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CAREER DEVELOPMENT ISSUES ENCOUNTERED BY SURGERY FACULTY

By

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ABSTRACT

CAREER DEVELOPMENT ISSUES ENCOUNTERED BY SURGERY FACULTY

By

Kimberly Dean Anderson

The purpose of this study was to: 1) describe the characteristics of faculty involved in academic surgery; 2) examine the career development issues of academic surgeons; 3) determine if the career development issues of academic surgeons are similar to the issues of non-physician college faculty; 4) determine whether or not surgery faculty with fellowship training differ from surgeons without fellowship training; and 5) examine relationships between selected characteristics and career development issues.

A questionnaire was mailed to each surgeon member of the Association for Surgical Education who was located in the United States or Puerto Rico (n=521). Three hundred ninety two (392) surgeons responded, representing a response rate of 75.2%.

The questionnaire included 62 items; 21 items addressed factors influencing surgeons' decisions to pursue academic careers, how respondents spend their time in academic surgery, and additional demographic information; and 41 items addressed career development issues. An exploratory factor analysis was conducted on the 41 career development issues to identify any existing underlying pattern of relationships in the responses; correlation and discriminant analyses

were conducted to examine the relationship between selected characteristics.

An analysis of the research data provided the following conclusions. 1) Four major factors represented the underlying dimensions of career development issues of surgeons: Institutional Frustrations/Concerns, Time Management Issues, Professional Confidence, and Career Satisfaction. 2) Both fellowship training and type of fellowship training impacted how surgeons spent their time and ultimately, how satisfied they were with their careers. 3) The earlier in their training surgeons decided to enter academics, the more concerned they were about their qualifications. This same group ultimately demonstrated more satisfaction with their careers. Conversely, the later surgeons made their career decisions, the less concerned they were about their qualifications. Once in their academic careers these surgeons became more concerned with issues surrounding professional confidence. 4) Factors affecting career decisions help explain academic surgeons' primary practice location. 5) The career development issues of surgery faculty were similar but not parallel to the career development issues of non-physician faculty.

Dedicated to my loving husband, Bill

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CHAPTER I

INTRODUCTION

Background

According to Aristotle's Nicomachean Ethics, a career is something one is required to do to make a living and may not be what one would choose when given a choice. A craft, on the other hand, is something one enjoys doing with all of his or her being, and, when given the choice, would continue.[1] The new American work ethic holds that work should be fulfilling and fun, in essence, merging the gap between a craft and a career and becoming an integrated part of a whole life plan. In today's society individuals want work to provide more than just a paycheck; they want to express themselves and their values, to make a difference in society, and to have time for family, health and spirituality.[2] This new ideal provides a unique challenge to organizations in an economic climate of scaling down, cutting back, redefining and refocusing.

The idea of helping people manage their careers has not only received increased attention, but has led to an explosion in the field of career planning and development in all sectors of society. From industry to higher education to medicine, organizations have adopted career planning and development programs to improve the quality of worklife of employees, to reduce unwanted turnover, to improve performance and to respond to equal employment and affirmative action legislation.[3] They have discovered that organizational growth and effectiveness requires

career development programs which integrate organizational objectives with the personal and career needs of employees.

Because self-esteem is tied inextricably to progress in a career, the decision to pursue a particular career is one of the most important decisions an individual will make in life.[4] Hall states that "an individual's work is often the major input to his total self-identity...one could...hypothesize that the degree of one's mental health or growth is directly related to the degree of congruence between one's career work role (what one has to do) and his ideal identity (what he loves to do)." He believes occupational selection is the process of choosing a career role in which a high or satisfactory degree of adjustment and satisfaction can be attained...this process is not simply a matter of selecting a role but also one of choosing an aspect of one's self which is potentially effective and highly valued.[5] Erikson, in his book Identity, Youth and Crisis writes that love relationships and work are the two most important factors through which a person's inner changes become visible. The first serious love of a person's life and the first long-term job are important turning points and are usually recognized as such.[6] Bridges believes that the phase of life we move into or beyond is greatly affected by the realities of our organizational or professional role; and that even the course of personal growth is channeled by the somewhat prescribed routes of career advancement.[7]

The concept of career represents a central theme in adult development. A corollary to this theme is that career development and adult development are inseparable. Career is broadly defined as one's course through life, not simply one's job. Career development represents the preparation for effective and satisfying living, not simply preparation

for work. Adult development is defined as the evolution of one's life structure.[8]

Unlike the life stages of childhood and youth, which are well-defined by age and institutional roles transitions (e.g., the start of grade school, high school graduation, driving age, college graduation, legal age, marriage, etc.) the important changes in the adult years are harder to delineate. A person's stage in his or her work career is a factor that can strongly affect (and is likewise affected by) social behavior and attitudes; and yet this variable may not be closely tied to age. Individuals in their first permanent job following professional training will be concerned about advancement and establishing a reputation among colleagues, whether they are 25 or 45.[9]

In the profession of medicine, physicians are forced to make various important decisions about their career goals. The first decision, selection of a residency, is likely to be the most difficult and important decision made by a senior medical student for it sets the future course of one's career. No decision since the original plan to study medicine has such potential for influencing the doctor's future. In its personal impact, this choice is akin to selecting a marital companion; both can profoundly affect the course of one's life.[10] The choice of a specialty is also a complex process. Students are seeking the one specialty that will best fit them for the rest of their lives and must weigh some hard practicalities and balance them against the intangible qualities they also want from the world.

The second decision arises during residency when physicians are forced to decide whether or not to pursue fellowship training. This decision is significant because physicians must further hone in on an

area of interest which they hope will be fulfilling personally and professionally for the remainder of their careers. In addition, physicians must commit to several more years of training, several more years of minimal wages, and several more years of loss of autonomy.

The third decision physicians must make concerns the type of career and practice environment they want to pursue, i.e., private practice vs. group practice vs. academic medicine. Physicians must weigh a variety of such variables as job satisfaction, location preference, spousal opinions, debt load, and practice potential, to name a few. This decision represents the focus of this study, and specifically concerns those physicians who have chosen to practice in an academic environment.

Physicians who choose to practice academic medicine have further decisions to make. Like all professors in higher education, academic physicians are expected to perform multiple and diverse duties: to teach, to do research, to participate on committees, to stay abreast of their fields, and to treat patients. In the field of academic medicine, however, physicians may choose to serve in limited academic roles or in full-time academic positions through their appointment in one of several tracks: clinical preceptor, non-tenure track and tenure track. Bland, in her work concerning successful faculty in academic medicine, describes the various roles that physicians assume in academic settings.[11]

Preceptors are non-tenure track practicing physicians in the community who work part-time or on a volunteer basis for community or university based programs. Their primary academic task is to supervise students or residents on clinical rotations. They have no academic responsibilities with regard to research and scholarly activity. Academic

surgery faculty are paid faculty located in university-owned hospitals, county or VA hospitals, and community or private hospitals. They have part-time or full-time appointments to work with students, residents or other health professionals. They conduct research, teach residents and students, provide patient care, maintain strong clinical practices, and administer projects and programs. Within this definition there are two track distinctions among academic surgery faculty: tenure track and non-tenure track. The basic distinction between the two tracks lies in the percentage of time faculty spend in certain activities. Tenure track academic surgeons will be expected to produce a greater number of publications, and allocate more time to service and teaching than their non-tenure track peers.

Academic physicians hold a unique position both as physicians and as academicians in that they enact roles in both worlds. Although there have been many articles written about academic career development in the medical setting, there has been very little empirical research. Are there career development stages that academic surgeons go through? Does gender, age or academic rank affect career development issues? The overall goal of this study is to identify and describe what issues surgery faculty encounter during career development.

Statement of the Problem

The recruitment and retention of competent physician faculty members to maintain high quality medical education programs continues to be a high priority for medical schools and graduate medical education programs. Yet recently, writers within clinical specialties have expressed

concern not only about the decline in young physicians who choose academic careers, but in the number of young physicians who are electively withdrawing from academic positions in favor of pursuing careers in private practice.[12-22]

The position of an academic physician is essential for the academic development of medical students and residents. One of the most critical roles physician faculty members fulfill is that of being successful roles models for learners. They communicate basic knowledge, demonstrate clinical skills, discuss ethical issues, and access the research literature in medicine and education. They also provide feedback to learners during instruction and evaluate learners' performance.[11] Faculty members also serve as mentors. Mentor relationships have long been advocated as an important mechanism for facilitating the personal and professional development of junior members of a profession. Mentors provide a guided introduction to the norms of the social system of the profession and there is some evidence that those who have had the benefits of a mentor are more likely to advance rapidly in their careers.[23]

Because of the considerable diversity in clinical faculty member's skills, career development is becoming less predictable and more complex. A review of the literature does identify some relevant variables which serve to focus the content of this study, however, the literature which was located is quite dated and no recent studies have been conducted examining the career development and satisfaction of academic surgeons. There is a need to examine what issues academic surgeons encounter during their own career development, in order to continue to attract young physicians to the field, to enhance their job satisfaction, and to decrease faculty attrition rates.

Significance of the Study

The research in four major fields was reviewed and combined for this study: adult development and transitions, career development, career development in higher education, and career development in medicine. Several career development models were utilized in designing the focus of this research. Baldwin and Blackburn believe that academic careers follow an evolutionary course. They describe career development in terms of stable faculty characteristics, evolving faculty characteristics, fluctuating faculty characteristics, and critical events in the academic career. Each of these characteristics will vary in terms of the five career stages of the faculty member.[24] Knopke and Anderson introduced a model for academic career development which suggested that each person goes through four developmental stages: initiation, adjustment, integration, and maturation. In turn, each stage is influenced by three factors: personal issues, the learners' perceptions of faculty members, and institutional concerns.[25] Swee and others tested this model by generating data on the initiation phase.[26] They confirmed the previously proposed career development model and found that the major concerns of new faculty members were: acting as a role model, developing teaching skills, and maintaining clinical competency. The model had predicted that personal and resident learner issues would be influential aspects during the initial years. Bogdewic delineated three career stages corresponding closely to the faculty ranks of assistant, associate, and full professor. He believed that the issues or dilemmas that will likely challenge junior academicians are different from those that challenge more senior faculty.[27] Ashkenas, in his study of the lives and careers of academic physicians, described stages similar to Bogdewic, but found

that physicians fell into three age-related groups that were not necessarily related to academic rank.[28]

By determining the issues encountered by surgery faculty, it will be possible to empirically describe the sequence of career development issues among academic surgeons. This research will be useful to individuals, academic departments of surgery, surgical residency programs, medical schools, and professional associations. For individuals, the results of this study will be useful in: 1) helping to define career development goals; 2) helping to develop career development plans; 3) providing a better understanding of career development in surgery; and 4) identifying their own career development issues and focusing on future growth.

Academic surgery departments will find the results of this research helpful as they work to: 1) help surgeons manage their career development; 2) target interventions for the stable, fluctuating, and evolving career issues of surgery faculty, and help them cope with critical events that occur; 3) enhance faculty job satisfaction, thereby decreasing faculty attrition rates and enhancing the attraction of young physicians to academic surgery; and 4) design faculty development programs for their faculty.

Surgical residencies, medical schools, and professional organizations could use the results of the research to: 1) help guide potential academic surgeons' career development; 2) develop curricula for clinical rotations, conferences, courses, workshops and seminars; 3) develop new questions and new research topics about career development and academic surgery; and 4) develop collaborative efforts

with other clinical specialties to determine the degree of similarity and difference among career development issues with their faculty.

Research Questions

The objective of this study is to: describe the issues academic surgery faculty encounter during their careers; to empirically derive a depiction of the sequence of career development of surgery faculty in terms of these issues; and to describe variations in the career issues surgery faculty face by faculty appointment, academic rank, number of years in academic surgery, timing of career decision, factors influencing their career decision, fellowship training, practice setting, allocation of work hours, gender, age, marital status, employment status of partner, and parental status. The major research questions of this study are the following:

1. What are the characteristics of those faculty involved in academic surgery?
2. What are the career development issues of academic surgeons?
3. Do the career development issues of academic surgeons parallel the issues of non-physician college faculty?
4. Do surgery faculty with fellowship training differ from their peers without fellowship training?
5. What are the relationships among selected characteristics and career development issues?

Limitations of the Study

The study involved sending questionnaires to all surgeons located in the United States and Puerto Rico who are members of the Association for Surgical Education (n=521).

1. Individuals who are members of the Association for Surgical Education have self-selected themselves into this organization because of their interest in education. Their perceptions may be very different than non-members.
2. The study reflects the perceptions of the surgeons who chose to participate. Surgeons who did not choose to participate may have had different perceptions. Data on non-respondents will be summarized to include age, gender, and academic rank.
3. Not all surgeons who are members of the Association for Surgical Education practice in a university setting. Many are located in community-based hospitals with university affiliations. It is therefore difficult to correlate academic rank with other variables. In addition, caution must be used when describing differences between tenure and non-tenure track faculty. Several medical schools do not have tenure track available, and institutions that do have tenure track may have a very limited number of tenure positions. Tenure cannot be an assumed indicator of academic success for academic surgeons.

Definition of Terms

Medical Student: An individual who is engaged in general medical studies to become a physician. For most medical students, the course of study is four years. Preclinical years refer to the first two years of a medical student's course of study. Emphasis is on the basic sciences. Clinical years refer to the last two years of a medical student's course of study. It is during these years that students begin taking care of patients.

Resident: An individual who has completed undergraduate work, four years of medical school, and is now training in a community, university-affiliated, university, or armed services setting in the specialty of his/her choice. The duration of the residency varies by specialty. Those in surgical residencies will spend 5-7 years in training (beyond their undergraduate and medical school careers).

Surgeon: An individual who has completed a 5-7 year surgical residency and who is eligible to take the written and oral board exams of the American College of Surgeons. The focus of their practice includes operating and performing procedures.

Fellowship: Any formal education beyond residency training that leads to a specialized skill or skills, and/or leads to certification and licensure, and/or leads to career enhancement. The duration of the training is specialty and/or content dependent.

Academic Surgeon: Surgeons who have part-time or full-time appointments to work with students, residents or other health professionals. They conduct research, teach residents and students, provide patient care, maintain strong clinical practices, and administer projects and programs. Within this definition there are two track

distinctions among academic surgery faculty: tenure track and non-tenure track. The basic distinction between the two tracks lies in the percentage of time faculty spend in certain activities. Tenure track academic surgeons will be expected to produce a greater number of publications, and allocate more time to service and teaching than their non-tenure track peers.

Community-Based Program: A hospital based program located in the community that either has no academic affiliation with a university or loose academic affiliation with a university.

University-Affiliated Program: A hospital based residency program located in the community that is associated by formal agreement with a university.

University Program: A residency program that is owned and operated by the university. The program may be based in a university based hospital or based in a hospital located in the community.

Armed Services: A residency program that is owned and operated by a military branch of the government. The program is usually based in a hospital on the military base.

Preceptor: Practicing physicians in the community who work part-time or on a volunteer basis for community or university based programs. Their primary task is to supervise students or residents on clinical rotations. They have no academic responsibilities with regard to research and scholarly activity.

Chapter Summary

In this chapter, the process of deciding upon a career has been described as one of the most important decisions an individual can make in life. Because a career is defined as one's course through life, self-identity and adult development is often tied inextricably to professional identity. In the profession of medicine, career development is becoming less predictable and more complex. Physician's career decisions are affected by a multitude of variables including length and duration of training, the amount of debt they have accrued, fellowship training options, career and practice environment decisions. Physicians who choose to enter academic medicine have an essential role in the academic development of medical students and residents, yet fewer numbers of qualified physicians are entering into the academic arena.

Overview of the Study

Chapter Two of this study contains a selected review of related literature in the area of adult development and transitions, career development in business and industry, career development in education, career development in medicine, and pertinent variables that may affect the career development of academic surgeons. This background will lend insight into the career issues of academic surgeons. Chapter Three includes a description of the study population, a description of the instruments used, a report on the methods and procedures used, a restatement of the research questions in the form of research objectives, and a discussion of the data analysis techniques employed. Chapter Four contains a presentation of the results of the data analysis. Chapter Five includes a presentation of the summary of the research,

conclusions, a discussion of the results, and a statement of the implications for future research as well as for institutions attempting to recruit and retain academic surgeons.

CHAPTER II

SELECTED REVIEW OF RELATED LITERATURE

Introduction

This chapter contains a review of literature and research pertinent to the topic under investigation. The literature review contains four sections. The first section pertains to the adult development and transitions literature. The second section pertains to the career development literature from business and industry. The third section pertains to the career development literature from education. Finally, in the fourth section, literature relevant to career development in medicine is discussed.

Adult Development and Transitions

Some of the best information about adult transitions comes from such phase developmentalists as Erikson, Levinson and Sheehy who felt that each person will go through a set number of developmental stages at set times.

Erik Erikson's theory of the stages of the life cycle can be logically applied to the study of working careers.[29] Erikson viewed an individual's life as consisting of eight stages which stretch from birth to death. According to Erikson, the sequence of the eight stages is genetically determined and thus is unalterable. Each stage of development is characterized by a crisis and the crisis in each stage of development has

a possible positive or negative resolution. A positive resolution contributes to an individual's greater developmental adaptation while a negative resolution weakens this adaptation. Furthermore, a positive crisis resolution in one stage increases the likelihood that the crisis involved in the next stage will be resolved positively. If a person's development becomes arrested at any given stage, he may be plagued with doubts about his career choices, shifting from job to job and perhaps career to career. According to this theory, a person cannot achieve a full, deep commitment to an organization, person, or cause until his identify is fairly well-defined; similarly, he cannot attain higher-stage experiences such as creative production or ego fulfillment.

Other theories correspond in part to Erikson's concept of life stages. In vocational behavior, Super and his associates employ a model of five developmental stages.[30] In childhood (up to age 14), an individual begins to fantasize about careers, and develops vocational interests and capacities. During adolescence, the person begins to explore his own interests and different specific career opportunities. In young adulthood, the person may initially flounder a bit and eventually establish himself in a particular field. In maturity the person continues to hold his own in a sort of career plateau. Old age is a period of disengagement.

The development of a family physician's professional identity as described by Grose, et al, is also described in terms of Erikson's model.[31] They believe that Erikson's fourth stage best matches the beginning of a physician's residency. Similar to Erikson's idealized child, new residents are characterized by high energy and eagerness to achieve new levels of mastery. Five months into the residency a period similar to adolescence begins; by the end of the year the majority emerge from the struggle

feeling confident with their identities as family physicians. The second year of residency is characterized by the developmental tasks of young adulthood which includes sharing their identities as family physicians with peers, faculty and patients. The last three months of the second year and the first three months of the third year constitute a period similar to Erikson's next stage — adulthood. During this period, residents who feel competent in their skills and identity will contribute as much as they can to the program. They will also direct heavy criticism at anything that can be seen as encroachments on their independence. Late adulthood, a period of evaluative review of one's life, emerges near the middle of the resident's third and last year, when they begin to scrutinize their long period of training and begin to demonstrate anxiety, negativism, and renewed dependence on faculty. The role of faculty at this stage is to demonstrate that even with years of experience, family physicians can have gaps in their own knowledge and yet still be highly competent.

Sheehy, in her book *Passages*, said that the years between 18 and 50 are divided into roughly five cycles.[32] Like Erikson, she believed that if the tasks to resolve the crises presented by each cycle were accomplished, the individual could progress into the next cycle. Sheehy said that males and females were apt to have different tasks in each cycle. While the titles and time frames of the stages were different, both Levinson and Sheehy described the middle stages as periods where men and women formed "dreams" of who they wanted to become and how; they developed life scripts.

Levinson, in his work *The Seasons of a Man's Life*, proposed a universal life cycle consisting of specific eras and periods in a set

sequence from birth to old age.[33] The basic unit of the life cycle is the era, which lasts about 20 years; that is pre-adulthood, 0-20; early adulthood, 20-40; middle adulthood, 40-60; late adulthood, 60-80, and late, late adulthood, 80 on. His theory was that our lives move rhythmically back and forth through periods of building and breaking as we grow older and accommodate to the changing circumstances of our lives. He also described certain developmental tasks involved in occupational selection, attainment, and achievement and demonstrated their invariance in four disparate occupational fields. Zabarenko and Zabarenko in their book, *The Doctor Tree*, described five developmental lines for physician development.[34] They emphasized the need for attitudinal changes in addition to acquisition of skills and knowledge.

Building from the work of Levinson, Gould and Vaillant and the developmental stages they derived from their studies, there are three major developmental tasks of adulthood.[33,35,36] The first stage is building and modifying the life structure. This happens during stable periods. In transition periods, the tasks include terminating the existing structure and exploring new possibilities. In the second stage, adults work on single components of the life structure. This includes forming and modifying an occupation; forming mentoring relationships; restructuring aspects of love, marriage, and family; and forming and modifying a "dream". The dream can be conceptualized as a vague sense of oneself in the adult world, which involves a future goal. The dream provides meaning and direction as well as excitement and vitality. The last stage involves becoming more individuated, which involves integrating the basic polarities within the personality and society, i.e., young/old, attachment/separation, masculine/feminine, etc.

As individuals move from childhood to adulthood, they increasingly confront questions relevant to responsibility, autonomy, and competence while at the same time dealing with needs for intimacy, cooperation and sharing. Issues related to personal and professional identity are of considerable significance to young adults. The developmental stage of identity, as described by Erikson, Gould, Levinson, and Sheehy, is one in which late adolescents-young adults endeavor to establish who they are in the world. Who they are includes separating from parents, finding a career path, and forming significant relationships with others. While not all of these crucial developmental tasks are fully completed during this life stage, significant "work" on them has to occur in order for individuals to be able to continue their development as healthy, functioning adults. That is, factors that help or hinder development in any of these areas can affect the way people function, view themselves, and are viewed by others. The sense of adult independence, the ability to engage in meaningful work, and the capacity to be intimately involved with others are issues that receive the bulk of peoples' developmental and exploratory energies at this time. These are also the areas most susceptible to environmental forces.

The characteristics of the medical training environment can exert significant influence in the resolution of very important developmental tasks. Brent, in his discussion of the residency as a developmental process, argues that the residency is more than the acquisition of new skills and knowledge.[37] Residency also involves the development of attitudes and the modification of self-representations.

According to Lane Gerber, author of *Married to Their Careers*, medical students may not care for or wish to emulate many of their

teachers; at the same time they are under great pressures in many situations.[38] They begin caring for many sick people and do not have much experience and thus have fear of not taking proper care of patients. Work, time and responsibility demands isolate them significantly from the rest of the world outside of medicine and from peers. These factors can add up to a "fellowship of suffering." This is important in understanding how an occupational identity gets formed. Many clinical teachers or preceptors are not liked, but because they have shared common experiences and are already "members of the club," they can exert significant influence on individuals who are forming their personal and professional identity.

The notion of "specialness" also has a profound influence on medical trainees and represents a second developmental phase that students must go through. Physicians, by virtue of their intelligence, hard work, and ability and willingness to care for human life, are rewarded by being seen as special by patients and society. Through this specialness they can achieve high status, gain self esteem, and prove themselves to others. A medical career is a certified way of "getting ahead." However, along with the notion of specialness are associated pressures: internal pressure — "can I live up to being a good doctor?"; family expectations: "I feel like I'm the hope of the family"; expectations from teachers & colleagues; and societal expectations.

At different points along one's life course the relative importance of issues (such as management of time, energy and resources) will vary. For instance, one shifts from an orientation of having unlimited time to accomplish objectives to the realization that time is limited and not all that one has set out to do may be accomplished. The pressures

associated with this resource management, along with the social, political, and historical events, creates conflicting demands for available resources and results in role conflict. Regardless of the source of role conflict, it causes internal stress because it forces the person to violate one set of role expectations to fulfill another set.[8] Society contributes to role conflict by providing what Neugarten terms a "social clock" that outlines age-related norms for role performances.[39] These norms vary over time and cultural context, but include societal rewards for being "on time" with progress through education, job entry, marriage, children leaving home, retirement, etc. Individuals in medical training often find themselves out of sync with their peers because for most, training takes them into their 30's. There is a fatalistic sense that their youth is gone. Friends and family members who have gone into fields such as business, are already reaping the benefits of their hard work in their 30's. Individuals in medical training must not only pay off staggering educational loans, but must also await the delayed gratification of future earnings.

Robert Broadhead, author of *The Private Lives and Professional Identity of Medical Students*, stated that the vast majority of medical students are not interested in devoting the totality of their lives to the practice of medicine.[40] What they look for, as in their selection of an area of specialization, is a compromise or tradeoff between their professional and private lives.

Career Development in Business and Industry

Individuals employed in business and industry view their careers longitudinally and experience a variety of concerns as they progress

through the different career stages of establishment, advancement, maintenance and withdrawal; each with unique issues relevant to career planning.[41] According to Huse and Cummings, individuals in the establishment stage of their careers are concerned with finding an appropriate occupation, organization and job. They need to gain the skills and knowledge to perform effectively while learning about their competence, interests, and potential in the organization. Interventions to help them in this stage include providing individuals with realistic expectations about the job, job pathing, performance feedback and coaching.

In the advancement stage, employees are concerned with long-term advancement and growth. Individuals want opportunities to do challenging work that gives them the chance to demonstrate potential and to gain visibility in the organization. They also must balance career opportunities with outside interests and responsibilities, such as raising a family and accommodating a spouse's career development. Interventions in this stage include providing challenging and visible assignments, and establishing mentoring relationships.

In the maintenance stage, employees have reached their greatest advancement and are concerned with leveling off and maintaining their careers. During this phase, people's career development needs focus on autonomy, opportunities to develop others, and redefining their role in the company. At midcareer, employees need to withdraw from the "tournament mobility" track, where success depends mainly on hierarchical career advancement. Interventions in this phase include developmental training, helping individuals become mentors, and rotations to jobs which require new skills.

The final career stage, the withdrawal stage, involves leaving the organization to begin retirement. It includes letting go of one's organizational identity and establishing a productive leisure life. People in this stage want to feel that their knowledge and experience are still valued; they want the opportunity to continue to help develop others and to serve in a consultative role. Equally important, those nearing retirement need to increasingly establish a meaningful life outside of the company. Little attention has been given to appropriate interventions in this stage, however, helping individuals develop their consultative roles and establishing phased retirement are processes that are receiving increased attention.

In a study of young AT&T managers, Hall and Nougaim found some evidence to support a concept of career stages.[42] The paramount concerns for new managers in an organization were the need for achievement and esteem, followed by the concern for safety. In the next stage they found that managers were not as concerned with fitting into the organization as they were with moving up and mastering the organization. The authors believed that this advancement stage was followed by a maintenance stage. They speculated that once managers had cues that they were nearing the limit of their advancement, their careers would start to level off, and their need or opportunity to compete would decrease. Successful individuals might take on mentoring roles with their successors in order to strengthen the organization and perpetuate their work, whereas unsuccessful managers might block newcomers' progress. Regardless of the behavior that occurred at this stage, the period represents the onset of a terminal plateau. Managers

achieved their own particular level of success, and now must find some other means of gratification.

Schein derives a series of stages for a person's career in a single organization.[43] He makes the distinction between an organizational career (the part of the person's career that is spent in one organization) and a person's total work career. Contrary to most views of organizational careers, which focus on the organization's influence on the person, Schein views the career as a two-way influence relationship between the person and the organization. The person influences the organization as well as being influenced him or her self.

Career Development in Education

In K-12 education, recent studies of teachers' perceptions of their careers reveal that many do not view career continuity as an important characteristic of their work. With few exceptions, teachers cannot be promoted and still remain teachers. Teachers may change to other school positions (e.g., principal), but even that "promotion" is open to very few.[44] While the steady state of conditions in higher education have resulted in low faculty turnover, a phenomenon mirroring that of teachers in K-12 education, the battle for promotion and tenure in the ranks of academia more closely reflects the culture of business and industry.

Recent enthusiasm for programs to enhance faculty development have probably arisen from the stark realization that current faculty will be an institution's primary asset with regard to sources of energy, ideas and innovation, into the 21st century. Thus greater concern has emerged for the general welfare, personal growth, and professional

performance of college professors. At present there is little developmental research which focuses specifically on college teachers.

In his study describing how college professors change over the course of a career, Roger Baldwin found that academics have similar characteristics at all career stages.[45] Specifically, faculty share common career goals such as the intellectual and personal development of students and contribution to one's academic field. Many enjoy the same aspects of the profession such as teaching and the environment. Changes in faculty interests, however, change significantly over time. He found that over time faculty interest in roles such as research and teaching gradually decrease and take on smaller proportions of their time, while interest in and time committed to such areas as department and college affairs, outside service and professional activities increase.

Faculty also perceive changes in their major professional strengths and weaknesses as they gain experience. At successive career stages, college professors see themselves becoming more adept at some roles (e.g., teaching, department and college affairs) while becoming less confident in areas such as research. Stress and satisfaction in the academic career also seems to be related to years of experience, where the lowest occupational satisfaction emerges among new professors and highest satisfaction is found among those faculty nearing retirement. Baldwin theorized that individuals gradually arrive at a match between their interests and abilities and their occupational responsibilities, noting that as the discrepancy between these factors narrow, career satisfaction increases.

Baldwin concluded that there are four critical events which emerge, following a loose sequential order, which affect faculty career

progression. The first event is the process of education and professional socialization which include the experiences that lead up to and conclude with receipt of the Ph.D. The second critical event is early professional employment, that is, the impact of their initial college teaching position on faculty members' subsequent career direction. Opportunities for professional growth constituted the third critical event. Failures, disappointments, and value questions related to faculty members' sabbaticals, grants and research had major impact on their career direction and growth. Finally, status and role changes were viewed as important career events. While this includes achievement of traditional faculty ranks, faculty described new roles and new interests which continued to evolve long after receipt of the final formal academic title.

Baldwin and Blackburn's study of college faculty identified five career stages of college faculty, ranging from new assistant professors to full professors who were within five years of retirement.[24] The information provided by faculty focused on their values and goals, professional strengths and weakness, critical career events, vocational satisfaction, career reassessment and change. The responses of the five career stage subgroups were then compared on each topic of investigation. Baldwin and Blackburn found that some faculty characteristics remain stable over time, some characteristics evolve, and some fluctuate predictably during the career. Critical events important to career development also emerged.

Stable characteristics across all subgroups included pressure from workload, the importance of teaching, and the high value placed on scholarship. Evolving characteristics were those periods in careers that were identified as "difficult" and "easy." The first few years of teaching

and periods of new or added responsibilities were considered difficult periods by all groups. However, the early difficulty with teaching passed and faculty increasingly became more comfortable with that role. At the same time, pleasure from teaching steadily decreased. Scholarly matters declined on all dimensions and pressure and stress decreased over the course of the career. Most dimensions of the academic role fluctuated somewhat over the course of a career on a short term basis. Reassessment experiences (including mid-career crises, loss of interest, lack of recognition, and dissatisfaction) were most intense during the late assistant professor and continuing full professor periods. Finally, critical events that had significantly influenced faculty members' careers included opportunities for professional growth, promotions, and role changes.

Claude Mathis, building on the work of Erikson, Levinson and Baldwin, identified four functional stages during a faculty member's career where controlled interventions could influence the future course of particular careers.[46] According to Mathis, the first intervention should occur during the graduate preparation of the future faculty member. He believes that very little is done to prepare beginning faculty members for career demands involving teaching and professional service, yet notes that these activities become increasingly important as one progresses through a career. He suggests that information about career patterns in higher education should be a part of all doctoral programs, regardless of discipline, for those who plan to enter the academic professions. Unlike research and scholarship which are important factors in determining promotion tenure but do little to maintain enthusiasm and motivation as a faculty member mid-career, Mathis believes that early rewards for

effective teaching can initiate patterns which provide a basis for satisfaction throughout an academic career.

The second intervention, according to Mathis should occur during the initial years of a faculty member's first appointment and during the first several years of subsequent appointments. During this stage the initial socialization which occurs when introducing a faculty member to his or her first job is quite important in giving faculty members the skills they need to manage their careers. The assignment of a mentor is extremely important to the young faculty member's career development. The productivity of that faculty member is directly related to whether or not he or she has the skills the institution wishes to reward, and to whether or not the faculty member receives early rewards for applying those skills.

The third intervention emerges during the middle and later years of faculty career patterns. After a faculty member has acquired tenure, a full professorship, and a good salary, his or her attitudes begin to change; the things which were important at the beginning are no longer the motivating forces they once were. The mid-career crisis for most faculty is not an exhaustion of talent and commitment, rather, it is brought on by the increasing expenditure of energy required to maintain a career on the same terms by which it reached mid-point in the first place. These transition phases in careers are critical times which will determine whether one decides to do the same work each year until retirement, or whether the remaining years provide a unique series of experiences which help generate energy for the satisfactions ahead.

Mathis believes we need interventions which help the older faculty member prepare for retirement and sustain some productivity of choice

after retirement. Retirement, he feels, should be a transition in the career pattern, and not an end of all that has gone before. As such, retired faculty who wish to maintain identity with the institution should be allowed access to the resources of the institution including such amenities as a parking space, library permit and mailbox. Participation in faculty meetings, receipt of faculty minutes, and invitations to come back to one's "career home" make emeritus status meaningful.

Onuoha, in his study of job satisfaction of university faculty found that context of work, policies and administration and interpersonal relationships with peers were found to contribute to more than 50 percent of the feeling of dissatisfaction among faculty members.[47] When sources of dissatisfaction were closely examined it was found that they consisted of work-related aspects over which the respondents had only limited control. In contrast, sources of satisfaction, such as recognition, achievement, content of work and interpersonal relationships with students pertained to factors which could be controlled, at least in part, by the faculty member. These findings suggested that people tend to remember and to attribute causes of satisfaction to themselves, and the causes of dissatisfaction to the environment.

Blackburn summarized the research done on faculty productivity and satisfaction by presenting nine assertions about academic careers.[48] First, he believes the productivity of faculty over an entire career is predictable. While the amount will vary from individual to individual, age of first product and age of receiving the advanced degree have a significant effect on career productivity. Second, he states that faculty at certain institutions produce appreciably more than individuals at other institutions, regardless of faculty training. Third, organizational factors

such as leadership and support, control of the environment, and colleague selection/retention by peers correlate with faculty output. Fourth, lack of time is the single most significant faculty complaint and source of stress which affects performance. Fifth, faculty interest in research lessens over time while interest in teaching waxes and wanes over a career. Sixth, productive people will maintain their high level of performance regardless of increasing age, and less productive people will become even less so. Seventh, mentorship/sponsorship in the first years is critical for faculty in launching a productive career. Eighth, faculty productivity over a career is affected by security and by challenge. Last, intrinsic and extrinsic rewards affect faculty performance.

Career Development in Medicine

The issue of career development has also been addressed in academic medicine. A recent article about undergraduate medical education reported in JAMA by Jonas, et. al, has shown that in the past two decades there has been a steady increase in the number of budgeted unfilled full-time faculty positions in clinical departments.[49] For the past seven years, the number of vacant faculty positions in medical schools has averaged 5% of total full-time positions. Among the clinical departments, vacancy rates range from 9.6% in dermatology to 3.5% in public health and preventive medicine.

Several articles have addressed the process of career development in academic medicine. Knope and Anderson described a model for academic development in family practice.[25] They stated that although individuals enter academic settings at different times, the stages of academic development are common to each. Four stages constitute the

process of academic development. Each stage, in turn, is influenced by three major factors: 1) personal elements representing the faculty member's internal perceptions, personal expectations, and conceptions of the academic role; 2) learners who are shaped by their perceptions of faculty roles, and in some cases, misplaced identification with faculty members; and 3) institutional elements formed by the collective perceptions, expectations, and biases of the administration senior faculty, and peers.

In the first stage, initiation, there is a newness and anticipation by all involved resulting in generally warm relationships and few difficult experiences. Personally, individuals experienced feelings of both excitement and apprehension associated with the new situation. At the learner level, students may accept or even create a new faculty member's reputation which is often not well grounded in fact. Institutionally, colleagues are less judgmental, allowing new colleagues freedom to demonstrate how their personal and professional qualities will mesh with the institution.

The adjustment stage, stage two, initial enthusiasm and tolerance is altered and the demands and expectations of day-to-day schedules assume greater immediacy. Personally, individuals begin to realize the realities of the institutional hierarchy, politics and bureaucratic procedures. Learners no longer maintain their generally positive feelings toward the new faculty member. Institutionally, colleagues begin to express increased expectation of conformity.

Stage three, the integration stage, represents a continuum where individuals either completely buy in to the institution and the profession or they leave the institution. Personally, the individual begins to

concentrate on developing a particular approach to academic, clinical, research or administrative activities and functions. Learners bring realistic expectations to the relationship they develop with the faculty member, based on their own experience and the faculty member's record of accomplishment with previous students. Institutionally, colleagues integrate the individual into the group.

The final stage, maturation, is a period in which the individual has passed through the academic ranks, and is accepted and recognized for his or her fulfillment of the roles of teacher, clinician, researcher or administrator. Personally, the individual is a senior member of the institution who is realizing recognition and reward. Learners value the expertise of their senior professor. Institutionally, colleagues not only accept the individual as a member of the group but attribute certain leadership responsibilities either by virtue of recognized accomplishments, or by virtue of recognized talents and abilities.

Curreri, using a social science model, described academic surgeons' career development in terms of four basic career paths.[50] Those in the steady-state pathway have selected their area of interest early in their careers and frequently persist in these endeavors for life. Rarely expressing strong needs for wealth and power, these individuals exhibit great pride in the quality of their work. In an academic medical center, they are the hard-working members of the faculty who gain most satisfaction from striving for perfection in the local area with little interest in achieving national recognition. Faculty in the linear career pathway have strong needs for achievement, power and wealth. They are competitive, energetic, aggressive, possess considerable self-esteem and know instinctively how to gain advantage in department politics. These

individuals will become nationally recognized for research and clinical expertise, and often rise to positions of considerable responsibility within the university. The spiral pathway is represented by the person who changes career interest at intervals ranging from 5 to 7 years. They possess great self-esteem but also seek personal growth and development by pursuing new challenges. They are driven by challenge and rebel against arbitrary rules. Academic surgeons who have devoted themselves to sequential major bursts of energy directed toward research, education, practice and administration exemplify this career pathway. Finally, individuals in the transitory category are "job hoppers." They enjoy work but exhibit low tolerance to boredom. Few academic surgeons are successful in pursuing this pathway. Curreri believes that each of these pathways have a place in academic surgery. It is absolutely imperative, however, that a leader recognize the different requirements for job satisfaction of each personality group so that he or she may manipulate the environment in such a way that departmental needs, motives, and values do not conflict with individual career attitudes.

"The Colorado Study," initiated to better understand the lives and careers of academic physicians, was conducted by focusing on the lives of 15 physicians in one department of a major teaching hospital.[28] The results of surveys and interviews with this group indicated that physicians' attitudes about their careers was not related to their academic rank, but rather their age. They fell into three age-related groups: young academic physicians (ages 33-36), middle-aged academic physicians (ages 37-52) and older academic physicians (ages 53-66).

Young academic physicians realized the path to success in academic medicine is through research. Although they found clinical teaching and direct patient care equally exciting, they realized that their academic advancement would suffer if they pursued teaching and patient care with the same zeal as research. They had strong concerns about the effects of their careers on their family lives and insisted that they would not now or in the future allow career goals to interfere with their participation in the family. More uninterrupted family time, working with students, and more interesting cases were major reasons for staying in academics; research was viewed as a necessary evil.

Middle-aged academic physicians were all concerned with professional achievement and advancement. They described a huge amount of stress which stemmed from fear of failure, guilt toward family, or overwork. All of these individuals had taken on significant administrative tasks in addition to pursuing research. They felt overworked, overcommitted and stretched to the limit. They described being caught in a continual dilemma between work and home. In most cases the dilemma was managed by minimizing family commitments and giving in to the workload.

Older academic physicians were unconcerned with personal achievement. They were reconciled to who and what they were and described themselves as having "psychological autonomy." Reward had ceased to be a motivating factor, instead, they developed an abiding concern to find activities of personal interest and meaning. All had moved into expanded teaching/counseling roles, political formulation or administration. Family relations were not a major issue among this group. The more successful physicians had developed lives in which

work was a higher priority. Less successful physicians had created a balance between work and home.

Multiple articles have addressed job satisfaction in academic medicine. Peters and others analyzed the congruence between sources of satisfaction and perceived areas of responsibility, perceived vehicles for career advancement and what the faculty member actually does.[51] They found there was a degree of consistency between what respondents seemed to be doing and what gave them satisfaction. Respondents expressed the feeling that the different job components created conflicts, at least in terms of time demands, but they coped by setting or rationalizing priorities. Thus, they seemed to spend the greatest proportion of their time in those parts of the job which best satisfied them.

In a survey of academic general internists' work roles and motivations for learning, Linn and his colleagues found that physicians consistently valued more highly the activities that they spent the most time doing.[13] The largest correlations and the only significant correlations were between the percent of time physicians spent in that activity and the ratings of the importance of skills related to it. Physicians who spent more time in research were less interested in improving patient interviewing skills, improving the quality of care they rendered, or improving their own morale or job satisfaction. Those who spent more time in patient care were more interested in improving skills to maximize patient compliance and technical quality of care; they were less interested in improving classroom teaching or improving their abilities to design and implement research. The authors felt that faculty would not become more academic as a result of faculty development

programs or continuing medical education activities due to the demands that are already placed on their time. They believe the most viable solution involves the recruitment and selection of faculty with appropriate skills, values and interests to meet the work demands.

Hitchcock and others, in a paper describing the academic roles of graduates of family medicine faculty development fellowship programs, found that these graduates, on average, spent less time in research activities than recommended for productivity. The commitments of faculty development program alumni to research activities consistently averaged less than 20%, regardless of the type of faculty position, academic track, or fellowship attended. The Robert Wood Johnson fellowship graduates, specifically trained to advance the scholarly foundation of family medicine, were spending on average only 18% of their time in research activities.[52]

Beaty and others, in their study of research activity of faculty in academic departments of Medicine, found that among the faculty with an M.D. degree who claim to be involved in research, 22% had no research training and an additional 2.7% had less than 6 months of training. Many faculty with relatively lengthy preparation for a research career did not spend most of their time doing research.[53]

Linn and his colleagues, in a separate study, compared sources of satisfaction and stress for physicians in full-time academic practice with those in private practice.[54] This study reported that a variety of time pressures were the most frequently cited sources of physician distress and were more prevalent among academic faculty. Academic faculty also worked significantly longer hours and, as a result, experienced more role strain between work and family/social responsibilities. They also

reported greater dissatisfaction with their finances. Academic physicians spent a greater proportion of their time doing research, supervising residents, and teaching in the classroom than did clinical faculty. On the other hand, clinical faculty spent a majority of their time seeing outpatients. In spite of these differences in work activity, there were no statistically significant differences between the groups with relation to anxiety, depression, job stress, job satisfaction, or life satisfaction. They concluded that academic and clinical roles are self-selected and differences may be related to personality factors related to career choice or to differences in demographic characteristics.

Medical and pediatric residents were surveyed to determine the relationship of five variables (quality of work life, family and social stress, interaction between trainees and training program, sociodemographic characteristics of trainees, and educational background of trainees) on career orientation.[14] The authors found that quality of work life variables, job stress and job satisfaction were significantly related to career orientation. When the effects of other factors were controlled using multiple regression analyses, five variables were found to be significantly related to an academic career orientation: 1) job satisfaction; 2) sponsorship by faculty; 3) living alone; 4) having an employed spouse; and 5) having previous publications. They suggested that academic medical centers interested in enhancing the academic orientation of their residents could be most effective if they selected residents who had a history of academic interest and provided them with satisfying training and faculty sponsorship.

Factors influencing resident career choices in Emergency Medicine was investigated by Sanders and others.[55] A survey was distributed in

conjunction with the annual American Board of Emergency Medicine Inservice Examination, to all Emergency Medicine residents. The authors found those residents planning an academic career were significantly motivated by a desire to make a contribution to medicine. These individuals were exposed to role models and placed less emphasis on the need for free time for other interests and were less concerned with their practice location. Research in medical school and residency and authorship of a research paper were significantly more prevalent for those residents desiring a career in academics.

In a longitudinal study of graduates of Case Western Reserve School of Medicine, Mawardi addressed the most common satisfactions and dissatisfactions of these individuals and their medical practices.[17] She found that full time faculty members were the most satisfied with their careers. They found satisfaction in research, providing accurate diagnosis and successful therapy, and teaching. Their greatest dissatisfactions related to time pressures, which included too little personal free time, continuous on-call responsibilities, and pressures of the work load; and administration and committee work. Private practitioners suffered most often from time pressures, paperwork, and therapy failures (when encountered).

Perceptions of academic teaching positions were addressed by randomly selected graduates of dermatology training programs.[18] Responses to questions about the limitations and attractions of academic practice fell into several clear patterns. Respondents in private practice cited income as the first or second most important negative factor in deciding against academic practice. This was followed in frequency by issues concerning politics, control of environment, and the requirement

to publish and obtain grants. Positive aspects of academic appointments were intellectual challenge and the opportunity to engage in teaching. Among faculty who had full-time faculty appointments, only one-third considered income to be the dominant negative factor, and half of the respondents were concerned about the inordinate amount of time that their work required to accomplish their academic responsibilities. Reasons for enjoying academic appointments were similar to those perceived by the private practitioners.

In a comparative study of faculty satisfaction, activity and demographics between family practice and orthopaedic surgery faculty in the military there were many similarities.[19] Areas of satisfaction for both groups were centered around the teaching aspects of the residency program, including the quality of residents selected and the quality of those graduating, as well as a positive feeling of control and input into significant program decisions. Dissatisfaction was focused on the administrative support facilities, including facilities and personnel. The only significant difference in areas of dissatisfaction and satisfaction between Orthopaedic and Family Practice faculty was dissatisfaction on the part of Family Practice faculty regarding promotions and salary. Although not statistically significant, there was also a noticeable difference between Orthopaedic and Family Practice faculty, in their roles as teachers. The Family Practice faculty member spent about half as much time in actual teaching as his or her Orthopaedic counterpart. Orthopaedic surgeons spend 15% of their time in primary patient care as compared with 52% spent by Family Practitioners. This means that the primary job of Family Practitioners is not education but patient care.

A companion study of career satisfaction, activity and retention of military orthopaedic surgeons indicated that there was great similarity between actual and preferred time utilization among orthopaedic surgeons, except in the areas of administrative duties and research.[20] The future plans of military academicians varied, but most were uninterested in pursuing academic careers for the same reasons that civilian surgeons left academics; inadequate opportunity for personal patient responsibility and insufficient income. In addition, lack of satisfactory office facilities and support personnel figured prominently in this decision.

Alpert argued that the increasing friction between clinical faculty and laboratory investigators over differences in promotion and perceived differences in salary were driving away many of the best young potential faculty members.[21] Recognizing that the triple-threat man or woman is a medical ideal, and a rarity, he believes that junior and senior faculty members should be encouraged to develop those areas that interest and suit them best. Spiro contended that too many good clinical teachers and excellent research physicians, who would be role models for our students, have left academic life due to: inability to obtain grants to support research, the erosion of collegiality, and the non-recognition of communication skills and patient care.[22]

In an editorial entitled "No Longer Threadbare or Genteel," Petersdorf states that there are several factors that motivate physicians to pursue an academic career.[56] First, there is the love of making a discovery. Second, there is the love of teaching. Third, there is the desire to practice medicine in an intellectual environment which is fueled by residents and medical students. Fourth, there is the stimulus to

excel. Fifth is the love of, and desire for, the collegial environment. Last, there is the love of fame or prestige. He believes that the single largest deterrent that keeps young physicians from entering academics is the frustration they experience from being unable to obtain grant funding. Unfortunately, the factors that have motivated physicians to pursue academic careers are becoming less gratifying. Faculty are being shuttled in and out of courses to give specific lecture without having knowledge of the gist of the entire course. Patient care has become larger, more bureaucratized, and more expensive. Intellectual stimulation has taken a back seat to multiple conflicting responsibilities, and collegiality is precluded to the size of institutions. He believes that academicians expect too much of academic medicine. Future faculty members must set realistic goals for themselves while the academic system must bring its goals into line with reality. Career planning, retraining, and flexibility are, according to Petersdorf, the key to attracting future academicians.

Describing why they had returned to academic radiology, five radiologists explained that the challenges of research leadership, the association with the best of today's clinical and research medical scientists, and the opportunity to participate in the education of the brightest of tomorrow's physicians required an academic career.[57] Affiliation, esteem, recognition and self-actualization were powerful motivations in their decisions to enter academia. These factors outweighed the immediate and substantial loss of income and security; the understood and accepted mutual level of expected competence assumed by colleagues; and the freedom not to be involved in research.

Maloney conducted a study which evaluated the effect of intellectual and economic motivation on patient care and teaching, and on the extent to which individual faculty members and institutions were meeting the needs of society in the field of medical education.[58] In order to best evaluate the role of motivational influences in the performance of the clinical faculty, the questionnaire was directed to address the following points: 1) How does the faculty member spend his or her work week? and 2) Is he or she paid a guaranteed salary or is income dependent to some degree on money earned in clinical activity? The author found that economic motivation plays a much lesser role in the behavior of academic surgeons than it does among academic medical nonsurgeons. Full-time academic surgeons performed fewer operations than clinical faculty surgeons and this was a source of major dissatisfaction for the academic surgeons. Clinical faculty were found to spend more time in teaching than academic faculty yet academic faculty spent double the amount of time in research related activities than did their clinical counterparts. The full-time academic faculty was significantly younger than the clinical faculty, giving evidence to the observation that academic institutions are having difficulty recruiting and retaining distinguished faculty. Maloney concluded that we need more, not fewer, professors in the clinical departments whose investigative efforts are uninterrupted by clinical responsibilities.

Surgery has been particularly affected by the paucity of young surgeons seeking academic careers. Departments of Surgery have experienced vacancy rates as low as 276 positions in 1984-85, to a five-year high of 376 positions in the 1989-90 academic year, the last year of the study.[49]

In 1973, the Committee on Issues of the Association for Academic Surgery studied the trend of young surgeons electively withdrawing from academic positions in favor of private practice.[15] Surgeons and surgical specialists who left academic positions were sent detailed questionnaires which were designed to ascertain major and minor considerations that led to their initial desire to pursue careers in academic surgery as well as principal conditions which prompted their resignation. The primary factors which initially motivated these individuals to pursue academic careers were a desire to develop and expand strong interests in teaching, a desire for additional development and training, professional prestige, department or faculty encouragement or pressure, and a desire to limit clinical practice to surgical fields of specific interest. The most influential factors affecting their decisions to resign were: inadequate opportunities for personal patient responsibility, insufficient incomes, and pressure to assume a large number of administrative duties early in their career development. While 68% of faculty who had left academics were more satisfied in private practice, 50% regretted leaving teaching, 32% missed the intellectual stimulation, and 15% missed research opportunities.

In a 1979 study of the "Recruitment and Retention of Academic Surgeons," Skinner examined the background, activities, and attitudes of surgical graduates from three university training programs, whose major departmental objective was the production of academic surgeons.[12] Respondents represented those currently engaged in academic surgery and those in private practice. In comparing the two groups, he found that commitment to research was one of the strongest differentiating factors between those choosing academic surgery vs. private practice. The amount of satisfaction academic surgeons derived from teaching

medical students and residents was significantly different from the private practitioner, yet lack of teaching opportunity was the most frequently cited source of discontent among the private practitioners. Those in private practice were significantly more satisfied with their incomes than were those in academics. What academic surgeons liked best about their careers were their clinical opportunities, teaching, the academic environment and atmosphere, and research opportunities. They disliked their low incomes, lack of time, government and university bureaucracy, and lack of research funds. Reasons for surgeons switching to careers in private practice included, to name a few: similarities of their academic job to private practice, desire to return to their home region, dislike for administration, academic politics and bureaucracy, income, lack of research funding.

In a study of the career choices of trainees in the first year of an academic university surgical residency program, Mason concluded that those residents choosing nonacademic careers did so because of concerns about the political environment, the lack of remuneration, the lack of consistency and opportunity, the loss of personal freedom, and the lack of opportunity to give individual patient care.[59] Those who chose full-time faculty roles cited the varied roles of teacher, surgeon, researcher, author, lecturer, and administrator, the enjoyment of thinking, opportunity to do research, stimulation of teaching, and career interest as motivating factors. There was no difference in the degree of career satisfaction between those surgeons in private practice and those in academics.

Barnes found that the most influential reason for individuals to initially choose academia related to the surgical department chairman, while

those surgeons initially selecting private practice did so for personal reasons.[60] Those who left academia did so primarily because of dissatisfaction with administrative or research demands, yet they greatly regretted leaving teaching. Those surgeons who returned to academic from private practice did so because of: dissatisfaction with their practices, the desire for more intellectual stimulation, to improve their teaching opportunities and to avoid some personality conflicts encountered in private practice. The most common reason for those in private practice not to enter academic surgery was the necessity of doing research. Barnes believes that the decreasing emphasis on the pursuit of creative endeavors is the most crucial issue that has led to the instability and frustration of the academician. Academicians-to-be should be sought out early and academic surgeons should serve as role models illustrating the "juxtaposition" of clinical service and research in surgical care.

Chapter Summary

Based upon a review of the literature, two conclusions can be drawn. The previously cited literature does identify some relevant variables which serve to focus the content of this study. Second, the literature which has been located is quite dated and no recent studies have been conducted examining the career development and satisfaction of academic surgeons. There is a need to examine current reasons why surgeons engage in academic careers and to determine what dilemmas they encounter during career development, if we hope to continue to attract young physicians to academic medicine, to enhance their job satisfaction and to decrease faculty attrition rates.

CHAPTER III

RESEARCH METHODS

Introduction

The study methods are presented in this chapter. They include a discussion of the study population and the representative nature of the respondent sample; a discussion of instrument development; a description of the survey procedures; definition of the study variables; and a restatement of the research questions in the form of research objectives along with relevant hypotheses. A description of the data analysis techniques related to each research objective is also included. Finally, a summary of the research methods and procedures is presented.

Study Population and Respondent Sample

The population for this study consisted of surgeons located in the United States and Puerto Rico who were members of the Association for Surgical Education on December 1, 1992 (n=521). Excluded from the study were non-physician members (n=37) and Canadian members (n=60). A total of 392 academic surgeons responded to the survey. This represented an overall response rate of 75.2%. In order to assess the representative nature of the response, three known characteristics of the population, two personal and one professional, were selected and compared with the response frequency. The 1992 American College of

Surgeons Yearbook was used to acquire the information on these characteristics. Data were not available on 28 non-respondents who represent 21% of all non-respondents and 5% of the population.

The known personal characteristics of non-respondents were age and gender. These data were compared with the 389 respondents who gave their age and gender. The mean age for the respondent sample was 48.2 years and the mean age of non-respondents was 52.6 years. Analysis of the groups using chi-square for equal interval age cohorts demonstrated a significant difference ($p<.001$) between respondents and non-respondents. The gender of the respondent sample was 91.5% male and 8.5% female, while 97.7% of non-respondents were male and 2.3% were female. Again, the differences between these groups was statistically significant ($x^2=5.91$, $p<.015$) demonstrating that there was a greater proportion of men among non-respondents.

The professional characteristic selected was academic rank. Most of the respondents (n=388) indicated their academic rank. Of the respondents, 26.0% were Assistant Professors/Clinical Assistant Professors, 29.4% were Associate Professors/Clinical Associate Professors, and 40.5% were Professors/Clinical Professors. Four percent were characterized as "other", a category which included preceptors, individuals in positions that did not carry an academic rank, and individuals holding non-traditional academic titles. In the non-respondent group 22.9% were Assistant Professors/Clinical Assistant Professors, 23.7% were Associate Professors/Clinical Associate Professors, 47.3% were Professors/Clinical Professors, and 6.1% were classified as "other." There was no statistically significant difference

(x^2=3.45, p<.327) between respondents and non-respondents on the characteristic of academic rank.

Study Instrument

The survey instrument developed for this study was adapted from a questionnaire developed by Maurice Hitchcock, Ed.D. and Scott Woods, M.D. Their survey was developed from four sources: a content review of the literature, Delphi studies with family medicine faculty, descriptive data from the literature, and questionnaires from published quantitative research. They conducted a pilot study of the questionnaire with thirty-two visiting family medicine physician faculty at Duke University, and based on comments they received, made revisions on the instrument. Test-retest reliability was conducted on a similar group of twenty-three visiting faculty with the time interval between tests being three days. The average item correlation was 0.74.

The instrument used in this study was composed of all 41 items in the Hitchcock and Woods survey, plus 21 additional items. The additional items addressed factors influencing a career in academic surgery, how respondents spent their time, and additional demographic information. These additional survey items were derived from a further review of the academic medicine professional development literature. Two pilot studies of the instrument were conducted with 15 academic surgery faculty at Michigan State University. The survey instrument was also reviewed by the Editorial Advisory Board of the Association for Surgical Education. Revisions were made in the demographic section of the instrument based upon the pilot and review. (Appendix A)

The study was submitted to Michigan State University's Committee Involving Human Subjects for "exempt" review and was approved. The questionnaire was simultaneously submitted to the Editorial Advisory Board of the Association for Surgical Education for review. This Board approved the questionnaire and granted permission to use the Association's membership mailing list and name on the questionnaire itself. The President of the Association for Surgical Education agreed to write a letter of endorsement to be sent with the initial mailing of the questionnaire. (Appendix B)

Survey Procedure

The overall strategy for distribution of this survey followed the Total Design Method suggested by Don Dillman (1978).[61] A membership mailing list was obtained from the Educational Clearinghouse of the Association for Surgical Education (ASE) and a letter of endorsement from the President of ASE was secured for the first mailing. The first mailing of the questionnaire was sent on Tuesday, January 5, 1993 to all surgeon members of the Association for Surgical Education (n=521) located in the United States and Puerto Rico. Questionnaires in each mailing were accompanied by a self-addressed, stamped envelope for ease in questionnaire return. To protect the respondents' confidentiality, no respondent identification information was contained on the questionnaire itself. Instead, a stamped self-addressed, respondent identification post card, which subjects mailed separately from the questionnaire, was included with the survey. The sole purpose of the respondent identification post card was to remove individuals who already completed the questionnaire from subsequent mailings. At three

weeks (Tuesday, January 26, 1993) a letter and replacement questionnaire were sent only to non-respondents. This questionnaire was nearly the same in appearance as the original mailout, but contained a shorter cover letter which not only informed non-respondents that their questionnaire had not been received, but appealed for the questionnaire's return. (Appendix C)

The Total Design Method (TDM) follow-up procedures suggest three carefully timed mailings, each of which differ substantially from the others. In this study only one follow-up mailing was conducted because a response rate of 55% (n = 288) was obtained from the first mailing and an additional response rate of 20% (n=104) was obtained from the follow-up mailing, yielding a total response rate of 75.2% (n=392). This is considered an acceptable response rate by Dillman who states "response rates to mail questionnaires are usually lower than those obtained by either of the interview methods. When put to its most difficult test, that is, surveys of the general public using lengthy questionnaires, response rates from 60 to 75 percent are achieved."

Study Variables

In this study, the dependent variables were the scores of respondents on the empirically derived factor scales. The independent variables were such selected characteristics as:

1. type of faculty appointment
2. academic rank
3. number of years in academic surgery
4. timing of career decision

5. factors influencing career decision
6. presence or absence of fellowship training
7. type of fellowship training
8. length of fellowship training
9. practice setting
10. allocation of work hours
11. gender
12. age
13. marital status
14. employment status of spouse or roommate
15. presence or absence of children

Research Objectives and Hypotheses

Research Objective 1 — To Identify the Characteristics of Faculty Involved in Academic Surgery

Research Objective 2 — To Identify Career Development Issues Encountered by Surgery Faculty

A necessary objective of this research was to identify the factors influencing surgeons' decisions to pursue careers in academic surgery, to identify when they decided to pursue academic careers, and to identify the importance of career development issues encountered by surgery faculty.

Research Objective 3 — To Determine if the Career Development Issues of Academic Surgeons Parallel the Issues of Non-Physician College Faculty

This objective represents a pivotal research objective for the study. Because academic surgeons function in two worlds — the world of higher education and the business of medicine, it will be important to determine how career development issues merge.

Research Objective 4 — To Determine if Surgery Faculty With Fellowship Training Differ From Their Peers Without Fellowship Training

This objective addresses relationships between the empirically derived career development issues and the fellowship training experiences of academic surgeons. For purposes of analysis, three hypotheses were developed. The hypotheses are stated here in the null form.

Hypothesis #4.1. There will be no statistically significant relationship between the empirically derived career development issues and participation in fellowship training.

Hypothesis #4.2. There will be no statistically significant relationship between the empirically derived career development issues and the type of fellowship training.

Hypothesis #4.3. There will be no statistically significant relationship between the empirically derived career development issues and the length of fellowship training.

Research Objective 5 — To Examine the Relationship Between Selected Characteristics and Career Development Issues

This objective addresses relationships between the empirically derived career development issues and the selected characteristics of academic surgeons. For purposes of analysis, ten hypotheses were developed. The hypotheses are stated here in the null form.

Hypothesis #5.1. There will be no statistically significant relationship between the empirically derived career development issues and the type of faculty appointment of the academic surgeon.

Hypothesis #5.2. There will be no statistically significant relationship between the empirically derived career development issues and the respondents' academic rank.

Hypothesis #5.3. There will be no statistically significant relationship between the empirically derived career development issues and the timing of the respondents' decisions to pursue academic surgical careers.

Hypothesis #5.4. There will be no statistically significant relationship between the empirically derived career development issues and the setting in which the responding surgeons' practice.

Hypothesis #5.5. There will be no statistically significant relationship between the factors affecting career choice and the age of the responding surgeons.

Hypothesis #5.6. There will be no statistically significant relationship between the empirically derived career development issues and the marital status of the responding surgeons.

Hypothesis #5.7. There will be no statistically significant relationship between the empirically derived career development issues

and such factors influencing responding surgeons' decisions to pursue academic careers as: family obligations, desire to/not to specialize, personal income, concerns over stress, concerns over competition, adequacy of research skills or training, leisure time, having a role model, concerns over the value of doing research, and personal indebtedness.

Hypothesis #5.8. There will be no statistically significant relationship between the responding surgeons' actual allocation of work hours and their preferred allocation of work hours.

Hypothesis #5.9. There will be no statistically significant relationship between the empirically derived career development issues and parental status of the responding surgeons.

Hypothesis #5.10. There will be no statistically significant relationship between the empirically derived career development issues and the employment status of the responding surgeons' spouses or roommates.

Analysis

Data were coded and entered at Michigan State University. Analyses were performed on an IBM computer using the extended version of the Statistical Package for the Social Sciences (SPSS-X, Release 3.0).

Appropriate data analysis techniques were employed for each of the research objectives. The following section identifies the technique(s) employed for each objective. (Appendix D)

Research Objective 1 — To Identify the Characteristics of Faculty Involved in Academic Surgery

In this preliminary analysis, descriptive statistics were used to describe the characteristics of the responding academic surgeons on the variables of: response rate, age, marital status, employment status of their spouse or roommate, the presence or absence of children and the age of those children, type of academic appointment, academic rank, type of practice setting, and the percentage of effort academic surgeons spend and would prefer to spend engaged in academic tasks. Chi-square tests were conducted to determine differences between women and men regarding their: marital status, employment status of their spouse or roommate, the presence or absence of children, and the age of those children. A t-test was conducted to distinguish differences between women and men on the variable of age.

Research Objective 2 — To Identify Career Development Issues Encountered by Surgery Faculty

Descriptive statistics provided information on factors influencing surgeons' decisions to pursue careers in academic surgery, the timing of surgeons' decisions to pursue academic careers, and the twenty-one Likert scale items identified as "career development issues." In addition, an exploratory factor analysis was conducted on the career development issues to determine if the items clustered into the four academic responsibilities of a faculty member (Bland, 1992): professional academic skills, administration, education, and research.

Research Objective 3 — To Determine if the Career Development Issues of Academic Surgeons Parallel the Issues of Non-Physician College Faculty

In this broad research question, generalizations from higher education studies were used as guidelines to draw comparisons with similar items from this study. Eleven analyses were conducted: 1) academic rank and current percent effort in academic tasks were analyzed using Analysis of Variance (ANOVA); 2) academic rank and preferred percent effort in academic tasks were analyzed using ANOVA; 3) academic rank was compared with gender using chi-square (x^2); 4) academic rank and the four career development factors were analyzed using MANOVA; 5) preferred percent effort in academic tasks and gender were compared using a t-test; 6) correlations between preferred percent effort and age were made by using the Pearson Product Moment Correlation (r); 7) gender and the ten factors affecting academic career choice were analyzed using t-tests; 8) gender and the four career development factors were compared using ANOVA; 9) correlations between age and the four career development factors were made with the Pearson Product Moment Correlation; 10) differences between the number of years the respondents have been academic surgeons and factors affecting career choice were analyzed using Multiple Linear Regression (Multiple R); and (11) differences between the number of years the respondents have been academic surgeons and the four career development factors were analyzed using Multiple R.

Research Objective 4 — To Determine if Surgery Faculty With Fellowship Training Differ From Their Peers Without Fellowship Training

To analyze this objective, descriptive statistics were obtained to provide information about the extent of fellowship participation.

Hypothesis #4.1: T-tests were conducted to determine the differences between the presence or absence of fellowship training and current percent effort in academic tasks, preferred percent effort in academic tasks, and the four career development factors.

Hypothesis #4.2: T-tests were conducted to determine the differences between the presence or absence of a clinical fellowship and current percent effort in academic tasks, preferred percent effort in academic tasks, and the four career development factors; and the presence or absence of a research fellowship and current percent effort in academic tasks, preferred percent effort in academic tasks, and the four career development factors.

Hypothesis #4.3: The relationship between number of months individuals spent engaged in research fellowships and their current and preferred percent effort engaged in academic tasks was determined using Pearson Product Moment Correlations.

Research Objective 5 — To Examine the Relationship Between Selected Characteristics and Career Development Issues

This objective addresses relationships between the empirically derived career development issues which have emerged as four career development factors, the percent of effort surgeons currently spend engaged in academic tasks, the percent of effort surgeons would prefer to

spend engaged in academic tasks, factors affecting career choice, and the selected characteristics of academic surgeons.

Hypothesis #5.1. To determine differences between the type of faculty appointment (part-time vs. full-time, and non-tenure track, tenure track and other) of the academic surgeon and factors affecting career choice a t-test was conducted. Differences between respondents' type of faculty appointment and the four career development factors were analyzed using multiple analysis of variance (MANOVA). A MANOVA was used here and in subsequent analyses to examine more than one variable simultaneously.

Hypothesis #5.2. To determine differences between the respondents' academic rank and factors affecting career choice a MANOVA was conducted.

Hypothesis #5.3. To determine differences between the timing of respondents' decisions to pursue academic surgical careers and factors affecting career choice a MANOVA was conducted. Differences between the timing of respondents' decisions to pursue academic surgical careers and the four career development factors were also analyzed using MANOVA.

Hypothesis #5.4. To determine differences between the setting in which the responding surgeons' practice and factors affecting career choice a MANOVA was conducted. Differences between the setting in which the respondents practice and the four career development factors were also analyzed using MANOVA.

Hypothesis #5.5. To determine differences between the age of the responding surgeons and factors affecting career choice a Multiple Linear

Regression was conducted. Multiple Linear Regression allows multiple independent variables to be equated with a single dependent variable.

Hypothesis #5.6. To determine differences between the marital status of the responding surgeons and the factors affecting career choice a MANOVA was conducted.

Hypothesis #5.7. To determine differences between such factors affecting responding surgeons' decisions to pursue academic careers as: family obligations, desire to/not to specialize, personal income, concerns over stress, concerns over competition, adequacy of research skills or training, leisure time, having a role model, concerns over the value of doing research, and personal indebtedness and the four career development factors a Multiple Linear Regression was conducted.

Hypothesis #5.8. To determine differences between the responding surgeons' actual allocation of work hours and their preferred allocation of work hours chi-square was conducted.

Hypothesis #5.9. To determine differences between the parental status of the responding surgeons and the amount of effort they would prefer to spend engaged in academic tasks and the amount of time they actually spend engaged in academic tasks MANOVA tests were conducted. Differences between the parental status of respondents and the four career development factors was analyzed using MANOVA.

Hypothesis #5.10 To determine differences between the employment status of the responding surgeons' spouses or roommates and their current and preferred percent effort engaged in academic tasks a MANOVA was conducted.

Chapter Summary

The population for this study consisted of surgeons located in the United States and Puerto Rico who were members of the Association for Surgical Education on December 1, 1992. Surgeons were mailed a copy of the career development questionnaire, a prepaid return envelope, and a stamped self-addressed, respondent identification post card. An overall response rate of 75.2% was achieved. Based on a comparison of known variables about respondents and non-respondents, the respondent sample proved to be representative of the population on the variable of academic rank, but was significantly different on the variables of age and gender.

Descriptive statistics provided an overview of responses on each of the survey items, and correlational and discriminant statistical analysis techniques were employed to examine the differences between the characteristics of the respondents, as well as the relationship between those characteristics and the career development issues.

CHAPTER IV

RESULTS

Introduction

This chapter contains the presentation and statistical analysis of surgeons' responses to survey items. The characteristics of responding surgeons who are involved in academic surgery are presented first. The second section contains an analysis of surgeons' responses to factors influencing their decisions to pursue academic careers, an analysis of surgeons' responses to career development issues, and the relative importance academic surgeons place on these issues. This section also presents the results of the factor analysis of the career development issues. The third section presents correlation and discriminant analyses related to the career development issues of surgeons. Section four presents the correlation and discriminant analyses examining the relationship between surgeons who have engaged in fellowship training and surgeons who are non-fellowship trained. Section five presents the correlation and discriminant analyses examining the relationship between selected characteristics of surgeons and career development issues. The analyses are presented for each of the research objectives and hypotheses formulated for this study.

Research Objective 1 — To Identify the Characteristics of Faculty Involved in Academic Surgery

This survey yielded a response rate of 75.2% (n=392). Demographic information on the respondents revealed that 91.5% were male and 8.5% were female. Their mean age was 44.78 years. The mean age for women was 41.69 years and the mean age for men was 48.82 years; this difference was statistically significant ($t=4.23$, $p<.001$).

Of all respondents, 90.3% were married, 6.6% were single and living alone, and 2.3% were single and living with someone. Again, when women and men were compared on this variable using x^2 there was a highly significant statistical difference ($p<.0001$). Male respondents were more likely to be married than female respondents (94.1% vs. 57.6%). When asked if their spouse or the person with whom they lived was employed, 41.8% responded affirmatively. Statistically significant differences ($x^2=13.45$, $p<.0003$) existed between men and women on this variable. Seventy-eight percent of responding women stated that their spouse or the person with whom they lived was employed as compared to 39% of responding men. Only 9.6% of the respondents' spouses or roommates were employed as faculty members in university settings. However, the spouses or roommates of women respondents were more likely to be employed in this setting than the spouses or roommates of men (21.7% vs. 8.8%). These differences were statistically significant ($x^2=4.12$, $p<.05$).

Most respondents had children (86.9%), although there were statistically significant differences between women and men ($x^2=48.83$, $p<.001$). Of those who had children, 46.9% were women and 90.4% were men. Regarding the age of respondents' children, 28.2% had pre-school

age children; 43.7% had children in grades K-8; 20.1% had high school age children (grades 9-12); and 50.1% had children who were beyond their high school years. There were statistically significant differences (x^2=13.05, p<.0003) between women and men and the age of their children; 69% of women had preschool age children compared to 27% of men. Men were more likely to have high school age children (x^2=3.94, p<.04) and children who were beyond their high school years (x^2=8.65, p<.003). Approximately 47% of women and men had children aged K-8. Sixty-eight percent of the respondents who had children stated that at least some of their children lived with them full-time; there were no differences between women and men on this variable. Differences between women and men respondents on these select variables are illustrated in Table 4.1.

Ninety-six percent of all respondents indicated that they had an appointment at a medical school. This appointment was part-time for 13.8% of respondents and full-time for 86.2% of respondents. Over half of the respondents (56.8%) had tenure track academic appointments; of these, 61.7% had tenure. Approximately 34% of respondents classified themselves as non-tenure track, and 9.6% were described as "other." The most commonly specified reason for marking "other" was the absence of a tenure system at that institution.

The majority of respondents were professors/clinical professors (40.5%); while associate professors/clinical associate professors and assistant professors/clinical assistant professors were fairly equally represented (29.4% and 26.0% respectively). Only 3.9% of respondents were classified as "other," a category encompassing preceptors, positions that did not carry an academic rank, and other non-traditional academic

titles. The mean number of years that respondents had been in academic surgery (excluding residency and fellowship years) was 13.

When asked to indicate where most of their patient care activity takes place; 38.0% of academic surgeons practiced in a university-owned hospital, 16.5% practiced in a county or VA hospitals; 44.2% practiced in community or private hospitals; and 4.6% indicated that their practice took place in a setting that was not listed.

Subjects were asked to identify what percentage of effort was involved in the categories of administration, clinical work, research and teaching (independent from clinical work) in their current positions. Based on their own goals, they were asked what their ideal allotment of time would be in each of these same categories. Their responses are indicated on Figure 4.1. Respondents spent more time involved in administrative activities than they desired, and spent less time than they desired involved in research and teaching.

Research Objective 2 — To Identify Career Development Issues Encountered by Surgery Faculty

Ten factors associated with influencing surgeons' decisions to pursue careers in academic surgery were presented. Subjects were asked to determine the importance of each item (on a scale of 1-4, with 1 being not important and 4 very important) in influencing their decisions to pursue a career in academic surgery. Table 4.2 illustrates these findings. Issues of personal indebtedness, concerns over competition, personal income, concerns over stress, and leisure time were considered not important or not very important to most respondents (range 93.3% - 77.5%). Seventy-four percent of respondents ranked

"having a role model" as the most significant factor in their decision to pursue an academic surgical career. Respondents were fairly equally split regarding the importance of such factors as family obligations, desire to/not to specialize, adequacy of research skills or training, and concerns over the value of doing research.

When asked, "when did you decide on an academic career," 50.5% stated that they decided during residency, 19.8% made this decision after training, 16.5% during medical school, 8.5% during their fellowship(s) and only 4.6 had decided their career path prior to entering medical school.

The mean scores of the 41 career development issues are found on Table 4.3. For the purpose of this study, means scores ≥3.5 were considered "agree," mean scores between 3.4 and 2.5 were considered "neutral," and mean scores between 2.4 and 1.6 were considered "disagree." Respondents agreed with eleven statements (range 4.5 - 3.5), felt neutral about 25 statements (range 3.4 - 2.5), and disagreed with five statements (range 2.4 - 1.6). The statements with which respondents agreed concerned issues of career satisfaction, i.e., deriving personal satisfaction from their career, feeling confident in their abilities and skills, and feeling recognized as an expert. Time management as a source of stress was the only issue of agreement which is considered a negative.

The five statements with which respondents disagreed were inversely related to the eleven issues of agreement. Respondents did not agree that their careers were starting to stagnate, they did not want to explore alternative careers, they were not dissatisfied with their level of clinical skills, they would not choose a career outside of medicine if they

had it to do all over again, and they did not feel they made a mistake choosing academic surgery as a career.

An exploratory factor analysis of the 41 career development issues (conducted to determine whether the variables could be explained by a smaller number of factors) resulted in items loading on eleven factors. A review of eigenvalues (values which describe the amount of variance in the data explained by that factor), revealed very little variance between the factors. When the factor issues were reviewed, it appeared that the variance could be described by four factors. The factor analysis was then loaded for four factors. When loaded for four factors, all but seven items fell onto one of the four factors. Because the seven factors did not have strong positive or negative correlations with any of the four factors, and because they did load logically to build a fifth factor, they were omitted from the study. The seven issues are as follows: I feel I have a realistic understanding of the hierarchy of my institution; I am satisfied with my teaching role; I feel burdened by my administrative tasks; research competence is one of my major strengths; my career is starting to stagnate; and I feel that my rapport with residents/students is one of my major strengths.

Factor 1, entitled "Institutional Frustrations/Concerns" had the greatest number of loadings, eleven. Three of the items were negatively correlated with the factor. Items constituting Factor 1 dealt with frustrations concerning performance expectations, personality conflicts within their department, and inability to evoke change; conflicting expectations regarding responsibilities; a lack of mentoring relationships; and discontentment with their salaries.

Factor 2, entitled "Time Management Issues," loaded with seven items, one which was negatively correlated. Items on this factor dealt with frustrations about inadequate time to devote to research, social relationships, and family; feeling constrained by time demands; and inability to manage time effectively.

Factor 3, "Professional Confidence" was also loaded with seven items. This factor addressed issues of confidence, independence, and anxiety that faculty members have about their academic roles and their ability to meet the challenges that lay ahead of them. These issues were in the domains of teaching, research, administrative skills, and clinical skills.

The final factor, Factor 4, "Career Satisfactions," was loaded with nine items, four of which were negatively correlated. Items on this factor dealt with issues that were satisfying for academic surgeons; feeling recognized as an expert, feeling satisfied with their career choice, feeling recognized as a leader, and deriving personal satisfaction from their careers. The factors and their item loadings are displayed on Table 4.4.

Research Objective 3 — To Determine if the Career Development Issues of Surgery Faculty Parallel the Issues of Non-Physician Faculty.

All analyses conducted to support this research objective were made on the sample population of this study. There was no comparison group. The major issues of non-physician college faculty were used as guidelines for comparison with like issues of academic surgeons.

The difference between academic rank and the current and preferred percent effort surgery faculty spend engaged in academic tasks was analyzed. Statistically significant differences emerged between

academic rank and the variables: percent effort surgery faculty actually spend engaged in administrative tasks ($f=24.30$, $p<.001$) and percent effort they prefer to spend engaged in administrative tasks ($f=16.85$, $p<.001$); as well as the percent effort surgery faculty actually spend engaged in clinical work ($f=17.20$, $p<.001$) and the percent of effort they prefer to spend engaged in clinical work ($f=8.24$, $p<.001$). There were no statistically significant differences between academic rank and the amount of time surgery faculty spend or would prefer to spend engaged in research and teaching.

When the independent means of academic rank were reviewed with regard to percent of time individuals actually spend and would prefer to spend engaged in academic tasks, the following results, as shown in Table 4.5, emerged. As surgeons progressed through traditional academic ranks (Assistant Professor to Associate Professor to Professor): the amount of time they spent and preferred to spend in administrative activities increased; the amount of time they spent and preferred to spend in clinical work decreased; and the amount of time surgeons actually spent and preferred to spend involved in research increased until they achieved the rank of professor, then it decreased slightly. The amount of time surgeons spent and preferred to spend engaged in teaching did not follow a clear path.

In determining the difference between academic rank and the four career development factors, statistically significant differences ($F=7.94$, $p<.001$) emerged between academic rank and all four factors. When the independent means of academic rank were reviewed with each of the four factors, the concerns associated with the first three factors (Institutional Frustrations/Concerns, Time Management Issues, and Professional

Confidence) all decreased as surgeons progressed through the traditional academic ranks. Career Satisfaction increased as surgeons progressed through the traditional academic ranks. The responses of surgeons in the "other" category did not follow a clear

path with surgeons carrying traditional academic ranks. These data are displayed in Table 4.6.

There were statistically significant differences ($x^2=14.81$, $p<.002$) between academic rank and gender as graphically depicted in Figure 4.2. Women more frequently held the ranks of Assistant and Associate Professor, while men were Professors greater than three times more frequently than women.

T-tests revealed statistically significant differences between gender and factors affecting career choice as well as gender and surgeons' preferred percent effort engaged in academic tasks. The only statistically significant difference ($p<.05$) between factors affecting career choice and gender emerged on the issue of personal income; personal income was more important to men than women. With regard to preferred effort in academic tasks, men preferred to spend more time engaged in clinical work than women ($t=2.12$, $p<.035$), and women preferred to spend more time involved in research than men ($t=2.16$, $p<.031$). There were no statistically significant differences between men and women on their preference for teaching or administrative activities.

Factor 3, Professional Confidence, revealed the only statistically significant difference ($F=9.76$, $p<.002$) between men and women on the four career development factors. An analysis of independent means showed that women had significantly less professional confidence than men.

The relationship between age and surgeon's preferred percent effort engaged in academic tasks was analyzed using Pearson Product Moment Correlation. This correlation revealed that the older the surgery faculty member was, the more time he/she preferred to spend engaged in administrative activities (r=.29). The younger the surgery faculty member, the more time he/she preferred to spend engaged in clinical work (r=-.19) and research (r=-.15). There was no correlation between age and the amount of time preferred for teaching. When age was correlated with the four career development factors, statistically significant differences emerged. The older the surgery faculty member was, the less significant were Institutional Frustrations/Concerns (r=-.30), and Time Management issues (r=-.19). There was no relationship between age and Career Satisfaction and no statistically significant difference between age and Professional Confidence.

When factors affecting career choice were compared to the number of years individuals had spent in academic surgery, three issues, leisure time, adequacy of research skills or training, and concerns over competition accounted for ten percent of the variation. The strength of the relationship between years in academic surgery and the factors affecting career choice was R=.32. When the four career development factors were compared to the number of years individuals had spent in academic surgery, they accounted for 19% of the variance related to number of years in academic surgery. The strength of the relationship between years in academics and the four factors was R=.44.

Research Objective 4 — To Determine if Surgery Faculty With Fellowship Training Differ from their Peers Without Fellowship Training.

Hypothesis #4.1: When asked if they had completed one or more fellowships, 62.7% indicated they were fellowship trained. Approximately two-thirds (66%) of the fellowship trained respondents indicated their fellowship was clinical. The mean number of months spent engaged in clinical fellowships was 16.6. Approximately one-third (32%) of respondents had completed research fellowships. The mean number of months spent engaged in research fellowships was 18.8 months. Only 2% of respondents had completed faculty development fellowships and 1.5% indicated involvement in some other type of fellowship.

The presence or absence of fellowship training and the percent of effort surgical faculty currently spend engaged in academic tasks showed statistically significant differences between surgeons who did and did not complete a fellowship. Surgeons who completed a fellowship: spent less time engaged in administrative tasks ($t=3.23$, $p<.001$); spent a greater percentage of their time engaged in clinical work ($t=2.03$, $p<.05$); and spent a greater percentage of their time engaged in research ($t=3.70$, $p<.001$) than did their peers who were not fellowship trained. There was no statistically significant difference between fellowship completion and percentage of effort involved with teaching.

The presence or absence of fellowship training and the percent of effort surgical faculty preferred to spend engaged in academic tasks was analyzed. Surgeons who completed a fellowship were statistically different from non-fellowship trained surgeons in their desire to spend a greater percentage of their effort involved in research ($t=2.92$, $p<.004$) and their preference to spend less time involved in teaching ($t=2.16$,

p<.031). Differences between the two groups in their preferences for administrative tasks and clinical work were not statistically significant. The differences between fellowship and non-fellowship trained surgeons and their actual and preferred percent effort in academic tasks is displayed in Table 4.7.

The differences between fellowship and non-fellowship trained surgeons were also analyzed with the four career development factors. Surgeons who completed fellowships expressed greater concern for Factor 1, Institutional Frustrations/Concerns (t=3.03, p<.003), while non-fellowship trained physicians expressed greater concern for Factor 3, Professional Confidence (t=1.96, p<.050). There were no statistically significant differences between the two groups on Factor 2, Time Management, or Factor 4, Career Satisfaction.

Hypothesis #4.2: Differences were sought between surgeons who had and had not completed clinical fellowships and the percent of effort they currently spend engaged in academic tasks as well as the percent of effort they preferred to spend in these tasks. Surgeons who completed clinical fellowships preferred to spend a lesser percentage of their time engaged in administrative tasks (t=3.17, p<.002) and they actually spent less of their time involved in administrative issues than surgeons without clinical fellowships (t=4.33, p<.001). Clinical fellowship trained surgeons spent a greater percentage of their effort involved in clinical work (t=3.93, p<.001) than did non-clinical fellowship trained surgeons, but preferred to spend a greater percentage of their time involved in research (t=2.14, p<.033) than did their counterparts. There were no statistically significant differences between the two groups on the amount of time they actually spent involved in research or teaching, nor were there

statistically significant differences between the amount of time they preferred to spend involved in clinical work and teaching.

With regard to the four career development factors, the only statistically significant differences that emerged between surgeons who had completed clinical fellowships and those who had not, were on Factors 1 and 2. Surgeons completing clinical fellowships expressed more concern regarding Institutional Frustrations/Concerns ($t=3.11$, $p<.002$) and issues concerning Time Management ($t=2.44$, $p<.015$) than did non- clinical fellowship trained surgeons.

Surgeons who completed research fellowships were significantly different than non-research fellowship trained surgeons in that they preferred to spend a greater percentage of their time engaged in research ($t=3.37$, $p<.001$) and actually spent the greatest percentage of their time conducting research ($t=5.40$, $p<.001$). Research fellowship trained surgeons preferred to spend less time involved in teaching ($t=3.06$, $p<.002$). There were no statistically significant differences between the two groups on actual time spent and preferred time spent in clinical work or administrative activities.

Surgeons completing research fellowships expressed less concern regarding Factor 3, Professional Confidence issues ($t=2.60$, $p<.010$) and greater Career Satisfaction, Factor 4 ($t=3.96$, $p<.001$) than did non-research fellowship trained surgeons.

Hypothesis #4.3: The number of months surgeons spent engaged in research fellowships were also compared with the percent effort they currently expend in academic tasks and the percent effort they preferred to spend in these tasks. Pearson Product Moment Correlation revealed that the greater the number of months surgeons spent involved in

research fellowships, the greater the amount of time they actually spent doing research (r=.26), the greater the amount of time they preferred to spend doing research (r=.20), and the lesser amount of time they preferred to spend teaching (r=-.13).

Research Objective 5 — Relationship Between Selected Characteristics and Career Development Issues

Hypothesis #5.1: Factors affecting career choice and the four career development factors were compared with surgeons' part-time or full-time academic appointments. Two issues affecting career choice were statistically significant between part-time and full-time academic surgeons. Full-time academic surgeons viewed the adequacy of research skills or training (t=2.06, p<.040), and concerns over the value of doing research (t=3.28, p<.001) as more important issues in deciding upon academic careers than did part-time faculty. There were no statistically significant differences between full-time and part-time academic surgeons on the four career development factors.

When the factors affecting career choice were compared with the type of academic appointment that academic surgeons held (tenure track, non-tenure track, "other"), the overall test of factors affecting career choice was not statistically significant (F=1.44, p<.097). There were, however, statistically significant differences between two of the four career development factors (Factors 3 and 4) and type of academic appointment (F=1.98, p<.047). Tenure track faculty did not have significant concerns regarding issues of professional confidence and they were more satisfied with their careers than were non-tenure track faculty or those falling in the category of "other."

Hypothesis #5.2: MANOVA revealed that there were statistically significant differences ($p<.001$) between the academic rank of surgeons and six of the factors affecting their career choice. A univariate analysis (ANOVA) showed there were statistically significant differences across the groups on six variables. Independent means demonstrated that when deciding upon careers in academic surgery, those who had reached the rank of Professor felt their decision had been less motivated by family obligations, concerns over stress, concerns over competition, leisure time and personal debt, and more motivated by concerns over the adequacy of their research skills or training than their lower ranked peers.

Hypothesis #5.3: Statistically significant differences emerged when the factors affecting career choice were compared with the timing of academic surgeons career decision ($F=3.03$, $p<.001$). A review of independent means showed that the later surgeons made their decision to enter academic careers, the more significant such issues as desire to/not to specialize and concerns over stress were. Concerns regarding adequacy of research skills or training, leisure time, having a role model, and the value of doing research, decreased the later surgeons made their decision to enter academic careers.

When the four career development factors were compared with the timing of surgeons' decision to enter academic careers, statistically significant differences ($F=2.87$, $p<.001$) emerged on Factors 3 and 4. Issues regarding professional confidence were more significant to surgeons who made their career decisions after they had completed training. The earlier in their training surgeons decided to enter academics the more satisfied they were with their careers.

Hypothesis #5.4: The primary location of academic surgeons' patient care activity and issues affecting their career choice revealed statistically significant differences ($F=2.34$, $p<.001$). For academic surgeons primarily practicing in community/private hospitals, such issues as family obligations, personal income, concerns over stress, concerns over competition, leisure time, and personal indebtedness more greatly affected their career choice. When making their career choice, academic surgeons practicing primarily in university-owned hospitals had greater concerns about desires to/not to specialize and having a role model. Surgeons practicing in county/VA hospitals did not express strong concerns about any of the issues affecting their career choice.

When comparing the four career development factors and the primary practice location of academic surgeons, there were statistically significant differences ($F=3.15$, $p<.002$) on Factors 2 and 4. Academic surgeons practicing in university-owned hospitals had greater concerns regarding time management issues and were more satisfied with their careers than were academic surgeons practicing in county-VA hospitals or community/private hospitals.

Hypothesis #5.5: Age and factors affecting career choice were compared using Multiple Linear Regression. Two issues, leisure time and personal indebtedness accounted for seven percent of the variance ($R=.26$) on age.

Hypothesis #5.6: Analyses comparing marital status with factors affecting career choice and the four career development factors were omitted, due to the fact that 90% of all respondents were married. Comparisons between individuals who were single and living alone and

single and living with someone would have been suspect due to the low number of respondents in these categories.

Hypothesis #5.7: When factors affecting career choice were compared with the four career development factors, Multiple R revealed that factors affecting career choice had very little to do with the four career development factors. Leisure time accounted for 2% of the variance on Factor 1, Institutional Frustrations/Concerns (R=.15). Three issues, desire to/not to specialize, concerns over the value of doing research, and personal income accounted for 7% of the variance (R=.20) on Factor 2, Time Management issues. Family obligations accounted for 2% of the variance (R=.13) on Factor 3, Professional Confidence. Three issues, adequacy of research skills/training, concerns over competition, and having a role model, accounted for 16% of the variance (R=.40) on Factor 4, Career Satisfaction.

Hypothesis #5.8: To compare the percent of effort academic surgeons spent engaged in academic tasks with the percent of effort they preferred to spend engaged in academic tasks, chi-square was conducted. There was a statistically significant difference between these groups (x^2=9.35, p<.025). Individual t-tests between the percent of time academic surgeons actually spent engaged in academic tasks and the percent of time they preferred to spend engaged in academic tasks showed statistically significant differences on each of the variables (administration, p<.001; clinical work, p<.001; research, p<.001, teaching, p<.001). This information appears in Figure 4.1. The greatest amount of variance was located on administration and research.

Hypothesis #5.9: The difference between the four career development factors and whether or not academic surgeons' children

lived with them full-time was described using MANOVA. The overall test showed statistically significant differences on Factors 1 and 2 ($F=9.13$, $p<.001$). Academic surgeons whose children lived with them full-time were more affected by institutional frustrations/concerns and time management issues. The difference between how academic surgeons actually spent their time and preferred to spend their time engaged in academic tasks was also compared with whether or not their children lived with them full-time. Statistically significant differences emerged between how they currently spend their time ($F=10.35$, $p<.001$) and how they preferred to spend their time ($F=5.15$, $p<.001$) on three issues. Surgeons whose children lived with them full-time actually spent and preferred to spend less time engaged in administrative tasks. Academic surgeons whose children lived with them full-time spent their preferred amount of time involved in clinical work and research.

Hypothesis #5.10: There were no statistically significant differences between the employment status of academic surgeons' spouse or roommate and the percent of time they spent engaged in academic tasks ($F=2.08$, $p<.083$). However, there was a statistically significant difference ($F=3.35$, $p<.01$) between how academic surgeons preferred to spend their time engaged in academic tasks and the employment status of their spouse or roommate. When their spouse or roommate was employed, academic surgeons preferred to spend more time involved in administrative tasks and clinical work.

Chapter Summary

The results of the statistical analysis and a summary of surgeons responses have been presented. An analysis of surgeons' responses to

factors influencing their decisions to pursue academic careers, an analysis of surgeons' responses to career development issues, and the relative importance academic surgeons place on these issues was examined. A Factor Analysis of the responses to the career development issues was conducted. The career development factors identified as Institutional Frustrations/Concerns, Time Management Issues, Professional Confidence, and Career Satisfaction emerged.

Correlational and discriminant statistical analysis techniques were used to examine: the career development issues of surgeons, differences between fellowship-trained surgeons and non-fellowship trained surgeons, and the relationship between selected characteristics of surgeons and the four career development factors. Statistically significant differences were found to exist among the characteristics of: type of faculty appointment, academic rank, location of primary patient care activity, actual vs. preferred percent time engaged in academic tasks, age, marital status, employment status of spouse or roommate, and the presence or absence of children.

The next chapter contains a summary of the study, conclusions, discussion of the results, and implications of the results for surgical societies and surgical educators, as well as implications for future research.

TABLE 4.1

Respondent Demographic Variables

	Men n=356 91.5%	Women n=33 8.5%	
Age	$\bar{x}$ 48.82	$\bar{x}$ 41.69	*
Marital Status	*		
• Single/living alone	4.2%	33.3%	
• Single/living with someone	1.7%	9.1%	
• Married	94.1%	57.6%	
Spouse/roommate employed?	39.3%	78.8%	*
Spouse/roommate faculty member?	8.8%	21.7%	***
Children?	90.4%	46.9%	*
• preschool age?	26.9%	68.8%	*
• grades K-8?	43.5%	46.7%	NS
• grades 9-12?	21.0%	0%	***
• other?	52.2%	13.3%	**
Children live with respondent FT?	67.6%	86.7%	NS

* $p<.001$
** $p<.003$
*** $p<.05$
NS Not Significant

Respondents were asked to select as many descriptors as applicable, thus percentages do not sum to 100.

TABLE 4.2

Factors Influencing Career Decision

Issue	1 Not Important	2 Not Very Important	3 Important	4 Very Important
Family Obligations	38.9	25.9	22.5	12.7
Desire to/not to Specialize	32.6	21.2	23.8	22.5
Personal Income	42.0	41.7	15.0	1.3
Concerns Over Stress	47.4	33.2	15.2	4.1
Concerns Over Competition	53.6	30.6	12.4	3.4
Adequacy of Research Skills or Training	16.3	25.6	38.8	19.4
Leisure Time	41.2	36.3	19.6	2.8
Having a Role Model	12.4	13.4	37.2	37.0
Concerns Over the Value of Doing Research	13.5	28.1	37.1	21.3
Personal Indebtedness	66.6	26.7	5.4	1.3

TABLE 4.3

Ranking of Career Development Issues Based on Strength of Mean

Item #	Issue	Mean	S.D.
21	I derive personal satisfaction from my career.	4.45	.70
20	I feel that my rapport with residents/ students is one of my major strengths.	4.30	.73
14	I feel confident that I have appropriate abilities for my career.	4.17	.81
25	I feel that I am treated as an equal by other faculty members in my department.	3.88	1.03
40	I feel recognized as an expert.	3.83	.94
8	I feel I have a realistic understanding of the hierarchy of my institution.	3.77	1.12
41	I feel recognized as a leader in my discipline.	3.76	.98
19	I am satisfied with my teaching role.	3.58	.90
9	I need to feel recognized as an expert.	3.57	1.02
5	Time management is a source of stress for me.	3.51	1.21
15	My colleagues' perception of me as an academician is crucial.	3.48	.99
4	I am dissatisfied with my level of research skills.	3.42	1.11
39	I feel constrained by the time demands of my position.	3.42	1.11
17	My research time is inadequate for my research goals.	3.34	1.19
3	I feel the need to be a better teacher.	3.21	1.10
22	My career conflicts with my ability to devote time to social relationships.	3.17	1.26
29	I feel burdened by my administrative tasks.	3.14	1.14

Item #	Issue	Mean	S.D.
33	I am content with my current salary.	3.11	1.21
26	I feel frustrated by the lack of time available to devote to my family because of my career.	3.03	1.20
36	I feel that my career goals are hampered by the need to bring in clinical revenue for my department.	3.00	1.20
27	I often feel I have to choose between academic success and family life.	2.99	1.26
1	I feel apprehensive about the challenges that accompany a new job situation.	2.95	1.18
13	I would like an increased leadership role in my department.	2.92	1.19
38	I feel frustrated over the inability to evoke change in my department.	2.92	1.19
12	I am uncertain about what challenges lie ahead in my career.	2.89	1.17
30	My superiors nurture my career growth.	2.87	1.19
34	I feel the need for nurturing from an academic mentor.	2.85	1.17
23	I am satisfied with the way in which I manage my time.	2.83	1.08
2	There are unclear performance expectations in my job.	2.73	1.25
7	I am uncomfortable negotiating for available resources.	2.73	1.18
35	I need more time to spend seeing patients.	2.71	.97
28	Although my job expectations are clear, they are in conflict with my institution's expectations.	2.65	1.12
31	I feel frustrated because of personality conflicts within the faculty of my department.	2.63	1.18
32	I need more training to do my administrative tasks.	2.62	1.13

Item #	Issue	Mean	S.D.
6	I am confused by the organizational structure of my academic institution.	2.51	1.25
18	Research competence is one of my major strengths.	2.46	1.05
10	My career is starting to stagnate.	2.36	1.13
16	I would like to explore alternative careers.	2.31	1.21
37	I feel dissatisfied with my level of clinical skills.	1.81	.94
24	If I had to do it all over, I would have chosen a different career outside of medicine.	1.68	.98
11	I made a mistake choosing academic surgery as a career.	1.60	.82

*Value Range (1= strongly disagree, 5 = strongly agree)

TABLE 4.4

Four Career Development Factors

Factor 1: Institutional Frustrations/Concerns (11 items)

Item #	Issue	Eigenvalue
38	I feel frustrated over the inability to evoke change in my department.	.63
28	Although my job expectations are clear, they are in conflict with my institution's expectations.	.61
6	I am confused by the organizational structure of my academic institution.	.59
2	There are unclear performance expectations in my job.	.58
31	I feel frustrated because of personality conflicts within the faculty of my department.	.54
30	My superiors (do not) nurture my career growth.	-.54
36	I feel that my career goals are hampered by the need to bring in clinical revenue for my department.	.51
13	I would like an increased leadership role in my department.	.51
7	I am uncomfortable negotiating for available resources.	.46
25	I (do not) feel that I am treated as an equal by other faculty members in my department.	-.46
33	I am (not) content with my current salary.	-.42

Factor 2: Time Management Issues (7 items)

Item #	Issue	Eigenvalue
26	I feel frustrated by the lack of time available to devote to my family because of my career.	.81
22	My career conflicts with my ability to devote time to social relationships.	.79
27	I often feel I have to choose between academic success and family life.	.78
5	Time management is a source of stress for me.	.61
39	I feel constrained by the time demands of my position.	.61
23	I am (not) satisfied with the way in which I manage my time.	.54
17	My research time is inadequate for my research goals.	.40

Factor 3: Professional Confidence (7 items)

Item #	Issue	Eigenvalue
1	I feel apprehensive about the challenges that accompany a new job situation.	.59
4	I am dissatisfied with my level of research skills.	.53
3	I feel the need to be a better teacher.	.52
34	I feel the need for nurturing from an academic mentor.	.45
37	I feel dissatisfied with my level of clinical skills.	.44
32	I need more training to do my administrative tasks.	.43
12	I am uncertain about what challenges lie ahead in my career.	.42

Factor 4: Career satisfaction (9 items)

Item #	Issue	Eigenvalue
21	I derive personal satisfaction from my career.	.67
41	I feel recognized as a leader in my discipline.	.60
24	If I had to do it all over, I would (not) have chosen a different career outside of medicine.	-.58
15	My colleagues' perception of me as an academician is crucial.	.57
40	I feel recognized as an expert.	.57
11	I made (did not make) a mistake choosing academic surgery as a career.	-.54
16	I would (not) like to explore alternative careers.	-.46
14	I feel confident that I have appropriate abilities for my career.	.46
9	I need to feel recognized as an expert.	.45

TABLE 4.5

Academic Rank/% Effort in Academic Tasks

Academic Task	Other	Assistant Professor	Associate Professor	Professor	SD for Population
Administration					
Actual	16.13	17.12	22.83	34.76	19.05
Preferred	9.73	11.05	14.69	22.30	14.38
Clinical Work					
Actual	59.06	56.54	49.39	40.21	20.26
Preferred	52.67	50.10	46.55	40.72	16.26
Research					
Actual	7.44	10.87	11.33	9.90	8.95
Preferred	15.00	20.25	18.69	18.64	10.88
Teaching					
Actual	17.38	15.41	16.35	15.61	10.41
Preferred	20.67	19.05	19.94	18.72	10.48

TABLE 4.6

Academic Rank/Four Career Development Factors

Career Development Factors	Other	Assistant Professor	Associate Professor	Professor
Factor 1				
Institut. Frust./ Concerns	.36 SD 1.33	.33 SD .98	.08 SD .95	-.31 SD .92
Factor 2				
Time Management	-.50 SD .92	.19 SD .96	.03 SD .90	-.09 SD 1.08
Factor 3				
Professional Confidence	-.10 SD 1.47	.29 SD .92	.06 SD .88	-.21 SD 1.04
Factor 4				
Career Satisfaction	-.38 SD 1.04	-.33 SD 1.17	-.11 SD .93	.32 SD .83

TABLE 4.7

Fellowship/% Effort in Academic Tasks

Academic Task	Fellowship Trained	Non-Fellowship Trained	Statistical Significance
Administration			
Actual	23.66	30.06	*
Preferred	15.83	18.46	NS
Clinical Work			
Actual	49.38	45.08	***
Preferred	46.05	44.02	NS
Research			
Actual	11.70	8.30	*
Preferred	20.12	16.80	**
Teaching			
Actual	15.46	16.57	NS
Preferred	18.22	20.61	***

* $p<.001$
** $p<.004$
*** $p<.05$
NS Not Significant

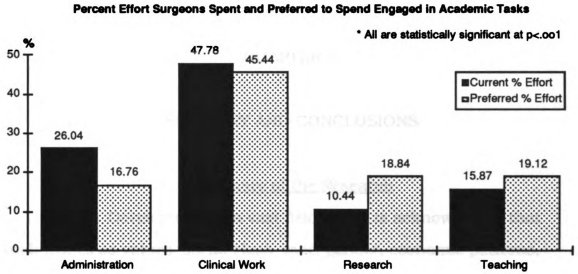

FIGURE 4.1

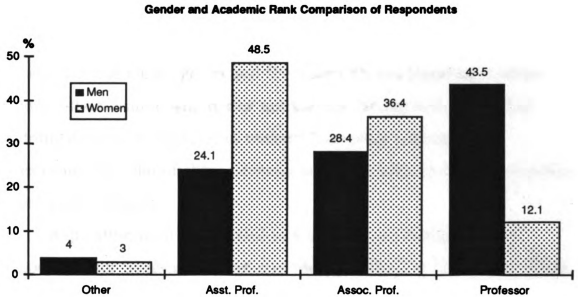

FIGURE 4.2

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary of the Research

Career Development is a vast field and it is acknowledged that such issues as values, social class, race, gender, economic patterns, national policy, technology, ego, income, leisure time, and even chance can influence an individual's career development. This study was designed to identify those career development issues which were directly related to surgeons' academic roles. The purpose of this study was to: 1) describe the characteristics of those faculty involved in academic surgery; 2) examine the career development issues of academic surgeons; 3) determine if parallel issues exist between the career development issues of academic surgeons and the issues of non-physician college faculty; 4) determine whether or not surgery faculty with fellowship training differ from their peers without fellowship training; and 5) examine the relationships between selected characteristics and career development issues.

A questionnaire was mailed to each surgeon member of the Association for Surgical Education who was located in the United States or Puerto Rico (n=521). Three hundred ninety-two (392) surgeons responded, representing a response rate of 75.2%.

The questionnaire itself included 62 items. The first section of the questionnaire included 21 items which addressed factors influencing

surgeons' decisions to pursue academic careers, how respondents spend their time in academic surgery, and additional demographic information. The second section of the questionnaire contained 41 items which addressed career development issues.

Means and standard deviations were calculated for all items on the questionnaire to systematically describe their characteristics. Depending on the type of data being examined (nominal, continuous, or interval) chi-square and t-tests were employed to determine differences between two groups. Analysis of Variance (ANOVA) was used to distinguish differences within and between groups. A Factor Analysis was conducted on the 41 career development issues in an effort to identify any existing underlying pattern of relationships in the responses. Multivariate statistics, such as Multiple Analysis of Variance (MANOVA) was used to examine more than one variable simultaneously. Multiple Linear Regression was employed to determine the relationship between variables, and Pearson Product Moment Correlation was used to gauge the strength of the relationship between variables.

Conclusions

An analysis of the research data provided the following conclusions.

1. There were four major factors which represented the underlying dimensions of career development issues of surgeons: Institutional Frustrations/Concerns, Time Management Issues, Professional Confidence, and Career

Satisfaction. The way surgeons spent their time and preferred to spend their time was indicative of these factors.

2. Both fellowship training and type of fellowship training impacted how surgeons spent their time and ultimately, how satisfied they were with their careers. All fellowship trained surgeons, regardless of type of fellowship, spent about the same amount of time teaching. All fellowship trained surgeons preferred to spend more time involved in research, however, only research fellowship trained surgeons protected time for research. Research fellowship trained surgeons had fewer concerns about issues of professional confidence and expressed greater satisfaction with their careers.
3. The earlier in their training surgeons decided to enter academics, the more concerned they were about their qualifications. This same group ultimately demonstrated more satisfaction with their careers. Conversely, the later surgeons made their career decisions, the less concerned they were about their qualifications. Once in their academic careers these surgeons became more concerned with issues surrounding professional confidence.
4. Factors affecting career decisions help explain academic surgeons' primary practice location. Surgeons who chose to practice primarily in community or private hospitals were more influenced by personal factors, whereas surgeons practicing primarily in university-owned hospitals were more influenced by the presence of a role model and the desire to/not to specialize.

5. The career development issues of surgery faculty were similar but not parallel to the career development issues of non-physician faculty. Similarities included the desire to become more engaged in administrative activities through time, the "waxing and waning" interest in teaching over the course of a career, and increased satisfaction in their careers over time. Dissimilarities included: the continued interest in research by surgery faculty, and the decreasing relevance of such career development issues as institutional frustrations/concerns, time management issues, and professional confidence issues as academic rank increased.

Discussion of Conclusions

Conclusion 1. A factor analysis of the 41 career development issues identified a pattern of relationships in the responses which could be described by four distinct career development factors. Based on an examination of the career development issues loading on each factor, the factors were labeled: Institutional Frustrations/Concerns, Time Management Issues, Professional Confidence, and Career Satisfaction.

Because the career development issues were part of a new instrument, it is not possible to make direct comparisons between these findings and the findings of other authors who described the career development issues of physicians. In addition, it is important to remember that most of these studies were conducted in specialties other than surgery. It is possible, however, to compare these findings with the general conclusions of other authors.

This factor analysis revealed that items did not cluster into the academic responsibilities of a faculty member as described by Bland and others.[11] In Bogdewic's study of Family Medicine faculty, he stated that the issues or dilemmas that will likely challenge junior academicians are different from those that challenge more senior faculty.[27] The results of this study revealed similar findings. There were statistically significant differences between academic rank and all four career development factors. Issues concerning Institutional Frustrations/Concerns, Time Management Issues, and Professional Confidence all progressively decreased as academic rank increased. Career Satisfaction increased as surgeons progressed from Assistant Professor to Associate Professor to Professor.

Ashkenas found that physicians fell into three age-related groups that were not necessarily related to academic rank.[28] In this study, when age was correlated with the four career development factors, statistically significant differences emerged on two factors. The results revealed that the older the surgery faculty member is, the less significant are Institutional Frustrations/Concerns, and Time Management issues. There was no relationship between age and Career Satisfaction and no statistically significant difference between age and issues surrounding Professional Confidence.

Institutional Frustrations/Concerns, Time Management Issues, Professional Confidence, and Career Satisfaction are also issues that have been described in the literature as attractions and detractions to careers in academic surgery. In his limited study of academic surgeons, Skinner found that what academic surgeons liked best about their careers were their clinical opportunities, teaching, the academic

environment and atmosphere, and research opportunities.[12] These issues were similar to those which arose on the Career Satisfaction factor. Their dissatisfactions were their low incomes, lack of time, government and university bureaucracy, and lack of research funds. All issues but funding (which was not addressed) emerged on one of the three factors dealing with career dissatisfactions.

The career development factors identified in this study are indicative of the issues physicians in academic settings face. A likely explanation for the decreasing significance of academic frustrations to surgeons over time mirrors a conclusion made by Baldwin who stated that "individuals gradually arrive at a match between their interests and abilities and their occupational responsibilities; as the discrepancy between these factors narrow, career satisfaction increases."[45]

The way surgeons spent and preferred to spend their time in this study was also indicative of the career development issues. Academic surgeons preferred to spend less time involved in administrative activities and clinical work, and more time involved in research and teaching. This result was in contradiction to the findings of authors in previous studies. Peters and others found there was a degree of consistency between what respondents seemed to be doing and what gave them satisfaction.[51] That is, they seemed to spend the greatest proportion of their time in those parts of the job which best satisfied them. Linn and his colleagues found that physicians consistently valued more highly the activities that they spent the most time doing.[13] In a study of career satisfaction, activity and retention of military orthopaedic surgeons, there was great similarity between actual and preferred time utilization except in the areas of administrative duties and research.

The mismatch between how surgeons spend their time (in administrative activities and clinical work) and their preferred allocation of time (involvement in research and teaching) has several possible explanations. One explanation is that administrative activities and clinical work become rote efforts providing little challenge to surgeons, while research and teaching are intellectually demanding and stimulating activities that become the reward for their more mundane responsibilities. A second explanation may be that new faculty members who are brought in to departments immediately fulfill two roles: they take on administrative responsibilities that others have tired of, and they bring in clinical work which provides expendable revenue. This revenue then provides release time as a reward to faculty members (who have been the administrators and clinical generators) to pursue research and teaching. A third explanation is that individuals entered academic surgery largely to do research and teaching, the only two activities which separate academics from private practice. As their dues are paid, they have increasing freedom to pursue the activities they like.

These explanations have particular significance when considering the differences that emerged between surgeons' academic rank and their preferred effort engaged in administrative roles, clinical work, research and teaching. It can be hypothesized the higher an individual's academic rank, the longer they have been involved in an academic setting. As surgeons progress through the academic ranks, the more accustomed they have become to the bureaucracies and politics of the institution, the less time and effort it takes to deal with administrative issues, therefore, the less they mind doing it. By the time surgeons have achieved the rank of Professor, their desire to do clinical work has decreased steadily.

Clinical work has become a continuous treadmill which expends countless hours of time and effort and increasingly demands more; at the same time surgeons' dependence upon clinical revenue has decreased. Research activities also decrease as academic rank increases. Assistant Professors conduct the greatest amount of research because they are anxious to make a name for themselves and to get promoted. Associate Professors do slightly less research because of conflicting academic demands; however, they are still establishing their area of interest and expertise and want to be promoted. At the level of Professor, their involvement in research continues to decrease slightly. They still enjoy their area of research and the reputation they have built, but research is no longer necessary for them to be promoted. Teaching in medicine follows a "waxing and waning" path which is identical to what is found in higher education. Baldwin and Blackburn found that the first few years of teaching were considered difficult periods by all levels of faculty.[24] The early difficulty with teaching passed, and faculty increasingly became more comfortable with that role, however, at the same time, pleasure from teaching steadily decreased.

Conclusion 2. The results of this study demonstrated that all fellowship trained surgeons, regardless of type of fellowship, spent about the same amount of time teaching; however, fellowship trained surgeons spent less time teaching than non-fellowship trained surgeons. In addition, surgeons who completed a fellowship spent a greater percentage of their effort engaged in research than did those who did not complete a fellowship and they preferred to spend more time in research than those without fellowships. Only research fellowship trained surgeons made time available in their schedules to conduct research.

The results of this study regarding research fellowship trained surgeons are in stark contrast to results of a study by Hitchcock and others which described graduates of family medicine faculty development fellowships.[52] These graduates, on average, spent less time in research activities than recommended for productivity. They found that the commitments of faculty development program alumni to research activities consistently averaged less than 20%, regardless of the type of faculty position, academic track, or fellowship attended. The Robert Wood Johnson fellowship graduates, specifically trained to advance the scholarly foundation of family medicine, were spending on average only 18% of their time in research activities.

The results of this current study also revealed that the greater the number of months surgeons spent involved in research fellowships, the greater the amount of time they spent doing research. Again, this is in contrast to what other researchers have found. Beaty and others, in their study of research activity of faculty in academic departments of Medicine, found that many faculty with relatively lengthy preparation for a research career did not spend most of their time doing research.[53]

One possible explanation to describe the difference in teaching responsibilities between fellowship and non-fellowship trained surgeons is that fellowship trained surgeons spend more time engaged in other activities. Fellowship trained surgeons are encouraged to use their specialized skills because they are bringing something that is valued (e.g., clinical revenue, grant funding, or publications) into the department. Another possible explanation is that because non-fellowship trained surgeons have a generalist perspective, students and residents are likely to be assigned to them on a regular basis. Fellowship

trained surgeons may only have students and residents assigned to them on a sporadic basis. These assignments may be made based on a students' shared interest in the fellowship trained surgeon's area of specialty, or it may be that a resident is assigned to these specialized surgeons to meet a residency training requirement.

The difference between fellowship and non-fellowship trained surgeons and the amount of time spent in research also has several possible explanations. In order to be accredited, a fellowship must have a minimal number of faculty with publication track records. Regardless of what formalized role research plays in a surgeon's fellowship, the surgeon in training will be exposed to at least one role model or mentor who has conducted research and who has published. This exposure can be instrumental in facilitating the research careers of surgeons. Conversely, non-fellowship trained surgeons may not have had exposure to research role models and are may be intimidated by the prospect of doing research.

Another possible explanation lies in self-selection. Non-fellowship trained surgeons may have followed this career path because they did not want to do research. Surgeons who completed fellowships did so because they wanted to expand their skills in one area; research related to that skill may have been necessary and/or attractive. Surgeons who completed research fellowships enjoyed research and want to pursue it throughout their careers.

There is a discrepancy between specialties among physicians who have research training and the amount of research they are conducting in their careers. Surgeons who have completed research fellowships, are involved in research in their careers. This is not true in other specialties.

One possible explanation is that other specialties, primarily primary care departments, are experiencing manpower shortages that are even greater than those being experienced in departments of Surgery. Research fellowship trained physicians in other specialties may not have the luxury of pursuing research to the extent they would prefer; they may have to fulfill teaching and clinical obligations.

Finally, research fellowship trained surgeons express fewer concerns about professional confidence and greater career satisfaction than surgeons without research fellowships. This can be explained by the fact that research fellowship trained surgeons are doing what they want to do and are trained to do. They are confident in their skills and abilities.

Conclusion 3. The earlier in their training surgeons decided to enter academics, the more concerned they were about their qualifications. This same group ultimately demonstrated more satisfaction with their careers. Conversely, the later surgeons made their career decisions, the less concerned they were about their qualifications. Once in their academic careers these surgeons became more concerned with issues surrounding professional confidence.

There are a number of articles which support these findings about the timing of career decisions. In a study of factors influencing resident career choices in Emergency Medicine, the authors found those residents planning an academic career were significantly motivated by a desire to make a contribution to medicine. They placed less emphasis on personal issues.[55] Mason concluded that residents who chose full-time faculty roles cited the varied roles of teacher, surgeon, researcher, author, lecturer and administrator, the enjoyment of thinking, opportunity to do

research, stimulation of teaching and career interest as motivating factors.[59] In a 1973 study, factors motivating surgeons to pursue academic careers were found to include: the desire to develop and expand strong interest in teaching, a desire for additional development and training, professional prestige, department or faculty encouragement or pressure, and a desire to limit clinical practice.[15] Petersdorf described six factors motivating physicians to pursue academic careers: the love of making a discovery; the love of teaching; the desire to practice medicine in an intellectual environment which is fueled by residents and medical students; the stimulus to excel; the love of, and desire for, the collegial environment; and the love of fame or prestige.[56]

In this study, the later the surgeons made their career decisions the more they were concerned about issues of professional confidence in their academic careers. In an article explaining why they had returned to academics after being in private practice, a group of radiologists explained that affiliation, esteem, recognition and self-actualization were powerful motivations in their decisions to enter academia.[57] Barnes found that those surgeons who returned to academics from private practice did so because of dissatisfaction with their practices, the desire for more intellectual stimulation, to improve their teaching opportunities and to avoid some personality conflicts encountered in private practice.[60]

Several possible explanations for the difference between surgeons who decided early and surgeons who decided late exist. Curreri described career development in terms of four basic career paths.[50] His description of surgeons in the steady-state pathway is congruent with surgeons described in this study as "early deciders." According to Curreri, those in the steady-state pathway have selected their area of

interest early in their careers and frequently persist in these endeavors for life. These individuals rarely express strong needs for wealth and power, and exhibit great pride in the quality of their work. "Early deciders" in this study were concerned about possessing the skills necessary to be successful in their academic careers. They were internally motivated to achieve these skills and have therefore found satisfaction in their careers as these goals have been met.

Curreri did not describe a career pathway that correlated with surgeons in this study who were termed "late deciders," (individuals who decide to enter academics after pursuing other training or practice options). In Curreri's description of surgeons in linear pathways and spiral pathways surgeons were different in many respects, but all surgeons had strong senses of self-esteem. In this study "late deciders" struggled with issues of professional confidence throughout their careers.

There are several possible explanations for this divergence from the literature. First, it could be that late deciders are akin to surgeons who Curreri described as "job hoppers." Job hoppers enjoy work but exhibit low tolerance to boredom, and are rarely successful in academics. Job hoppers, may be low in professional confidence because of their inability to stick with the same responsibilities.

Another other possible explanation is that professional confidence is a transitory factor in late respondents. Surgeons may feel confident in their skills because they have been externally rewarded through monetary gains, certification, patient confidence, etc. When external sources of support are no longer satisfying, or are less satisfying to these surgeons, they seek new environments that will reward their behavior and actions. This behavior can be viewed as a cycle; surgeons receive

rewards and experience career satisfaction; at some point there is diminishing satisfaction from these rewards; surgeons experience diminishing interest in their responsibilities and begin to question whether or not they have the skills to change jobs; career dissatisfaction increases to the point that surgeons risk moving to a new environment; they enter the new environment and the cycle begins again. Late deciders, based on their needs for external rewards may not stay in any position for a long period of time.

Conclusion 4. Factors affecting career decisions help explain academic surgeons' primary practice location. Surgeons who chose to practice primarily in community or private hospitals were more influenced by personal factors, whereas surgeons practicing primarily in university-owned hospitals were more influenced by the presence of a role model and the desire to/not to specialize.

For purposes of comparison, literature describing surgeons who chose to enter private practice were compared in this study with surgical faculty who practice in private or community hospitals. With the exception of concern about income, which was not important to any of the respondents in this study, regardless of practice setting; the comparisons between physicians who are in private practice and faculty who practice in private or community hospital settings are quite strong. Barnes found that those surgeons initially selecting private practice did so for personal reasons.[60] In a study of the career choices of trainees in the first year of an academic university surgical residency program, Mason concluded that those residents choosing nonacademic careers did so because of concerns about the political environment, the lack of remuneration, the lack of consistency and opportunity, the loss of

personal freedom, and the lack of opportunity to give individual patient care.[59] Skinner found that commitment to research was one of the strongest differentiating factors between those choosing academic surgery vs. private practice. Those in private practice were significantly more satisfied with their incomes than were those in academics.[13]

The results of this study also indicated that surgeons practicing in university-owned hospitals had greater concerns regarding time management issues and were more satisfied with their careers than were surgeons practicing in other settings. Mawardi similarly found that full time faculty members were the most satisfied with their careers. They found satisfaction in research, providing accurate diagnosis and successful therapy, and teaching. Their greatest dissatisfactions related to time pressures and administrative and committee work.[17]

The differences between faculty practicing in private and community hospitals and university-owned hospitals, may, as Linn and his colleagues described, be related to personality factors connected to career choice or to differences in demographic characteristics.[54] Surgeons practicing in private and community hospitals seem to have a strong desire to be independent and self-directed, and to be solely responsible for their own success.

Literature describing surgeons who left academics to pursue careers in private practice indicated that many individuals entered academics with false perceptions and expectations about an academic career. In Curreri's study the most influential factors affecting their decisions to resign from their academic appointments were: inadequate opportunities for personal patient responsibility, insufficient incomes, and pressure to assume a large number of administrative duties early in

their career development.[15] Skinner found that reasons for surgeons switching to careers in private practice included similarities of their academic job to private practice; desire to return to their home region; dislike for administration, academic politics and bureaucracy; income; and lack of research funding. According to Petersdorf, academicians expect too much of academic medicine; future faculty members must set realistic goals for themselves while the academic system must bring its goals into line with reality.[56]

Conclusion 5. The results of this study demonstrated that as surgeons progress from Assistant Professor to Professor, the amount of time they spent and preferred to spend in administrative activities increased. This is congruent with Baldwin's findings in his study of university college faculty; that interest in and time committed to department and college affairs increased over time.[45] This study further demonstrated that the amount of time surgeons spend and preferred to spend involved in research increased until they achieved the rank of Professor, then it decreased slightly. Baldwin found that over time, interest in research decreases over time and takes on a smaller percentage of time.[45]

The amount of time surgeons spent and preferred to spend engaged in teaching did not follow a clear path in this study. This finding is similar to that of Baldwin who described interest in teaching as "waxing and waning" over a career.[45] This trend was further described by Baldwin and Blackburn who found that the first few years of teaching were considered difficult periods by all levels of faculty.[24] The early difficulty with teaching passed, and faculty increasingly became more

comfortable with that role, however, at the same time, pleasure from teaching steadily decreased.

In this study, there were statistically significant differences between academic rank and all four career development factors. Institutional Frustrations/Concerns (Factor 1) were found to decrease as surgeons progressed from Assistant Professor to Professor. In contrast, Onouha, in his study of job satisfaction of university faculty found that policies and administration continued to contribute to job dissatisfaction among faculty members through their academic careers.[47]

Time Management Issues (Factor 2) were also found to decrease as individuals progressed through the academic ranks. Baldwin and Blackburn also found that pressure decreased over the course of a faculty member's career.[24] In a separate study, however, Blackburn commented that lack of time is the single most significant faculty complaint and source of stress which affects performance.[48]

Professional Confidence issues (Factor 3) and Career Satisfaction issues (Factor 4) were described conjointly in the literature on college faculty. In this study issues concerning professional confidence decreased as academic ranks increased and career satisfaction increased with increasing academic rank. In short, surgeons' sense of confidence and control over their careers increased as academic rank progressed. Baldwin found that faculty perceived changes in their major professional strengths and weaknesses as they gained experience.[45] He noted at successive career stages, professors saw themselves as becoming more adept at some roles (e.g., teaching , and department and college affairs) while becoming less confident in such areas as research.

In this study, the four career development factors collectively described only twenty percent of the variance related to the number of years individuals had spent in academic surgery. Baldwin, however, found that stress and satisfaction in the academic career seems to be related to years of experience, where the lowest occupational satisfaction emerges among new professors and highest satisfaction is found among those faculty nearing retirement.[45] When age was correlated with the four career development factors in this study, career satisfaction did not emerge as statistically significant. However, the results did demonstrate that the older the surgery faculty member is, the less significant were Institutional Frustrations/Concerns and Time Management Issues.

Study Limitations

For the purposes of this study, a career development questionnaire was sent to all surgeon members of the Association for Surgical Education who are located in the United States and Puerto Rico. The surgeons were asked to provide demographic information about themselves as well as information regarding factors that influenced their career decisions and how they spend their time. In addition, surgeons were asked to respond to 41 statements concerning career development issues.

This approach was used, as opposed to administering the questionnaire to surgeons in attendance at the annual meeting of the Association for Surgical Education or using telephone interviews, for several reasons. First, had the questionnaire been administered while surgeons were participating in the annual meeting of this association, the results would only be representative of those surgeons who were able

to attend the meeting; this would have resulted in a smaller potential population. In addition, based on the location of the meeting there could be a geographic bias among respondents. Second, the telephone interview alternative was abandoned, because of the enormous cost of long distance calls, and because of the difficulty encountered when attempting to contact physicians in their offices during their office hours.

Generalizability

The population of this study and the extent to which the results are generalizable to other groups of academic surgeons deserves discussion. The population of this study consisted of surgeon members of the Association for Surgical Education who were located in the United States or Puerto Rico on December 1, 1992. No attempt was made to select a random sample, but rather the survey instrument was sent to the entire population of members. A post hoc analysis of the representative nature of the responding sample suggested that respondents and non-respondents were similar with regard to academic rank but were dissimilar with regard to age and gender. Non-respondents were more likely to be older and were more likely to be male than were respondents. A possible explanation for this difference is that older male surgeons may not have found the questionnaire to be relevant to their needs, their current issues, or their experience in academics. In addition, because a specific group of surgeons was surveyed at a particular point in time, the generalizability of this study may become invalid over time. Caution must be exercised in attempting to generalize the findings to any group of academic surgeons other than those who are members of the Association for Surgical Education.The

Association for Surgical Education is highly representative of medical schools in the United States (98% of all United States Medical Schools are members), however, it is difficult to determine how representative surgeon members are of their colleagues at their home institutions.

Implications

Implications for Surgical Educators

The results of this study suggest several implications for those involved in the training and recruitment of academic surgeons.

1. Faculty development training programs will be essential to foster the career development of young academic surgeons. Particular attention should be given to developing surgeons' skills in administrative tasks, leadership, and time management. It will also be important to develop programming to address research skills. Along with this curricular initiative, departments must provide protected time for surgeons to engage in research activities.
2. Chairpersons of Departments of Surgery should engage in career planning and annual goal setting with faculty members. This process will provide faculty members with a means to achieve tangible goals and will integrate a reward system at regular intervals if goals are met.
3. When recruiting surgeons to fill specific clinical roles in departments, attention should also be given to the type of fellowship training that surgeons possess and the type of academic responsibilities that need to be met. Departments

whose primary goal is to fulfill teaching obligations may want to consider the results of this study and fill their positions with non-fellowship trained surgeons. If departments are trying to foster research, the results of this study indicated that they will have the greatest success in achieving this goal if a research fellowship trained surgeon is hired. Surgeons with fellowship training of any kind are more likely to pursue research than non-fellowship trained surgeons.

4. When recruiting surgeons to fill academic positions, surgeons should be questioned about the timing of their career decisions. Surgeons who decided on their career path early (before medical school, during medical school, or during residency) are not only more likely to maintain interest in this career path, but will exhibit greater satisfaction in that career. Surgeons who decided on their career path late (during fellowship or after training) are more likely to exhibit dissatisfaction with their careers and are more likely to switch career paths.

5. Departments of Surgery should actively engage in outreach efforts aimed at medical students to provide them with insight into the life of academic surgeons. These outreach efforts may take place in the form of workshops, seminars, academic surgery rotations, and/or preceptorships. Working knowledge of what being an academic surgeon is about will either dispel or enhance medical students' preconceived notions, and will also provide them with insight that will help them make informed career decisions. Outreach efforts will

be particularly helpful to medical students and surgical residents who have concerns about the effect of academic careers on their personal lives.

Implications for Future Research

1. The career development survey provided useful information about the career development issues of academic surgeons. The implications of this research could be furthered by issuing this questionnaire to surgeons who left careers in academic surgery and by issuing the questionnaire to surgeons who have returned to academic surgery. Information provided by these groups could have significant implications on the recruitment and retention of academic surgeons in departments. In addition, this instrument should be applied to other specialties to determine if there are generalized issues which medical schools need to address to positively affect the career satisfaction of their faculty.
2. Surgeons employed in private practice should be surveyed to determine what issues were significant in precluding them from pursuing careers in academic surgery; to identify their career satisfactions and dissatisfactions; and to determine how they spend and prefer to spend their time. By comparing career development issues between surgeons in private practice and surgeons in academic surgery, valuable career counseling information may be shared with medical

students, surgical residents, and surgeons who are exploring career options.

3. Further research should be conducted on the timing of career decisions and its impact on the frequency of faculty job or career changes, the issues that have influenced those changes, and faculty career satisfaction once these changes have been made. This information would further clarify the issue of surgeons' career paths and would provide valuable information to departments of Surgery in helping manage the career development of their faculty.
4. The administrative assignments of new faculty members should be studied to determine how it affects career development.
5. The relationship between fellowship training, surgeons' academic roles, and career satisfaction should be further investigated. Are surgeons with certain types of fellowship experiences more likely to be successful in their careers; or, are surgeons with certain characteristics that make them successful in academic careers more likely to pursue specific fellowships? This information will be invaluable to academic departments: who are attempting to build and develop their faculty membership to meet specific academic needs, and who cannot afford to have rapid faculty turnover.

APPENDICES

APPENDIX A

Please check or complete the following items:

Section I

1. **Do you have a faculty appointment at a medical school?**
   - ☐ No **(skip to #3)**
   - ☐ Yes

2. **Is your current faculty appointment part-time or full-time? (check one)**
   - ☐ Part-time
   - ☐ Full-time

3. **What type of faculty appointment do you have? (check one)**
   - ☐ Tenure track
     Do you have tenure? ☐ No ☐ Yes
   - ☐ Non-tenure track
   - ☐ Part-time preceptor
   - ☐ Other (specify) _____

4. **What is your academic rank? (check one)**
   - ☐ Preceptor
   - ☐ Assistant Professor/Clinical Assistant Professor
   - ☐ Associate Professor/Clinical Associate Professor
   - ☐ Professor/Clinical Professor
   - ☐ Position does not carry an academic rank
   - ☐ Other (specify) _____

5. **In what year did you graduate from medical school?**

   19____

6. **In what year did you complete your surgery residency?**

   19____

7. **How many total years (excluding residency and fellowship years) have you been in academic surgery?**

   ____year(s)

8. When did you decide on an academic career? (check one)

- ❒ Before Medical School
- ❒ During Medical School
- ❒ During Residency
- ❒ During Fellowship training
- ❒ After training

9. Please indicate how important each of the following factors was in influencing your decision to pursue a career in academic surgery?

For each item, circle the response that <u>best</u> represents how you feel:

1 not important	2 not very important	3 important	4 very important

Family obligations	**1**	**2**	**3**	**4**
Desire to/not to specialize	**1**	**2**	**3**	**4**
Personal income	**1**	**2**	**3**	**4**
Concerns over stress	**1**	**2**	**3**	**4**
Concerns over competition	**1**	**2**	**3**	**4**
Adequacy of research skills or training	**1**	**2**	**3**	**4**
Leisure time	**1**	**2**	**3**	**4**
Having a role model	**1**	**2**	**3**	**4**
Concerns over the value of doing research	**1**	**2**	**3**	**4**
Personal Indebtedness	**1**	**2**	**3**	**4**

10. Did you complete one or more fellowships?

- ❒ No
- ❒ Yes

If yes, what type of fellowship(s)? (check & complete all that apply)

- ❒ Faculty Development #_____month(s)
- ❒ Clinical Specialty_____#_____month(s)

  Specialty_____#_____month(s)
- ❒ Research #_____month(s)
- ❒ Other #_____month(s)

11. Where does most of your patient care activity take place?

- ❒ University-owned hospital
- ❒ County/VA hospital
- ❒ Community/Private hospital
- ❒ Other (specify) _____

12. In your current position, what percentage of effort is involved in each of the following categories?

(List below the percentages of time you spend in each category)

Administration _____%

Clinical work _____%

Research _____%

Teaching **(independent from clinical work)** _____%

TOTAL 100%

13. Based on your own goals, what would be your ideal allotment of time in each of these categories?

(List below the percentages of time you would like to spend in each category)

Administration _____%

Clinical work _____%

Research _____%

Teaching **(independent from clinical work)** _____%

TOTAL 100%

14. What is your gender?

- ❒ Female
- ❒ Male

15. In what year were you born? 19____

16. What is your marital status?

- ❒ Single/living alone **(skip to #19)**
- ❒ Single/living with someone
- ❒ Married

17. Is your spouse or the person with whom you live employed?

- ❒ No
- ❒ Yes

18. Does your spouse or the person with whom you live have a faculty appointment in a university setting?

- ❒ No
- ❒ Yes

19. Do you have children? ❒ No **(skip to Section II)**
❒ Yes

20. How many children do you have in each category?

- ❒ pre-school
- ❒ K-8
- ❒ 9-12
- ❒ other

21. Do your children live with you full-time?

- ❒ No
- ❒ Yes

Section II

For each item, circle the response that best represents how you feel:

1 strongly disagree	2 disagree	3 neutral	4 agree	5 strongly agree

1.	I feel apprehensive about the challenges that accompany a new job situation.	1	2	3	4	5
2.	There are unclear performance expectations in my job.	1	2	3	4	5
3.	I feel the need to be a better teacher.	1	2	3	4	5
4.	I am dissatisfied with my level of research skills.	1	2	3	4	5
5.	Time management is a source of stress for me.	1	2	3	4	5
6.	I am confused by the organizational structure of my academic institution.	1	2	3	4	5
7.	I am uncomfortable negotiating for available resources.	1	2	3	4	5
8.	I feel I have a realistic understanding of the hierarchy of my institution.	1	2	3	4	5
9.	I need to feel recognized as an expert.	1	2	3	4	5
10.	My career is starting to stagnate.	1	2	3	4	5
11.	I made a mistake choosing academic surgery as a career.	1	2	3	4	5
12.	I am uncertain about what challenges lie ahead in my career.	1	2	3	4	5
13.	I would like an increased leadership role in my department.	1	2	3	4	5
14.	I feel confident that I have appropriate abilities for my career.	1	2	3	4	5
15.	My colleagues' perception of me as an academician is crucial.	1	2	3	4	5
16.	I would like to explore alternative careers.	1	2	3	4	5
17.	My research time is inadequate for my research goals.	1	2	3	4	5

1 strongly disagree	2 disagree	3 neutral	4 agree	5 strongly agree

18.	Research competence is one of my major strengths.	1	2	3	4	5
19.	I am satisfied with my teaching role.	1	2	3	4	5
20.	I feel that my rapport with residents/students is one of my major strengths.	1	2	3	4	5
21.	I derive personal satisfaction from my career.	1	2	3	4	5
22.	My career conflicts with my ability to devote time to social relationships.	1	2	3	4	5
23.	I am satisfied with the way in which I manage my time.	1	2	3	4	5
24.	If I had to do it all over, I would have chosen a different career outside of medicine.	1	2	3	4	5
25.	I feel that I am treated as an equal by other faculty members in my department.	1	2	3	4	5
26.	I feel frustrated by the lack of time available to devote to my family because of my career.	1	2	3	4	5
27.	I often feel I have to choose between academic success and family life.	1	2	3	4	5
28.	Although my job expectations are clear, they are in conflict with my institution's expectations.	1	2	3	4	5
29.	I feel burdened by my administrative tasks.	1	2	3	4	5
30.	My superiors nurture my career growth.	1	2	3	4	5
31.	I feel frustrated because of personality conflicts within the faculty of my department.	1	2	3	4	5
32.	I need more training to do my administrative tasks.	1	2	3	4	5
33.	I am content with my current salary.	1	2	3	4	5
34.	I feel the need for nurturing from an academic mentor.	1	2	3	4	5
35.	I need more time to spend seeing patients.	1	2	3	4	5

1 strongly disagree	2 disagree	3 neutral	4 agree	5 strongly agree

36.	I feel that my career goals are hampered by the need to bring in clinical revenue for my department.	**1**	**2**	**3**	**4**	**5**
37.	I feel dissatisfied with my level of clinical skills.	**1**	**2**	**3**	**4**	**5**
38.	I feel frustrated over the inability to evoke change in my department.	**1**	**2**	**3**	**4**	**5**
39.	I feel constrained by the time demands of my position.	**1**	**2**	**3**	**4**	**5**
40.	I feel recognized as an expert.	**1**	**2**	**3**	**4**	**5**
41.	I feel recognized as a leader in my discipline.	**1**	**2**	**3**	**4**	**5**

Are there other factors, which were not addressed in the preceding questions that have significantly affected your career development? If so, please explain.

COMMENTS

Thank you for your cooperation!

Please return in the postage paid envelope to:

Kimberly D. Anderson, Ph.D. (cand.)
Assistant Director, Surgical Education
Michigan State University
Department of Surgery
B-424 Clinical Center
East Lansing, MI 48824-1315

Please return the post card separately.

APPENDIX B

Association for Surgical Education

January 5, 1993

Dear Colleague:

I would like to invite you to participate in a study which addresses the topic of career development issues encountered by surgery faculty. The enclosed questionnaire has been approved by the Editorial Board of the Association for Surgical Education for distribution to our physician membership.

This topic is of great significance to the Association for Surgical Education. The recruitment and retention of competent physician faculty members to maintain high quality medical education programs continues to be a high priority for medical schools and graduate medical education programs. Yet recently, writers within clinical specialties have expressed concern not only about the decline in young physicians who choose academic careers, but in the number of young physicians who are electively withdrawing from academic positions in favor of pursuing careers in private practice.

The issues you have encountered in your own career development as an academic surgeon are of great interest and concern. The Association for Surgical Education believes this study is an important project, and I hope you will agree to participate.

Sincerely,

Ajit K. Sachdeva, M.D.
President
Association for Surgical Education

APPENDIX C

Career Development Survey

This questionnaire addresses the topic of career development issues encountered by academic surgery faculty (which includes any part-time or full-time teaching, research, or administrative activities with medical students, residents or other health professionals). The purpose of this survey is to:

- describe the issues academic surgery faculty encounter during their careers
- determine if there is a sequence of career development of surgery faculty
- describe variations in the career issues you face with regard to your: gender, age, marital status, parental status, practice setting, career track and fellowship training

Please note that your participation in this study is completely voluntary. Completion and return of your questionnaire indicates your consent to participate. Your responses will be kept strictly confidential and data will be reported in aggregate form only. The enclosed postage paid post card should be returned to me **separately** from the completed questionnaire. The completion and separate return of this card will inform me of who has responded without compromising confidentiality.

As a member of ASE I know you receive many survey requests, but I ask that you take a few minutes to help provide an accurate picture of the career issues of academic surgeons. The recruitment and retention of academic surgeons is a problem that has widespread implications for all of our academic departments. There is a need to examine what issues academic surgeons encounter during their own career development in order to continue to attract young physicians to the field, to enhance their job satisfaction, and to decrease faculty attrition rates. Your response is requested **by January 19, 1993**. Thank you in advance for your efforts and cooperation.

Kimberly D. Anderson, Ph.D. (cand.)
Department of Surgery
Michigan State University

Career Development Survey

A few weeks ago you were sent a questionnaire on the topic of career development issues encountered by surgery faculty. As of January 22nd, your response had not been received. I am writing to you again because of the significance each questionnaire has to the usefulness of this study. In order for the results of this study to be truly representative of the opinions of academic surgeons it is essential that each person return their questionnaire. If you have recently returned your questionnaire, I thank you and ask you to please disregard this request. If you have not yet returned your questionnaire, I need your help!

As a member of the Association for Surgical Education I know you receive many survey requests, but I ask that you take **10 minutes** to help provide an accurate picture of the career issues of academic surgeons. By completing this questionnaire you will be contributing to a body of research which is quite sparse. The results of this study will be useful to you and your department by providing data about career development issues in surgery, which can be used for targeting career development interventions. The results of this study will also be useful to the Association for Surgical Education by providing data to help guide potential career development curriculum efforts.

I and the Association for Surgical Education would greatly appreciate your prompt response to the enclosed survey. The enclosed postage paid post card should be returned to me **separately** from the completed questionnaire. The completion and separate return of this card will inform me of who has responded without compromising confidentiality.

Your response is requested **by February 9, 1993**. Your cooperation is sincerely appreciated.

Kimberly D. Anderson, Ph.D. (cand.)
Department of Surgery
Michigan State University

APPENDIX D

Career Development Survey
Statistical Analyses

Research Objective #1: To identify the characteristics of faculty involved in academic surgery

Questions	Description	Statistic
S1Q1	faculty appt.?	mean, SD
S1Q2	PT or FT faculty appt.?	mean, SD
S1Q3	type of faculty appt.?	mean, SD
S1Q3A	Tenure?	mean, SD
S1Q4	academic rank	mean, SD
S1Q7	total years in academic surgery	mean, SD
S1Q11A-D	location of pt. care activity?	mean, SD
S1Q12A-D	current % effort in administration, clinical work, research & teaching	mean, SD
S1Q13A-D	preferred % effort in administration, clinical work, research & teaching	mean, SD
S1Q14	gender	mean, SD
S1Q15	age	mean, SD
S1Q16	marital status	mean, SD
S1Q17	spouse employed?	mean, SD
S1Q18	spouse faculty member?	mean, SD
S1Q19	children?	mean, SD
S1Q20A-D	age of children: pre-school, K-8, 9-12, other	mean, SD
S1Q21	children live with you FT?	mean, SD

Research Objective #1: continued

Questions	Description	Statistic
S1Q14 & S1Q15	gender & age nominal data/continuous data	t-test
S1Q14 & S1Q16	gender & marital status nominal data/nominal data	x^2
S1Q14 & S1Q17	gender & spouse employed? nominal data/nominal data	x^2
S1Q14 & S1Q18	gender & spouse faculty member? nominal data/nominal data	x^2
S1Q14 & S1Q19	gender & children nominal data/nominal data	x^2
S1Q14 & S1Q20A	gender & pre-school kids? nominal data/nominal data	x^2
S1Q14 & S1Q20B	gender & K-8 kids? nominal data/nominal data	x^2
S1Q14 & S1Q20C	gender & 9-12 kids? nominal data/nominal data	x^2
S1Q14 & S1Q20D	gender & other kids? nominal data/nominal data	x^2
S1Q14 & S1Q21	gender & kids with you FT? nominal data/nominal data	x^2

Research Objective #2: To identify career development issues encountered by surgery faculty

Questions	Description	Statistic
S1Q1	when acad. career decided upon	mean, SD
S1Q9A-J	factors affecting career choice	mean, SD, range
S2Q1-41	career development issues	mean, SD, range, & Factor Analysis

Research Objective #3: To determine if the career development issues of surgery faculty parallel the issues of non-physician college faculty

Questions	Description	Statistic
S1Q4 & S1Q12A-D	academic rank/current % effort nominal data/continuous data	ANOVA
S1Q4 & S1Q13A-D	academic rank/preferred % effort nominal data/continuous data	ANOVA
S1Q4 & S2Q1-41*	academic rank/4 career devp. fact. nominal data/continuous data	MANOVA
S1Q4 & S1Q14	academic rank/gender nominal data/nominal data	x^2
S1Q14 & S1Q9A-J	gender/factors affect. career choice nominal data/interval data	t-test
S1Q14 & S1Q13A-D	gender/preferred % effort nominal data/continuous data	t-test
S1Q14 & S2Q1-41*	gender/4 career devp. fact. nominal data/continuous data	ANOVA
S1Q15 & S1Q13A-D	age/preferred % effort continuous data/continuous data Moment	Pearson Product Correlation
S1Q15 & S2Q1-41*	age/4 career devp. fact. continuous data/continuous data Moment	Pearson Product Correlation
S1Q7 & S1Q9A-J	# years in academic surgery/ factors affect. career choice continuous data/interval data	Multiple R
S1Q7 & S2Q1-41*	# years in academic surgery/ 4 career devp. fact. continuous data/continuous data	Multiple R

**Instead of looking at each of the 41 individual items, we are looking at the four factors which emerged from the factor analysis of the 41 items.*

Research Objective #4: To determine if surgery faculty with fellowship training differ from their peers without fellowship training

Questions	Description	Statistic
S1Q10	fellowship?	Descriptive
S1Q10A-D	type of fellowship?	Descriptive
S1Q10 & S1Q12A-D	fellowship?/current % effort nominal data/continuous data	t-test
S1Q10 & S1Q13A-D	fellowship?/preferred % effort nominal data/continuous data	t-test
S1Q10 & S2Q1-41*	fellowship?/4 career devp. fact. nominal data/continuous data	t-test
S1Q10B & S1Q12A-D	clinical fellow./current % effort nominal data/continuous data	t-test
S1Q10B & S1Q13A-D	clinical fellow./preferred % effort nominal data/continuous data	t-test
S1Q10B & S2Q1-41*	clinical fellow./4 career devp. fact. nominal data/continuous data	t-test
S1Q10C & S1Q12A-D	research fellow./current % effort nominal data/continuous data	t-test
S1Q10C & S1Q13A-D	research fellow./preferred % effort nominal data/continuous data	t-test
S1Q10C & S2Q1-41*	research fellow./4 career devp. fact. nominal data/continuous data	t-test
S1Q10C (# months) & S1Q12A-D	# mos. research fellow./ current % effort continuous data/continuous data	Pearson Product Moment Correlation
S1Q10C (# months) & S1Q13A-D	# mos. research fellow./ preferred % effort continuous data/continuous data	Pearson Product Moment Correlation

**Instead of looking at each of the 41 individual items, we are looking at the four factors which emerged from the factor analysis of the 41 items.*

Research Objective #5: Relationship between selected characteristics and career development issues

Questions	Description	Statistic
S1Q2 & S1Q9A-J	PT/FT appt./ factors affect. career choice nominal data/interval data	t-test
S1Q2 & S2Q1-41*	PT/FT appt./ 4 career devp. fact. nominal data/continuous data	MANOVA
S1Q3 & S1Q9A-J	type of faculty appt./ factors affect. career choice nominal data/interval data	MANOVA
S1Q3 & S2Q1-41*	type of faculty appt./ 4 career devp. fact. nominal data/continuous data	MANOVA
S1Q4 & S1Q9A-J	academic rank/ factors affect. career choice nominal data/interval data	MANOVA
S1Q8 & S1Q9A-J	timing of career decision/ factors affect. career choice nominal data/interval data	MANOVA
S1Q8 & S2Q1-41*	timing of career decision/ 4 career devp. fact. nominal data/continuous data	MANOVA
S1Q11 & S1Q9A-J	location of patient care activity/ factors affect. career choice nominal data/interval data	MANOVA
S1Q11 & S2Q1-41*	location of patient care activity/ 4 career devp. fact. nominal data/continuous data	MANOVA
S1Q15 & S1Q9A-J	age/ factors affect. career choice continuous data/interval data	Multiple R
S1Q16 & S1Q9A-J	marital status/ factors affect. career choice nominal data/interval data	Omitted
S1Q9A-J & S2Q1-41*	factors affecting career choice/ 4 career devp. fact. interval data/continuous data	Multiple R

Research Objective #5: continued

Questions	Description	Statistic
S1Q12A-D & S1Q13A-D	current % effort/ preferred % effort continuous data/continuous data	x^2
S1Q21 & S2Q1-41*	FT children?/ 4 career devp. fact. nominal data/continuous data	MANOVA
S1Q21 & S1Q12A-D	FT children?/ current % effort nominal data/continuous data	MANOVA
S1Q21 & S1Q13A-D	FT children?/ preferred % effort nominal data/continuous data	MANOVA
S1Q18 & S1Q12A-D	partner/spouse employed?/ current % effort nominal data/continuous data	MANOVA
S1Q18 & S1Q13A-D	partner/spouse employed?/ preferred % effort nominal data/continuous data	MANOVA

**Instead of looking at each of the 41 individual items, we are looking at the four factors which emerged from the factor analysis of the 41 items.*

LIST OF REFERENCES

1. Aristotle. Nichomachean ethics. Indianapolis, IN: Hackett Publishing Co.; 1985. Irwin, Terence,translator.

2. Naisbitt, J.R.; Aburdene, P. Reinventing the corporation. New York, NY: Megatrends Inc., Warner Books Inc.; 1985:87-88.

3. Bolles, R. What color is your parachute? Berkeley, CA: Ten Speed Press:1972.

4. Gedde, C.; Strickland B. From plateaus to progress: a model for career development. Training. June: 56-61; 1984.

5. Hall, D.T. A theoretical model of career subidentity development in organizational settings. Org Behav and Hum Perform 6:50-76; 1971.

6. Erikson, E.H. Identity, youth and crisis. New York, NY: W.W. Norton: 1968:128-135.

7. Bridges, W. Transitions: making sense of life's changes. Reading, MA: Addison-Wesley Publishing Co.: 1980:58-59, 74.

8. Harren, V.A.; Daniels, M.H.; Buck, J.N.; editors. Facilitating students' career development. New Directions for Student Services 14: 1-15; 1981.

9. Hall, D. Career stages. Careers in Organizations. Pacific Palisades, CA: Goodyear Publishing Co.; 1976: 47-91.

10. Coombs, R. Mastering medicine. New York, NY: The Free Press A Division of MacMillan Publishing Co. Inc.; 1978: 182-183.

11. Bland, C.J.; Schmitz, C.C.; Stritter, F.T.; Henry, R.C.; Aluise, J.J. Successful faculty in academic medicine. New York, NY: Springer Publishing Co.: 1990: 3-5.

12. Skinner D.B. Recruitment and retention of academic surgeons. Surgery 86: 1-12; 1979.

13. Linn, L.S.; Lewis, C.E.; Leake, B. Academic general internists' work roles and motivations for learning. J Intern Med 2: 239-243; 1987.

14. Benson, M.C.; Linn, L.; Ward, N.; Wells, K.B.; et al. Career orientations of medical and pediatric residents. Med Care 23; 1256-1264; 1985.

15. Curreri, P.W.; Zimmerman, C.E.; Jaffe, B.M.; Mackenzie, J.R.; et al. Survey of employment satisfaction in academic surgery. J Surg Res 17: 215-218;1974.

16. Applegate, W.B.; Williams M.E. Career development in academic medicine. Am J Med 88: 263-267; 1990.

17. Mawardi, B.H. Satisfactions, dissatisfactions and causes of stress in medical practice. JAMA 241: 1483-1486; 1979.

18. Bergstresser, P.R. Perceptions of the academic environment: a national survey. J Am Acad Dermatol 25: 1092-1096; 1991.

19. Fogarty, A.J.J.P.; Barber, A. Faculty satisfaction, activity and demographics: a comparison of family practice and orthopaedic surgery faculty. Mil Med 150: 15-18; 1985.

20. Barber, A. Faculty satisfaction, activity and retention: a study of army academic orthopaedic surgeons. Mil Med 148: 410-413; 1983.

21. Alpert J.S,; Coles R. Careers in academic medicine: triple threat or double fake. Arch Intern Med 148:1906-1907; 1988.

22. Spiro H.M. A perspective on careers in academic medicine. Arch Intern Med 149:969,972; 1989.

23. Stange, K.C.; Hekelman, F.P. Mentoring needs and family medicine faculty. Fam Med 22: 183-185; 1990.

24. Baldwin, R.; Blackburn, R. The academic career as a developmental process. J Higher Educ 52: 598-614; 1981.

25. Knope, H.; Anderson, R. Academic development in family practice. J Fam Pract 12: 493-499; 1981.

26. Swee, D.; Winter, R.; Hammond, B. Testing a model of academic career development. Fam Med 21: 350-354; 1989.

27. Bogdewic, S. Advancement and promotion: managing the individual career. In: McGaghie, W.; Frey, J. Handbook for the academic physician. New York, NY: Spring-Vertag; 1986: p. 22-36.

28. Ashkenas, R. The behavioral sciences and physicians' concerns. Health Care Manage Rev Fall: 73-80; 1979.

29. Erikson, E.H. Childhood and society. New York, NY: W.W. Norton and Co.; 1963.

30. Super, D.E. Vocational development: a framework for research. New York, NY: Teachers College Press; 1957.

31. Grose, N.P.; Goodrich, T.J.; Czyewski, D. The development of professional identity in the family practice resident. J Med Educ 58: 489-491; 1983.

32. Sheehy, G. Passages: predictable crises of adult life. New York, NY: E.P. Dutton; 1976.

33. Levinson, D.J.; Darrow, C.N.; Klein, E.B.; Levinson, M.H.; McKee, B. Seasons of a man's life. New York, NY: Random House; 1978.

34. Zabarenko, R.N.; Zabarenko, L.M. The doctor tree. Pittsburgh, PA: University of Pittsburgh Press; 1978.

35. Gould, R.L. Transformations: growth and change in adult life. New York, NY: Simon and Schuster; 1978.

36. Vaillant, G. Adaptation to life. Boston, MA: Little, Brown; 1977.

37. Brent, D.A. The residency as a developmental process. J Med Educ 56: 417-422; 1981.

38. Gerber, L. Married to their careers. New York, NY: Tavistock Publications; 1983.

39. Neugarten, B. Adult personality: toward a psychology of the life cycle. In: Middle age and aging: a reader in social psychology. Chicago, IL: University of Chicago Press; 1968.

40. Broadhead, R. The private lives and professional identity of medical students. New Brunswick, NJ: Transactions Books; 1983.

41. Huse, E.F.; Cummings, T.G. Organization development and change. 3rd Ed. St.. Paul, MN: West Publishing Co.; 1985: p. 299, 305-322.

42. Hall, D.T.; Nougaim, K. An examination of Maslow's need hierarchy in an organizational setting. Org Behav and Hum Perform 3: 12-35; 1968.

43. Schein, E.H. The individual, the organization and the career: a conceptual scheme. J Appl Behav Sci 7:401-426; 1971.

44. Feiman-Nemser, S.; Floden, R.E. The cultures of teaching. In: Wittrock, M.C.; ed. Handbook of research on teaching. New York, NY: Macmillan Publishing Co.; 1986: p. 511.

45. Baldwin, R. Adult and career development: what are the implications for faculty: In: Current issues in higher education. Washington, DC: American Association for Higher Education: 1979: p. 13-20.

46. Mathis, B.C. Academic careers and adult development: a nexus for research. In: Current issues in higher education. Washington, DC: American Association for Higher Education: 1979: p. 21-24.

47. Onuoha, A.R.A. Job satisfaction of university faculty. The Canadian Administrator xx: 1-5; 1980.

48. Blackburn, R.T. Academic careers: patterns and possibilities. In: Current issues in higher education. Washington, DC: American Association for Higher Education: 1979: p. 25-27.

49. Jonas, H.S.; Etzel, S.I.; Barzansky, B. Undergraduate medical education. JAMA 264: 801-803; 1990.

50. Curreri, P.W. Presidential address: "real people." Surgery 90: 127-31; 1981.

51. Peters, A.; Markello, R. Job satisfaction among academic physicians: attitudes toward job components. J Med Educ 57: 937-939; 1982.

52. Hitchcock, M.A.; Anderson, W.A.; Stritter, F.T.; Bland, C.J. Profiles of family practice faculty development fellowship graduates 1978-1985. Fam Med 20: 33-38; 1988.

53. Beaty, H.N.; et al. Research activities of faculty in academic departments of Medicine. Ann Intern Med 104: 90-97; 1986.

54. Linn, L.S.; Yager, J.; Cope, D.; Leake, B. Health status, job satisfaction, job stress and life satisfaction among academic and clinical faculty. JAMA 254: 2775-2782; 1985.

55. Sanders, A.B.; Fulginiti, J.V.; Witzke, D.B. Factors influencing resident career choices in emergency medicine. Ann Emerg Med 21: 59-64; 1992.

56. Petersdorf, R.G. Academic medicine no longer threadbare or genteel. N Engl J Med 304: 841-843; 1981.

57. Worrell, J.A.; Winfield, A.C.; Carroll, F.E.; et al. Returning to academic radiology: why am I doing this? Radiology 172: 874; 1989.

58. Maloney, J.V. A report on the role of economic motivation in the performance of medical school faculty. Surgery 68: 1-19; 1970.

59. Mason, G.R. The academic surgical internship: a long-term follow-up. Surgery 93: 560-563; 1983.

60. Barnes, R.W. Surgical passages: career decisions regarding academe. J Surg Res 30: 57-64; 1981.

61. Dillman, D.A. Mail and Telephone Surveys The Total Design Method. New York, NY: John Wiley & Sons; 1978.