output Repeated Measures ANOVA Test for Male and Female Surgical Profiles

Tests of Between-Subjects Effects Measure: MEASURE_1 Transformed Variable: Average							
Sex	Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Male	Intercept	156,476.882	1	156,476.882	753.146	0.000	0.953
	Error	7,687.285	37	207.764			
Female	Intercept	135,634.741	1	135,634.741	996.768	0.000	0.964
	Error	5,034.759	37	136.075			

Table 85e.

SPSS Output Repeated Measures ANOVA Test for Male and Female Surgical Profiles

RIASEC Estimated Marginal Means Measure: MEASURE_1					
				95% Confidence Interval	
Sex	RIASEC	Mean	Std. Error	Lower Bound	Upper Bound
Male	1	31.579	1.349	28.845	34.313
	2	29.579	1.321	26.902	32.255
	3	18.263	1.703	14.814	21.713
	4	29.421	1.012	27.370	31.472
	5	26.500	1.466	23.529	29.471
	6	21.842	1.350	19.107	24.577
Female	1	20.711	1.607	17.454	23.967
	2	30.053	1.646	26.718	33.387
	3	20.605	1.295	17.982	23.229
	4	29.553	1.038	27.449	31.656
	5	22.342	1.320	19.667	25.017
	6	23.079	1.225	20.596	25.562

Table 86a.

SPSS Output Paired Samples t Tests for Male and Female Surgical Profiles

Paired Samples Statistics						
Sex			Mean	*N*	Std. Deviation	Std. Error Mean
Male	Pair 1	R	31.58	38	8.317	1.349
		I	29.58	38	8.143	1.321
	Pair 2	R	31.58	38	8.317	1.349
		A	18.26	38	10.495	1.703
	Pair 3	R	31.58	38	8.317	1.349
		S	29.42	38	6.241	1.012
	Pair 4	R	31.58	38	8.317	1.349
		E	26.50	38	9.040	1.466
	Pair 5	R	31.58	38	8.317	1.349
		C	21.84	38	8.320	1.350
	Pair 6	I	29.58	38	8.143	1.321
		A	18.26	38	10.495	1.703
	Pair 7	I	29.58	38	8.143	1.321
		S	29.42	38	6.241	1.012
	Pair 8	I	29.58	38	8.143	1.321
		E	26.50	38	9.040	1.466
	Pair 9	I	29.58	38	8.143	1.321
		C	21.84	38	8.320	1.350
	Pair 10	A	18.26	38	10.495	1.703
		S	29.42	38	6.241	1.012
	Pair 11	A	18.26	38	10.495	1.703
		E	26.50	38	9.040	1.466
	Pair 12	A	18.26	38	10.495	1.703
		C	21.84	38	8.320	1.350
	Pair 13	S	29.42	38	6.241	1.012
		E	26.50	38	9.040	1.466
	Pair 14	S	29.42	38	6.241	1.012
		C	21.84	38	8.320	1.350
	Pair 15	E	26.50	38	9.040	1.466
		C	21.84	38	8.320	1.350

Table 86b.

SPSS Output Paired Samples t Tests for Male and Female Surgical Profiles

Sex			Mean	*N*	Std. Deviation	Std. Error Mean
Female	Pair 1	R	20.71	38	9.907	1.607
		I	30.05	38	10.145	1.646
	Pair 2	R	20.71	38	9.907	1.607
		A	20.61	38	7.982	1.295
	Pair 3	R	20.71	38	9.907	1.607
		S	29.55	38	6.400	1.038
	Pair 4	R	20.71	38	9.907	1.607
		E	22.34	38	8.138	1.320
	Pair 5	R	20.71	38	9.907	1.607
		C	23.08	38	7.553	1.225
	Pair 6	I	30.05	38	10.145	1.646
		A	20.61	38	7.982	1.295
	Pair 7	I	30.05	38	10.145	1.646
		S	29.55	38	6.400	1.038
	Pair 8	I	30.05	38	10.145	1.646
		E	22.34	38	8.138	1.320
	Pair 9	I	30.05	38	10.145	1.646
		C	23.08	38	7.553	1.225
	Pair 10	A	20.61	38	7.982	1.295
		S	29.55	38	6.400	1.038
	Pair 11	A	20.61	38	7.982	1.295
		E	22.34	38	8.138	1.320
	Pair 12	A	20.61	38	7.982	1.295
		C	23.08	38	7.553	1.225
	Pair 13	S	29.55	38	6.400	1.038
		E	22.34	38	8.138	1.320
	Pair 14	S	29.55	38	6.400	1.038
		C	23.08	38	7.553	1.225
	Pair 15	E	22.34	38	8.138	1.320
		C	23.08	38	7.553	1.225

Table 86c.

SPSS Output Paired Samples t Tests for Male and Female Surgical Profiles

Paired Samples Test										
			Paired Differences							
						95% Confidence Interval of the Difference				
Sex			Mean	*SD*	*SE* Mean	Lower	Upper	*t*	*df*	Sig. 2-tailed
M	Pair 1	R - I	2.00	9.481	1.538	-1.12	5.12	1.300	37	0.202
	Pair 2	R - A	13.32	9.626	1.561	10.15	16.48	8.528	37	0.000
	Pair 3	R - S	2.16	9.027	1.464	-0.81	5.13	1.474	37	0.149
	Pair 4	R - E	5.08	10.354	1.680	1.68	8.48	3.024	37	0.005
	Pair 5	R - C	9.74	9.281	1.506	6.69	12.79	6.467	37	0.000
	Pair 6	I - A	11.32	12.677	2.056	7.15	15.48	5.502	37	0.000
	Pair 7	I - S	0.16	8.059	1.307	-2.49	2.81	0.121	37	0.905
	Pair 8	I - E	3.08	9.393	1.524	-0.01	6.17	2.021	37	0.051
	Pair 9	I - C	7.74	7.639	1.239	5.23	10.25	6.243	37	0.000
	Pair 10	A - S	-11.16	10.149	1.646	-14.49	-7.82	-6.777	37	0.000
	Pair 11	A - E	-8.24	11.707	1.899	-12.08	-4.39	-4.337	37	0.000
	Pair 12	A - C	-3.58	11.018	1.787	-7.20	0.04	-2.002	37	0.053
	Pair 13	S - E	2.92	7.933	1.287	0.31	5.53	2.270	37	0.029
	Pair 14	S - C	7.58	8.459	1.372	4.80	10.36	5.523	37	0.000
	Pair 15	E - C	4.66	6.394	1.037	2.56	6.76	4.491	37	0.000
F	Pair 1	R - I	-9.34	10.987	1.782	-12.95	-5.73	-5.241	37	0.000
	Pair 2	R - A	0.11	10.534	1.709	-3.36	3.57	0.062	37	0.951
	Pair 3	R - S	-8.84	11.967	1.941	-12.78	-4.91	-4.555	37	0.000
	Pair 4	R - E	-1.63	13.980	2.268	-6.23	2.96	-0.719	37	0.476
	Pair 5	R - C	-2.37	11.085	1.798	-6.01	1.28	-1.317	37	0.196
	Pair 6	I - A	9.45	10.521	1.707	5.99	12.91	5.535	37	0.000
	Pair 7	I - S	0.50	11.864	1.925	-3.40	4.40	0.260	37	0.796
	Pair 8	I - E	7.71	11.479	1.862	3.94	11.48	4.141	37	0.000
	Pair 9	I - C	6.97	9.832	1.595	3.74	10.21	4.372	37	0.000
	Pair 10	A - S	-8.95	9.897	1.605	-12.20	-5.69	-5.573	37	0.000
	Pair 11	A - E	-1.74	10.620	1.723	-5.23	1.75	-1.008	37	0.320
	Pair 12	A - C	-2.47	11.157	1.810	-6.14	1.19	-1.367	37	0.180
	Pair 13	S - E	7.21	9.467	1.536	4.10	10.32	4.695	37	0.000
	Pair 14	S - C	6.47	9.004	1.461	3.51	9.43	4.432	37	0.000
	Pair 15	E - C	-0.74	8.867	1.438	-3.65	2.18	-0.512	37	0.612

Table 87a.

SPSS Output Independent Samples t Tests for Male and Female Surgical Profiles

Group Statistics					
	Sex	*N*	Mean	Std. Deviation	Std. Error Mean
R	Male	38	31.58	8.317	1.349
	Female	38	20.71	9.907	1.607
I	Male	38	29.58	8.143	1.321
	Female	38	30.05	10.145	1.646
A	Male	38	18.26	10.495	1.703
	Female	38	20.61	7.982	1.295
S	Male	38	29.42	6.241	1.012
	Female	38	29.55	6.400	1.038
E	Male	38	26.50	9.040	1.466
	Female	38	22.34	8.138	1.320
C	Male	38	21.84	8.320	1.350
	Female	38	23.08	7.553	1.225

Table 87b.

SPSS Output Independent Samples t Tests for Male and Female Surgical Profiles

		Independent Samples Test								
		Levene's Test for Equality of Variances		*t* Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. 2-tailed	Mean Diff	*SE* Diff	Lower	Upper
R	Equal variances assumed	1.084	0.301	5.179	74	0.000	10.87	2.098	6.687	15.050
	Equal variances not assumed			5.179	71.84	0.000	10.87	2.098	6.685	15.052
I	Equal variances assumed	2.858	0.095	-0.224	74	0.823	-0.47	2.110	-4.678	3.731
	Equal variances not assumed			-0.224	70.69	0.823	-0.47	2.110	-4.682	3.734
A	Equal variances assumed	2.677	0.106	-1.095	74	0.277	-2.34	2.139	-6.604	1.920
	Equal variances not assumed			-1.095	69.07	0.277	-2.34	2.139	-6.609	1.925
S	Equal variances assumed	0.003	0.954	-0.091	74	0.928	-0.13	1.450	-3.021	2.758
	Equal variances not assumed			-0.091	73.95	0.928	-0.13	1.450	-3.021	2.758
E	Equal variances assumed	0.250	0.619	2.107	74	0.038	4.16	1.973	0.226	8.089
	Equal variances not assumed			2.107	73.20	0.039	4.16	1.973	0.226	8.090
C	Equal variances assumed	0.176	0.676	-0.679	74	0.500	-1.24	1.823	-4.869	2.395
	Equal variances not assumed			-0.679	73.32	0.500	-1.24	1.823	-4.870	2.396

Table 88a.

SPSS Output Repeated Measures ANOVA Test for Male and Female FP Profiles

Descriptive Statistics				
Sex		Mean	Std. Deviation	*N*
Male	R	29.65	10.418	55
	I	30.82	8.334	55
	A	19.47	10.642	55
	S	31.87	7.998	55
	E	24.16	8.032	55
	C	19.27	7.957	55
Female	R	17.16	7.957	89
	I	30.39	7.088	89
	A	20.80	9.348	89
	S	32.93	7.042	89
	E	20.78	9.145	89
	C	21.17	8.880	89

Table 88b.

SPSS Output Repeated Measures ANOVA Test for Male and Female FP Profiles

Tests of Within-Subjects Effects Measure: MEASURE_1								
Sex	Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Male	RIASEC	Sphericity Assumed	8,921.03	5	1,784.207	28.098	0.000	0.342
		Greenhouse-Geisser	8,921.03	4.14	2,155.266	28.098	0.000	0.342
		Huynh-Feldt	8,921.03	4.53	1,971.196	28.098	0.000	0.342
		Lower-bound	8,921.03	1.00	8,921.033	28.098	0.000	0.342
	Error (RIASEC)	Sphericity Assumed	17,144.80	270	63.499			
		Greenhouse-Geisser	17,144.80	223.52	76.705			
		Huynh-Feldt	17,144.80	244.39	70.154			
		Lower-bound	17,144.80	54.00	317.496			
Female	RIASEC	Sphericity Assumed	17,449.12	5	3,489.824	63.259	0.000	0.418
		Greenhouse-Geisser	17,449.12	4.44	3,929.293	63.259	0.000	0.418
		Huynh-Feldt	17,449.12	4.71	3,707.849	63.259	0.000	0.418
		Lower-bound	17,449.12	1.00	17,449.118	63.259	0.000	0.418
	Error (RIASEC)	Sphericity Assumed	24,273.72	440	55.168			
		Greenhouse-Geisser	24,273.72	390.79	62.115			
		Huynh-Feldt	24,273.72	414.13	58.614			
		Lower-bound	24,273.72	88.00	275.838			

Table 88c.

SPSS Output Repeated Measures ANOVA Test for Male and Female FP Profiles

Tests of Within-Subjects Contrasts								
Measure: MEASURE_1								
Sex	Source	RIASEC	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Male	RIASEC	Linear	2,779.076	1	2,779.076	38.787	0.000	0.418
		Quadratic	161.953	1	161.953	1.649	0.205	0.030
		Cubic	921.863	1	921.863	17.806	0.000	0.248
		Order 4	348.889	1	348.889	6.809	0.012	0.112
		Order 5	4,709.253	1	4,709.253	105.493	0.000	0.661
	Error (RIASEC)	Linear	3,869.082	54	71.650			
		Quadratic	5,302.701	54	98.198			
		Cubic	2,795.643	54	51.771			
		Order 4	2,766.790	54	51.237			
		Order 5	2,410.585	54	44.640			
Female	RIASEC	Linear	14.159	1	14.159	0.245	0.622	0.003
		Quadratic	5,874.415	1	5,874.415	82.582	0.000	0.484
		Cubic	745.996	1	745.996	18.534	0.000	0.174
		Order 4	189.394	1	189.394	4.051	0.047	0.044
		Order 5	10,625.155	1	10,625.155	177.156	0.000	0.668
	Error (RIASEC)	Linear	5,080.198	88	57.730			
		Quadratic	6,259.811	88	71.134			
		Cubic	3,542.088	88	40.251			
		Order 4	4,113.713	88	46.747			
		Order 5	5,277.905	88	59.976			

Table 88d.

SPSS Output Repeated Measures ANOVA Test for Male and Female FP Profiles

Tests of Between-Subjects Effects Measure: MEASURE_1 Transformed Variable: Average							
Sex	Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Male	Intercept	220,953.094	1	220,953.094	1,334.904	0.000	0.961
	Error	8,938.073	54	165.520			
Female	Intercept	304,280.916	1	304,280.916	2,218.223	0.000	0.962
	Error	12,071.251	88	137.173			

Table 88e.

SPSS Output Repeated Measures ANOVA Test for Male and Female FP Profiles

RIASEC Estimated Marginal Means Measure: MEASURE_1					
				95% Confidence Interval	
Sex	RIASEC	Mean	Std. Error	Lower Bound	Upper Bound
Male	1	29.655	1.405	26.838	32.471
	2	30.818	1.124	28.565	33.071
	3	19.473	1.435	16.596	22.350
	4	31.873	1.078	29.711	34.035
	5	24.164	1.083	21.992	26.335
	6	19.273	1.073	17.122	21.424
Female	1	17.157	0.843	15.481	18.833
	2	30.393	0.751	28.900	31.886
	3	20.798	0.991	18.829	22.767
	4	32.933	0.746	31.449	34.416
	5	20.775	0.969	18.849	22.702
	6	21.169	0.941	19.298	23.039

Table 89a.

SPSS Output Paired Samples t Tests for Male and Female FP Profiles

Paired Samples Statistics						
Sex			Mean	*N*	Std. Deviation	Std. Error Mean
Male	Pair 1	R	29.65	55	10.418	1.405
		I	30.82	55	8.334	1.124
	Pair 2	R	29.65	55	10.418	1.405
		A	19.47	55	10.642	1.435
	Pair 3	R	29.65	55	10.418	1.405
		S	31.87	55	7.998	1.078
	Pair 4	R	29.65	55	10.418	1.405
		E	24.16	55	8.032	1.083
	Pair 5	R	29.65	55	10.418	1.405
		C	19.27	55	7.957	1.073
	Pair 6	I	30.82	55	8.334	1.124
		A	19.47	55	10.642	1.435
	Pair 7	I	30.82	55	8.334	1.124
		S	31.87	55	7.998	1.078
	Pair 8	I	30.82	55	8.334	1.124
		E	24.16	55	8.032	1.083
	Pair 9	I	30.82	55	8.334	1.124
		C	19.27	55	7.957	1.073
	Pair 10	A	19.47	55	10.642	1.435
		S	31.87	55	7.998	1.078
	Pair 11	A	19.47	55	10.642	1.435
		E	24.16	55	8.032	1.083
	Pair 12	A	19.47	55	10.642	1.435
		C	19.27	55	7.957	1.073
	Pair 13	S	31.87	55	7.998	1.078
		E	24.16	55	8.032	1.083
	Pair 14	S	31.87	55	7.998	1.078
		C	19.27	55	7.957	1.073
	Pair 15	E	24.16	55	8.032	1.083
		C	19.27	55	7.957	1.073

Table 89b.

SPSS Output Paired Samples t Tests for Male and Female FP Profiles

Sex			Mean	*N*	Std. Deviation	Std. Error Mean
Female	Pair 1	R	17.16	89	7.957	0.843
		I	30.39	89	7.088	0.751
	Pair 2	R	17.16	89	7.957	0.843
		A	20.80	89	9.348	0.991
	Pair 3	R	17.16	89	7.957	0.843
		S	32.93	89	7.042	0.746
	Pair 4	R	17.16	89	7.957	0.843
		E	20.78	89	9.145	0.969
	Pair 5	R	17.16	89	7.957	0.843
		C	21.17	89	8.880	0.941
	Pair 6	I	30.39	89	7.088	0.751
		A	20.80	89	9.348	0.991
	Pair 7	I	30.39	89	7.088	0.751
		S	32.93	89	7.042	0.746
	Pair 8	I	30.39	89	7.088	0.751
		E	20.78	89	9.145	0.969
	Pair 9	I	30.39	89	7.088	0.751
		C	21.17	89	8.880	0.941
	Pair 10	A	20.80	89	9.348	0.991
		S	32.93	89	7.042	0.746
	Pair 11	A	20.80	89	9.348	0.991
		E	20.78	89	9.145	0.969
	Pair 12	A	20.80	89	9.348	0.991
		C	21.17	89	8.880	0.941
	Pair 13	S	32.93	89	7.042	0.746
		E	20.78	89	9.145	0.969
	Pair 14	S	32.93	89	7.042	0.746
		C	21.17	89	8.880	0.941
	Pair 15	E	20.78	89	9.145	0.969
		C	21.17	89	8.880	0.941

Table 89c.

SPSS Output Paired Samples t Tests for Male and Female FP Profiles

Sex			Paired Differences					*t*	*df*	Sig. 2-tailed
			Mean	Std. Dev	Std. Error Mean	95% Confidence Interval of the Difference				
						Lower	Upper			
M	Pair 1	R - I	-1.16	12.73	1.716	-4.60	2.28	-0.678	54	0.501
	Pair 2	R - A	10.18	14.43	1.945	6.28	14.08	5.234	54	0.000
	Pair 3	R - S	-2.22	12.39	1.670	-5.57	1.13	-1.328	54	0.190
	Pair 4	R - E	5.49	13.14	1.771	1.94	9.04	3.100	54	0.003
	Pair 5	R - C	10.38	11.68	1.575	7.22	13.54	6.590	54	0.000
	Pair 6	I - A	11.35	10.99	1.481	8.38	14.32	7.658	54	0.000
	Pair 7	I - S	-1.05	9.40	1.267	-3.60	1.49	-0.832	54	0.409
	Pair 8	I - E	6.65	10.25	1.382	3.88	9.43	4.815	54	0.000
	Pair 9	I - C	11.55	10.77	1.452	8.63	14.46	7.951	54	0.000
	Pair 10	A - S	-12.40	9.73	1.311	-15.03	-9.77	-9.456	54	0.000
	Pair 11	A - E	-4.69	11.27	1.520	-7.74	-1.64	-3.086	54	0.003
	Pair 12	A - C	0.20	11.55	1.557	-2.92	3.32	0.128	54	0.898
	Pair 13	S - E	7.71	9.45	1.274	5.16	10.26	6.053	54	0.000
	Pair 14	S - C	12.60	11.08	1.494	9.61	15.59	8.436	54	0.000
	Pair 15	E - C	4.89	8.69	1.171	2.54	7.24	4.176	54	0.000
F	Pair 1	R - I	-13.24	10.98	1.164	-15.55	-10.92	-11.370	88	0.000
	Pair 2	R - A	-3.64	10.55	1.118	-5.86	-1.42	-3.256	88	0.002
	Pair 3	R - S	-15.78	11.17	1.184	-18.13	-13.42	-13.326	88	0.000
	Pair 4	R - E	-3.62	11.05	1.171	-5.95	-1.29	-3.089	88	0.003
	Pair 5	R - C	-4.01	10.27	1.089	-6.18	-1.85	-3.683	88	0.000
	Pair 6	I - A	9.60	11.21	1.188	7.23	11.96	8.077	88	0.000
	Pair 7	I - S	-2.54	7.98	0.846	-4.22	-0.86	-3.002	88	0.003
	Pair 8	I - E	9.62	10.08	1.068	7.49	11.74	9.002	88	0.000
	Pair 9	I - C	9.22	10.13	1.074	7.09	11.36	8.590	88	0.000
	Pair 10	A - S	-12.13	10.43	1.105	-14.33	-9.94	-10.978	88	0.000
	Pair 11	A - E	0.02	11.34	1.202	-2.37	2.41	0.019	88	0.985
	Pair 12	A - C	-0.37	11.98	1.269	-2.89	2.15	-0.292	88	0.771
	Pair 13	S - E	12.16	9.61	1.018	10.13	14.18	11.940	88	0.000
	Pair 14	S - C	11.76	10.83	1.148	9.48	14.05	10.244	88	0.000
	Pair 15	E - C	-0.39	9.32	0.988	-2.36	1.57	-0.398	88	0.692

Table 90a.

SPSS Output Independent Samples t Tests for Male and Female FP Profiles

Group Statistics					
	Sex	*N*	Mean	Std. Deviation	Std. Error Mean
R	Male	55	29.65	10.418	1.405
	Female	89	17.16	7.957	0.843
I	Male	55	30.82	8.334	1.124
	Female	89	30.39	7.088	0.751
A	Male	55	19.47	10.642	1.435
	Female	89	20.80	9.348	0.991
S	Male	55	31.87	7.998	1.078
	Female	89	32.93	7.042	0.746
E	Male	55	24.16	8.032	1.083
	Female	89	20.78	9.145	0.969
C	Male	55	19.27	7.957	1.073
	Female	89	21.17	8.880	0.941

Table 90b.

SPSS Output Independent Samples t Tests for Male and Female FP Profiles

		Independent Samples Test								
		Levene's Test for Equality of Variances		*t* Test for Equality of Means						
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
R	Equal variances assumed	6.22	0.014	8.12	142	0.000	12.50	1.54	9.46	15.54
	Equal variances not assumed			7.63	92.6	0.000	12.50	1.64	9.24	15.75
I	Equal variances assumed	1.85	0.176	0.33	142	0.744	0.42	1.30	-2.15	3.00
	Equal variances not assumed			0.31	100.7	0.754	0.42	1.35	-2.26	3.11
A	Equal variances assumed	1.39	0.240	-0.78	142	0.435	-1.33	1.69	-4.67	2.02
	Equal variances not assumed			-0.76	103.4	0.449	-1.33	1.74	-4.78	2.13
S	Equal variances assumed	2.22	0.139	-0.83	142	0.406	-1.06	1.27	-3.58	1.46
	Equal variances not assumed			-0.81	103.6	0.421	-1.06	1.31	-3.66	1.54
E	Equal variances assumed	0.56	0.455	2.26	142	0.025	3.39	1.50	0.43	6.35
	Equal variances not assumed			2.33	125.7	0.021	3.39	1.45	0.51	6.27
C	Equal variances assumed	0.24	0.627	-1.29	142	0.198	-1.90	1.47	-4.79	1.00
	Equal variances not assumed			-1.33	124.0	0.187	-1.90	1.43	-4.72	0.93

Table 91.

SPSS Output Chi-square for Proportions of Male and Female FP PAs Completing the SDS

Sex	Observed *N*	Expected *N*	Residual	Statistic	Value
Male	55	60.5	-5.5	Chi-Square	0.856
Female	89	83.5	5.5	*df*	1
Total	144			Asymp. Sig.	0.355

Table 92.

SPSS Output Chi-square for Proportions of All Male and Female FP PA Respondents

Sex	Observed *N*	Expected *N*	Residual	Statistic	Value
Male	148	146.2	1.8	Chi-Square	0.040
Female	200	201.8	-1.8	*df*	1
Total	348			Asymp. Sig.	0.842